Landscapes of Burial? The Homs Basalt, Syria in the 4th-3rd millennia BC

JENNIE NICOLE BRADBURY

ABSTRACT

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In the basaltic landscape of the Homs region, there exist thousands of hitherto un-recognized burial cairns and settlements provisionally dated to the 4th-3rd millennia BC. They represent a unique opportunity to analyze a largely extant archaeological record of human activity, which contrasts with the traditional landscape of tells characteristic of the Middle East. With this in mind, this thesis aims to investigate such structures and their role within processes of social reproduction in what can be termed 'non-optimal' zones. The timing of their construction, when societies in lowland zones were undergoing a significant augmentation of political and economic complexity, concomitant with the rise of states, is pivotal. Despite assumptions regarding the association between these monuments and nomadic groups, preliminary research within the Homs area suggests that such an association is not necessarily straightforward. As such, the long-term interplay between mobile and sedentary populations within sub-optimal zones is crucial for the consideration of these monuments. Preliminary analysis of data from the Homs area, as well as other areas within the Levant, has also suggested that a sole 4th/3rd millennia BC attribution for these monuments cannot be supported. Accordingly, my research is also concerned with the re-incorporation of these monuments within changing landscape and settlement structures during later periods. It draws upon concepts such as experiential landscapes, previously under utilized by researchers in the Middle East, to reconsider the notion that such monuments represented a unified phenomenon.

"LANDSCAPES OF BURIAL? THE HOMS BASALT, SYRIA IN THE 4TH-3RD MILLENNIA BC"

Three Volumes

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VOLUME ONE

SECTION 1: LANDSCAPE, ENVIRONMENT AND METHODOLOGIES

CHAPTER 1: STONE MONUMENTS IN THE BASALT LANDS OF HOMS, SYRIA: A MULTI-SCALAR ANALYSIS AND INTERPRETATION

CHAPTER 2: ENVIRONMENT, GEOLOGY AND CLIMATE

SECTION 2: LANDSCAPE, BURIAL MONUMENTS AND ARCHAEOLOGICAL INTERPRETATION

CHAPTER 3: SETTLEMENT, BURIAL MONUMENTS AND ARCHAEOLOGICAL ACTIVITY

CHAPTER 4: BEYOND THE BRONZE AGE: A HISTORIOGRAPHY OF STONE MONUMENTS

SECTION 3: THE HOMS BASALT, SYRIA: CAIRNS, SETTLEMENTS AND LANDSCAPE

CHAPTER 5: MORPHOLOGY AND CHRONOLOGY OF CAIRNS IN THE HOMS NSA

CHAPTER 7: LIVING AND DYING IN THE *WA'AR*: THE 4TH-3RD MILLENNIA BC IN THE HOMS BASALT, SYRIA

VOLUME TWO

SECTION 4: INTERPRETING THE SUB-OPTIMAL: THE HOMS NSA AS A MODEL FOR THE 4TH-3RD MILLENNIA BC LEVANT

CHAPTER 8: CHRONOLOGY, MORPHOLOGY AND INTERPRETATION: THE HAURAN, JAULAN AND NEGEV IN THE 4TH-3RD MILLENNIUM BC

CHAPTER 10: 'LANDSCAPES OF BURIAL?' FUTURE RESEARCH IN SUB-OPTIMAL LANDSCAPES

VOLUME THREE: LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

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~To my parents, thank you for your inspiration~

CHAPTER 1: STONE MONUMENTS IN THE BASALT LANDS OF HOMS, SYRIA: A MULTI-SCALAR ANALYSIS AND INTERPRETATION

Introduction

In the basaltic landscape of the Homs region, there exist thousands of hitherto un-recognized burial cairns and settlements, a percentage which can be provisionally dated to the 4th-3rd millennia BC. They represent a unique opportunity to analyze a largely extant archaeological record of human activity, which contrasts with the traditional landscape of tells characteristic of the Middle East (e.g. Wilkinson, 2003: 100-127). With this in mind, my research aims to investigate such remains and their role within processes of social reproduction in what can be termed 'sub-optimal' zones (see Figure 1.1 and Chapter 1.2). The timing of their construction, when societies in lowland zones were undergoing a significant augmentation of political and economic complexity, concomitant with the rise of states, is pivotal. Despite assumptions regarding the relationship between stone monuments and nomadic groups (e.g. Prag, 1995, Ur and Hammer, 2009), preliminary research within the Homs area suggests that such an association is not necessarily straightforward. As such, the long-term interplay between mobile and sedentary populations within sub-optimal zones is crucial for the consideration of these monuments. It is also suggested that a sole 4th/3rd millennia BC attribution for monuments such as burial cairns cannot be supported. Accordingly, this thesis will also consider the re-incorporation of these monuments within changing landscape and settlement structures during later periods. Through this project I aim to move beyond traditional typological studies (e.g. Steimer-Herbet, 2004), and examine the cairns and settlements from the standpoint of topography, land-use, and seasonality. In addition, I draw upon concepts such as experiential landscapes (e.g. Ingold, 2000), previously little utilized by researchers in the Middle East, to reconsider the notion that such monuments represent a unified phenomenon.

1.1. Survey and Research in the Homs Basalt 1999-2007: Generating the aims and objectives of the thesis

Research in the Homs Basalt from 1999-2007 focused on two main agendas; the mapping and survey of sites and features identified from Corona and Ikonos satellite imagery (Philip *et al.,* 2002; 2005) and more recently, as part of the author's Masters thesis, the collation of data pertaining to the cairn monuments identified in the region (Bradbury and Philip, in press). Investigators in the field first noted cairn structures during the initial seasons of the SHR project (Philip *et al.*, 2002: 16). However, it was only during the author's Masters that these monuments began to be studied as a broader phenomenon. As part of this research preliminary digitisation of cairns, identified using declassified Corona imagery, was carried out in the NSA. In addition, a sample of c.200 cairns were examined in the field. From this work initial patterns of distribution were identified in the NSA. For example it was noted that cairn monuments appeared to be absent from the valley bottoms, a pattern that has remained visible in the larger dataset employed for this thesis (see Chapter 6). In addition to the cairn monuments identified by the applicant's MA Thesis, research by the SHR Project had begun to demonstrate the presence of a range of enclosure type settlements (e.g. Philip *et al.,* 2005: 39). These structures, on the basis of the limited collections of diagnostic pottery and lithic material, were preliminarily dated to the 4th-3rd millennia BC (ibid.). However, the role of these structures in relation to the broader phases of occupation and activity in the wider Homs region were poorly understood, largely due to the local and hand-made nature of the material culture at these sites.

On the basis of the evidence generated during the early seasons of the SHR project and research pertaining to cairn monuments across the Levant (e.g. Epstein 1985a) it was initially suggested that the Homs cairns predominantly dated to the 4th-3rd millennia BC (Philip *et al.,* 2005: 39). Having said this, the difficulties of dating these monuments were clearly acknowledged (Bradbury and Philip, in press; Philip *et al.,* 2005: 39). Furthermore, the applicant's MA thesis demonstrated the striking number of monuments (over 29,000 potential cairns) in the region, as well as the clear variety in morphology which could be seen from preliminary fieldwork analysis (Bradbury and Philip, in press). Based on these observations the author's MA thesis suggested that the cairns in the Homs Basalt represented a palimpsest of activity, spanning thousands of years of use and re-use.

The initial aim of the thesis was to move beyond the preliminary findings of the author's MA and examine the cairns of the Homs NSA within their broader chronological and landscape context. The thesis aimed to record variations in morphology alongside potential chronological indicators obtained through surface collections (see chapter 1.4.2.). From this it was hoped that subtle patterns, which could aid in future interpretation of cairn monuments both in the Homs NSA and elsewhere, would be elucidated. As such the thesis was initially based on several key questions/objectives:

a. *Can the Homs cairns be dated to the 4th-3rd millennia BC or alternatively do they represent multi-period and multi-functional activity? If the latter is correct, how can we develop a methodology to understand and interpret these monuments in relation to their utilisation in different historical contexts, as well as for different functions?*

b. *What is the value of typological classifications of cairn monuments in the Homs NSA and wider Levant? As preliminary evidence collated during the applicants*

MA demonstrated, these monuments show considerable variety. Thus, it might be possible to suggest that a methodology based on the recording of subtle morphological variations, in relation to the wider landscape and potential chronological context of monuments, is more appropriate for the interpretation of these structures.

Initial research in relation to the two objectives set out above illustrated the problematic nature of assigning any clear chronological attribution to cairn monuments. Furthermore, as illustrated in Chapter 3, the value of studying such structures as a single phenomenon was brought into question. Despite this, evidence did emerge to suggest that the initial construction of cairn monuments in the Homs NSA could be dated to the 4th-3rd millennia BC. Given these findings it was felt that the only way in which the broader context and importance of these monuments could be understood was by embarking upon a chronologically specific study of the role of cairn monuments in the Homs NSA. Due to the author's interest and area of expertise, the 4th-3rd millennia BC was selected. In order to better understand the role of cairn monuments during this period, it was clear that the entire range of evidence for 4th-3rd millennia BC activity in the Homs NSA would have to be considered. Moreover, it was felt that an understanding of the environmental and landscape context of this region would be necessary. Ongoing research in the Homs Basalt as part of the SHR project had led to the classification of this region as a 'sub-optimal' zone (see above for definitions). As such, it was felt that the examination of the nature of and evidence for 4th-3rd millennium BC activity in a number of other 'sub-optimal' zones was necessary. This, it was hoped, would allow the evidence from the Homs Basalt to be placed within a broader socio-economic and regional context. In order to further the above research an additional number of questions/objectives were developed:

c. *The current models concerning core/periphery and the role of 'complex society' within arid/sub-optimal regions are inadequate and need to be refined, in light of developments in archaeology and associated disciplines over the past couple of decades. With this in mind, is it possible to develop new models and interpretations in order to fully assess and understand how 'sub-optimal' landscapes may have been utilised and conceptualised within the past?*

d. *If we argue that the Homs region is not unique, but instead represents a uniquely preserved (until recently) area [e.g. a 'landscape of preservation' (Wilkinson 2003: 41-2)] what does comparison with other 'sub-optimal' study regions (see below) indicate? Can the Homs Basalt be seen to have unique* *aspects/elements or does it represent a typical example of the exploitation of a 'sub-optimal' region during the 4th-3rd millennia BC?*

The hypotheses and questions outlined above have developed over the three years of PhD research in reaction to findings from the author's MA thesis, as well as initial findings in the preliminary field season of this project. In addition, it has benefited from on-going research as part of the Homs Regional Survey Project, as well as the Leverhulme funded Vanishing Landscape Project which began in 2008. This thesis should not be viewed as the definitive statement concerning the Homs cairns and occupation/activity in the Homs Basalt during the 4th-3rd millennia BC. Rather, it represents merely one fragment of the ongoing research which is currently being undertaken in Central Syria and indeed the wider Levant.

1.2. Study Regions

Over the past three years primary fieldwork (see section 1.4.2.) has been carried out within the basaltic upland to the northwest of the modern city of Homs (ancient Emessa) in central Syria. This region represents the primary study area for this thesis. Covering, c.150 square kilometres, this landscape is part of the wider Homs Regional Survey Project (SHR), which has been developed over the past 12 years [see above and (Beck *et al.*, 2007, Bradbury, 2010, Bradbury and Philip, in press, Philip *et al.*, 2005, Philip and Bradbury, 2010, Philip *et al.*, in press, Philip *et al.*, 2002)]. Satellite imagery analysis has also been carried out in the area of the Leverhulme funded Vanishing Landscape Project [an area of c. 21,000 square kilometres from Hama in the North to El-Hermel in the South (Durham University)]. Three comparator regions will also be considered in this thesis; the Hauran, Jaulan and Negev.

The Hauran, Jaulan and Negev all represent landscapes where stone burial monuments, such as cairns have been identified, excavated and surveyed and thus, in some respect are comparable with the Homs NSA. As such, they are significant regions for discussing whether broad trends in burial monuments, settlements and material culture can be seen across different regions during the 4th-3rd millennia BC. One of the key factors in the selection of the above case studies has been the quality, availability and accessibility of detailed survey and excavations reports. Areas such as the Beka'a also show comparable features to the Homs Basalt. However, this region, despite its similarities in terms of material culture and burial forms, has not been considered due to the lack of detailed excavation and publication. The areas selected as case studies all fall under the broad concept of 'sub-optimal' regions (see below). They offer the opportunity to consider activities within areas beyond the traditionally studied lowland basins. However, as Chapter 2 will demonstrate they all have different characteristics which make them 'sub-optimal'. The Homs Basalt and Jaulan both have sufficient rainfall to support rain-fed farming [see chapters 2.2.1 and 2.2.3 (e.g. Epstein, 1998: 4-5; Na'aman 1951: 24-5)]; however, they have been classified as 'sub-optimal' due their stony environments, as well as the seasonal variability in resource distribution. In particular, both these regions can become waterlogged during the winter months, affecting the nature and distribution of subsistence activities. The Hauran is located at the edge of rain-fed farming and the nature of subsistence and activity in this region is also considerably influenced by the seasonal variability of resources [see chapter 2.2.2. (Allison *et al.*, 2000: 353; Newson, 2000: 86)]. The Negev, in contrast, is an arid environment, the majority of which lies beyond the limits of rain-fed farming [i.e. beyond the 250mm rainfall isohyets (Evenari *et al.*, 1971: 8-9, 33, 49) and see chapter 2.2.4], thus it offers different potentials to the three regions discussed above. The fact that all these areas show evidence of both comparative features, in terms of material culture, burial monuments and possibly settlements (see Chapters 6-8), as well as distinctive elements offers the opportunity to consider whether such zones can be treated a single phenomenon. If this is not the case a more detailed comparative analysis and examination of these areas will hopefully point towards new avenues of research, enabling us to develop approaches and methodologies for the study of such regions.

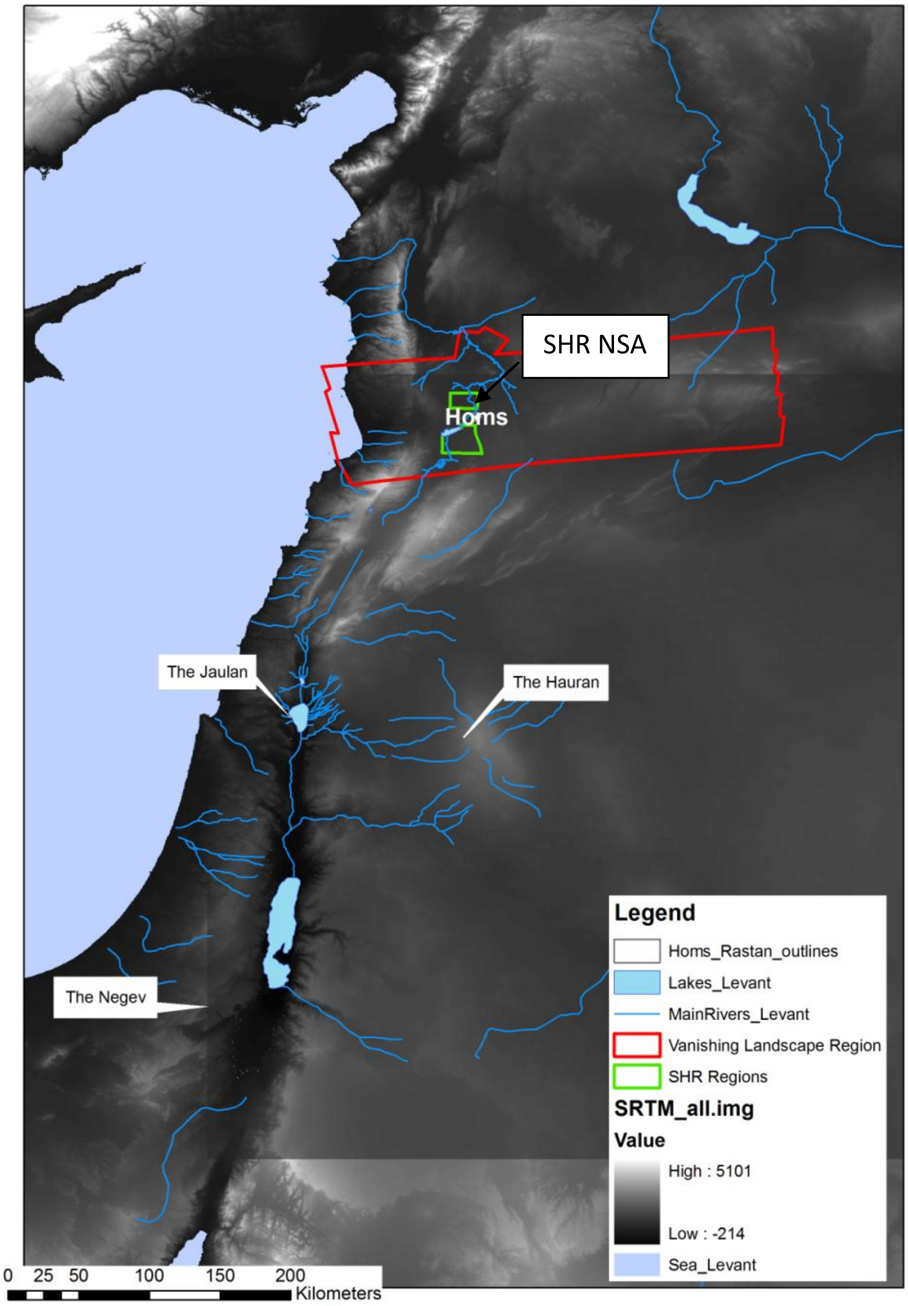


Figure 1.1. Study regions examined during the thesis

1.3. 'Sub-optimality': Methodology and Interpretation

The case study areas discussed in this thesis can be broadly termed as 'sub-optimal'; however, what is actually meant by this term. 'Sub-optimal' zones are those which, despite offering considerable potential in terms of human exploitation, require significant input in terms of labour, technological developments or external socio-political factors before such potential can be realised. A background of low intensity exploitation and occupation of such regions is viable. However, widespread expansion and intensification of activity requires either external stimuli or alternatively internal developments based on the new potentials offered to local inhabitants by changing socio-political, technological or environmental circumstances (Philip and Bradbury, 2010: 138). In other words, given the difficult and perhaps challenging nature of subsistence and settlement in these regions there has be further incentives to encourage widespread occupation and exploitation. For example, whilst supporting an annual rainfall of around 400-600mm, the Homs Basalt has significant limiting factors hindering large-scale exploitation and occupation. Resources in this area are present as a patchwork of seasonal opportunities with the nature of these resources altering across very short distances (see Chapter 2 for further discussion). In addition, movement is severely hindered by the rocky and waterlogged environment, especially during winter months. These limiting factors restrict the utilisation of this region and led Na'aman (1951: 19-20, 68) to characterise it as a depressing and desolate landscape. However, as this thesis will demonstrate at certain points throughout history, the expansion and intensification of activity in this region was perceived as a worthwhile activity. 'Sub-optimal' regions are not static and it is clear that people's perceptions of their exploitability may have dramatically altered over time (see Chapter 2 for further discussion).

The term 'sub-optimal', as used here, also has a further connotation. In this case it has been used to illustrate the methodological bias within archaeological studies towards areas which have generally been perceived by researchers as 'optimal' agricultural zones, for example river valley locations where tell sites represent the predominant occupational traces. Such zones also fall into Wilkinson's (2004:43) criteria of 'Zones of Attrition', areas which have witnessed thousands of years of use and re-use, processes which often mask the archaeological remains researchers seek to study. In comparison 'sub-optimal' landscapes or the 'spaces in between' tell settlements have received relatively little examination. Indeed it is only with it is only with the advent of high-resolution satellite imagery within archaeological agendas that the large-scale mapping and interpretation of such areas has become feasible. Ongoing research by projects such as PaléoSyr (pers comm. Braemer, 2010) the Homs Regional Survey (Philip and Bradbury, 2010) and the Marges Arides Survey (e.g. Geyer *et al.,* 2006) has begun to demonstrate the complex and diverse opportunities for subsistence and dwelling in such landscapes. Indeed, these so-called 'sub-optimal' regions, located outside the primary agricultural zones, are likely to have represented a significant proportion of the population and economic potential of the later prehistoric and historic Levant.

1.4. Methodologies and Datasets across the Levantine region

1.4.1. Map, satellite imagery and aerial photographs

The map, satellite imagery and aerial photographs used in this thesis range in date, accuracy and resolution (see Figure 1.2 and Appendix 1.3 for further details). Corona and Ikonos imagery have been the most prolifically used datasets and their benefits have been noted by other investigators (e.g. Beck, 2004, Casana and Cothren, 2008, Kennedy, 1998, Kouchoukos, 2001). All of the maps used in this thesis have been geo-corrected using a base co-ordinate system of *WGS 1984*. This has allowed the data to be depicted in ArcMap in a single view within one co-ordinate system. Various different co-ordinate systems are present across the region and thus a number of methods have had to be employed in order to geo-correct the map data [see (Beck, 2004, Galiatsatos, 2004) for further discussions on geo-correction and the use of multiple image sources within archaeology]. Where map data was in paper format, these were scanned in sections and then merged in Adobe Photoshop. Following this where a clear co-ordinate system could be identified for the map i.e. *WGS 1984* the maps were geo-corrected using the co-ordinates recorded on the map and then if necessary re-projected into *UTM* using the re-projection functions in ArcMap 9.3. When this could not take place, geo-correction by hand was necessary. This is an imprecise system and relies on the ability of the person carrying out this correction to be able to identify features on both the base map which they are employing and the map which is being geo-corrected. The primary base map used within this thesis was Landsat data (see below). When a sufficient number of correlating data points could not be identified between Landsat data and maps requiring geo-correction, maps already corrected/re-projected were employed. At the localised scale (i.e. within the Homs region) the accuracy of data is excellent. In contrast, at the regional scale the difficulties of geo-correction are more apparent due to the necessity of having to combine data from a large number of different geographic and projected co-ordinate systems. Errors in the regional data might be in the order of several kilometres.

Map/ Imagery	Date	Scale/ Resolution	Region	Available Data/Use	Limitations	Source
Syrian Maps (see Figure 1.3)	C.20th	1: 25,000 /1: 50,000	Homs NSA	Place names, such as '*Tell*' (ذلـ ل) and '*Khirba*' (خربـ ا), as well as a variety of symbols and features depicting ruins and areas of antiquity.	Place names do not always correspond to archaeological sites	SHR Project
Annual Rainfall Variability	C. 21st	1: 800,000	Levant/ Near East	Overview of Near Eastern Climatic data (modern)	Subtleties in the data are lost due to the large scale at which information is plotted	TAVO Map Series

Geological Maps	21st century	1:500,000	Levant/ Near East	Geological/ Lithological Information	In many cases geological strata are recorded by period rather than lithology, making their use in archaeological interpretation difficult. In others, softer rocks, such as marls are treated as part of the same strata as harder outcrops, such as limestone.	Bender 1975; Wolfart 1967; Picard 1959
Aerial Photos (see Figure 1.4)	1950s	c.1m	Homs NSA	Identification of archaeological features and 'image truthing' of lower resolution imagery	This imagery is only available for the northern half of the NSA and is also subject to geo-correction errors due to the angle of the aerial shots	SHR Project
Ikonos (see Figure 1.4)	2002	4m (multi-spectral) and 1m (pan-sharpened) imagery	Homs NSA	Identification of archaeological features and 'image truthing' of lower resolution imagery	Dates to 2002 when a large proportion of sites had already disappeared in the Homs NSA	SHR Project
Google Earth (see Figure 1.4)	2000-2011	Variable	World	Identification of archaeological features in areas outside that of the SHR/Vanishing Landscape Imagery	Image quality is variable and the processes involved in their preperation are unknown. Imagery can also not be used directly in ArcMap and file have to be converted into Kml format in order to viewed directly in Google Earth	Freely Available
Corona (see Figure 1.5)	1960s	2-8m	Vanishing Landscape Area	Identification of archaeological features prior to their widespread destruction	Variable resolution and image quality depending on cloud cover and geo-correction methods	SHR Project/Vanishing Landscape Project
True Colour Landsat 5 and 7 Images (see Figure 1.5)	1980s	28m	World	Base map for display and geo-correction. Some very large archaeological features i.e. Tells can be distinguished. Landsat 7 can also be used for lithological and land cover assessment (see chapter 3)	Cannot be used to distinguish archaeological features due to resolution	http://gaialab.asu.edu/Jordan/# 2010; http://glovis.usgs.gov 2010; http://www.landcover.org/index.shtml 2010
SHR DEM (see Figure 1.5)	n/a	20m	Homs NSA	High resolution data concerning the elevation and topography of the landscape. Using such data it is possible to generate hydrological flow, slope and aspect models	Only available for the SHR area	SHR Project

Levant SRTM (see Figure 1.5)	n/a	90m	Levant/Near East	Provides data concerning the elevation and topography of the landscape. Using such data it is possible to generate hydrological flow, slope and aspect models	Data is obtained in 5x5 degree squares and has to be mosaiced	http://srtm.csi.cgiar.org/ 2010

Figure 1.2. The Main Sources of Imagery and Map data

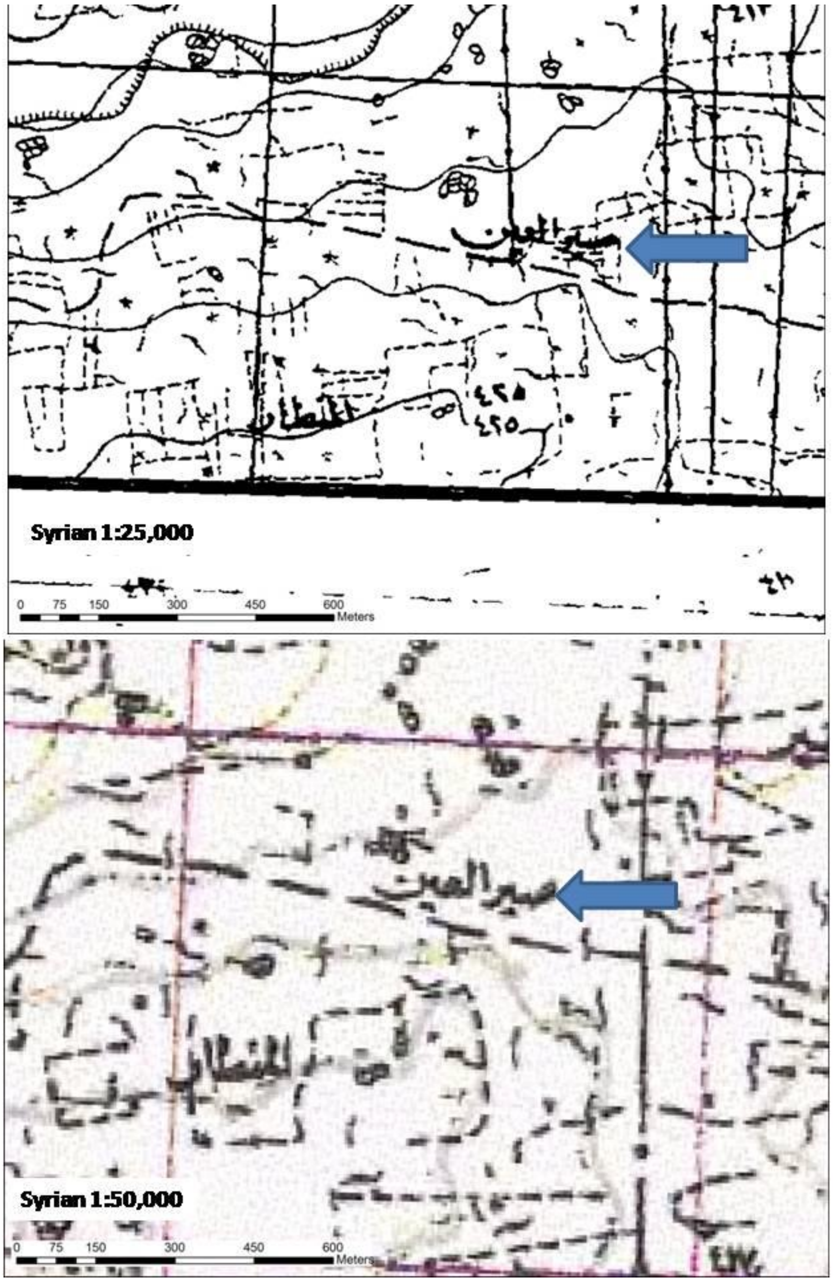


Figure 1.3. Syrian maps 1:25,000 and 1:50,000. These maps are useful for indicating potential archaeological features, such as enclosures, as well as recording place names such as Sayr al 'Ain (Crack of the Eye) as marked by an arrow on the figure.

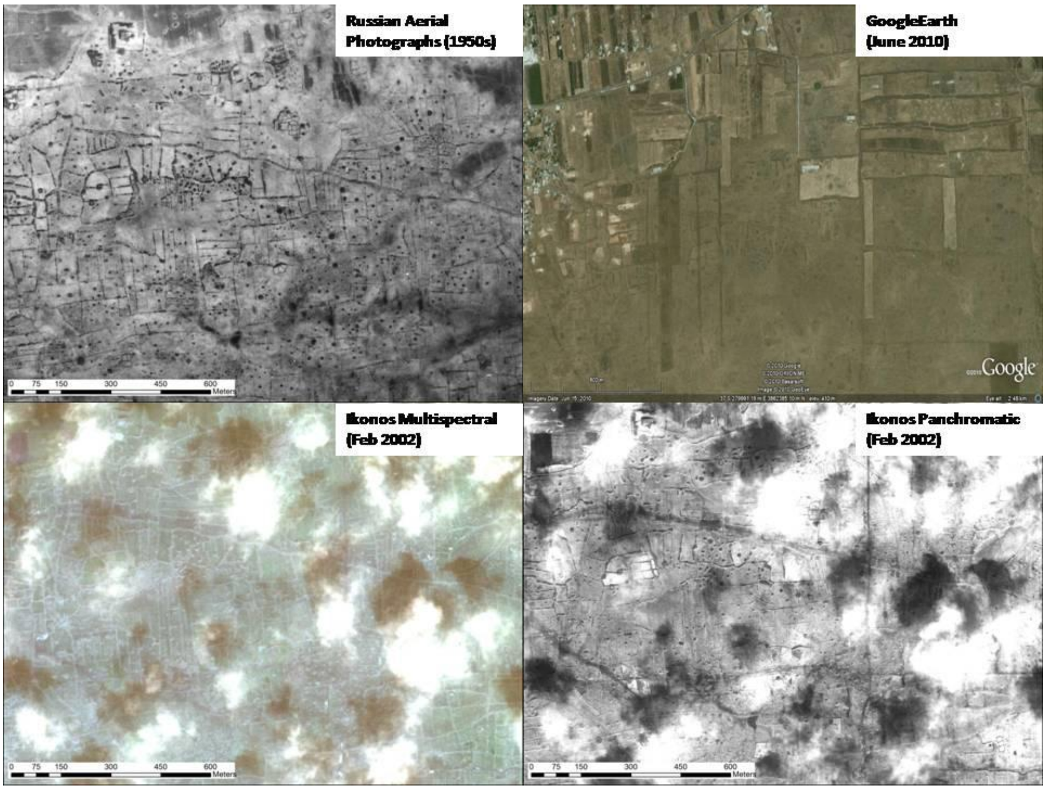


Figure 1.4. Russian Aerial Photographs, GoogleEarth Imagery, Ikonos Multispectral and Ikonos Panchromatic

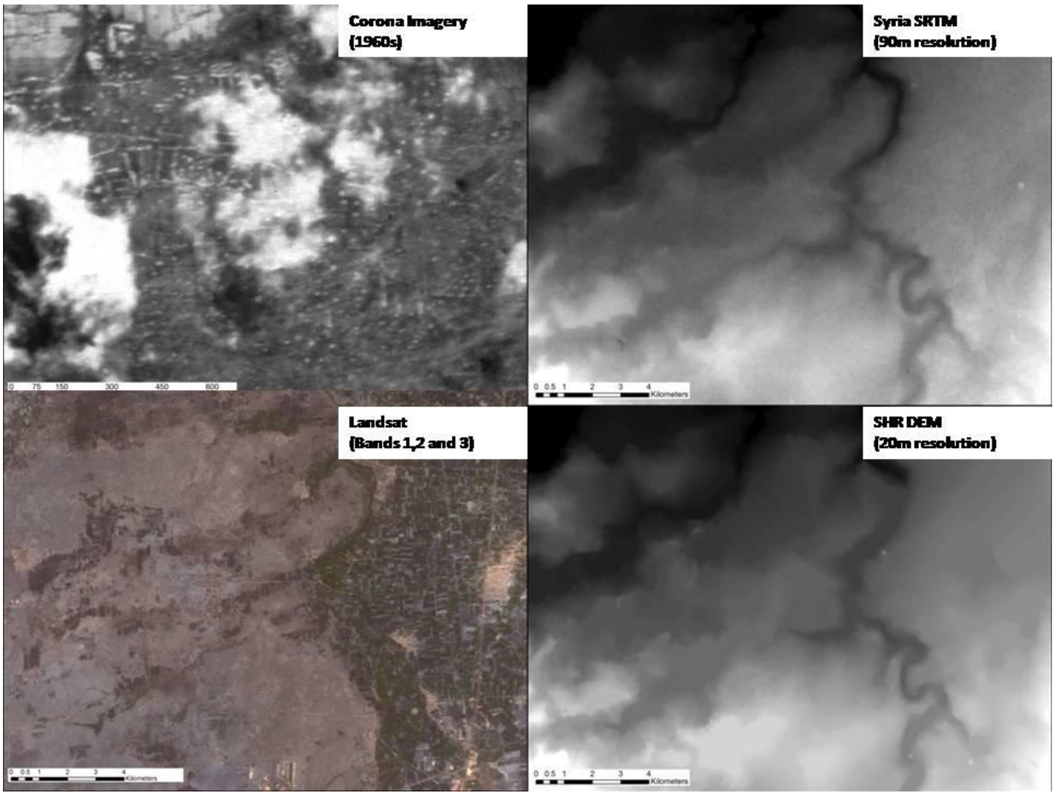


Figure 1.5. Corona (Mission 1110), Syrian SRTM (90m), Landsat (True Colour), SHR DEM (20m)

1.4.2. Field Survey

Fieldwork involved the survey of five hundred and twenty five cairns and over 20 potential settlement sites over the course of three years. The size, shape, associated features; building material and level of preservation were all recorded (Figure 1.6).

Cairn Features	Recorded Variables					
Size	Width	Length	Height			
Shape	Circular	Irregular	Ovoid	Rect.	Square	Unknown
Associated Features	Internal cists/chambers	External Revetment	External Paving	Platform	Monoliths	Walls/ Enclosure
Building Material	Blocky	Cobbly	Rubbly	Soily		
Preservation	Less than 50% intact	More than 50% intact	100% intact			

Figure 1.6. Cairn Variables recorded during thesis fieldwork

In addition, local landscape features e.g. the presence of seasonal lakes, were also noted (See Appendix 1.1). Two hundred and three cairns were selected for field pick-up. Collections were carried out across the tops of cairns and within a radius of 1m surrounding structures (Figures 1.7-8). The sample from which pick-up was carried out, represent nearly 40% of those surveyed. In addition, collections were carried out in transects across areas of both cairns and archaeological structures (Figure 1.9). These aimed to assess the relationship between artefactual material found in association with 'settlement' structures and that found in association with cairn monuments. Based on evidence, already recorded by the SHR project, it was possible to target these transects in order to assess a number of key questions:

1. *The differential density of material found across bulldozed/non-bulldozed areas of structures and bulldozed/non-bulldozed areas of cairns.*
2. *The differential nature of material found across these areas in terms of diagnostic versus non-diagnostic material.*
3. *Chronological similarities/differences between areas of structures and cairns found in close spatial correlation with one another.*

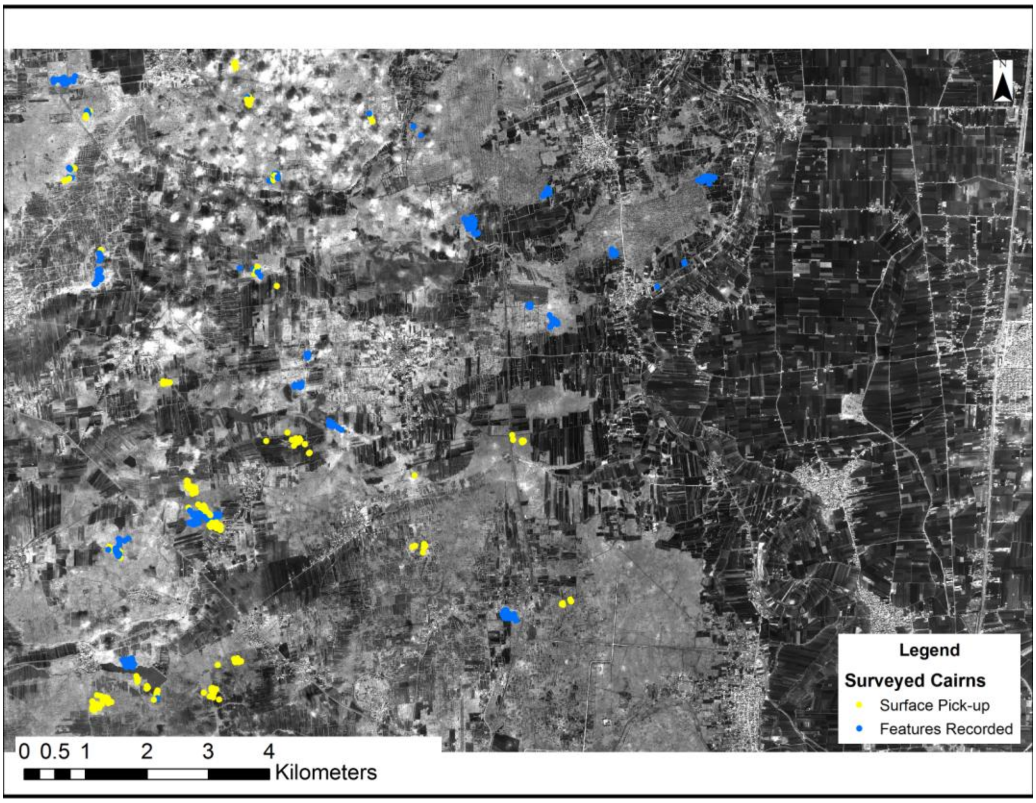


Figure 1.7. Distribution of surveyed cairns across the Homs NSA

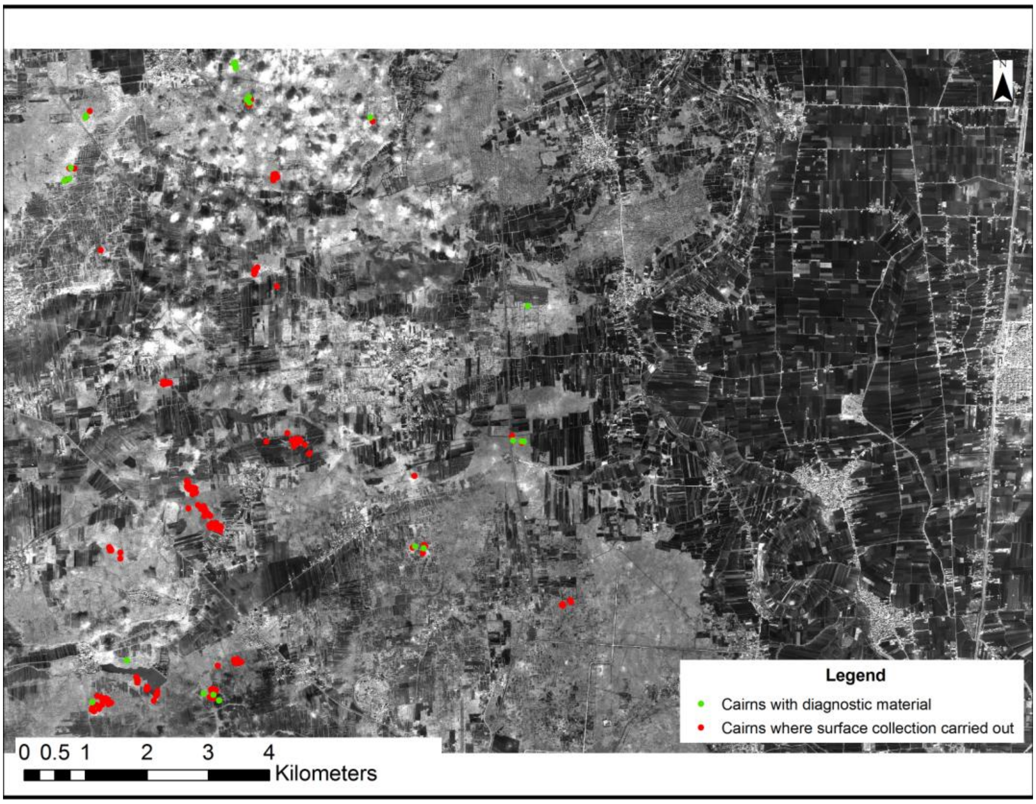


Figure 1.8. Distribution of cairns where pick-up was carried out across the NSA.

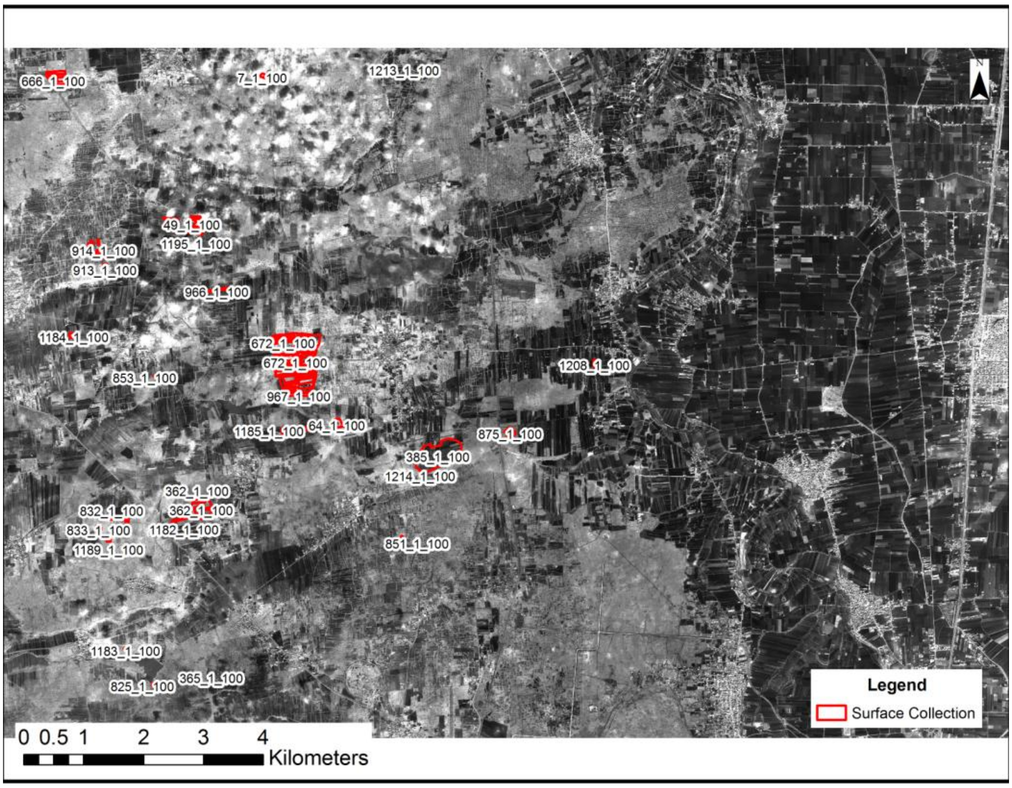


Figure 1.9. Distribution of transects and general pick-ups areas across the NSA.

In order to further elucidate the relationships between cairn monuments and 'settlement' structures, six soundings were carried out (see Appendix 5.3 for all notes and plans associated with these). These were placed at three sites, SHR 666, 362 and 63. The sondages at SHR 666 and 63 aimed to assess the potential for utilising small soundings (1mx2m) to assess relative chronological patterns between wall lines, cairn structures and areas of paving. In addition, it was hoped that these excavations would reveal information concerning depth of preservation, assessing whether the cairn structures in this region were built on top of or just below the existing land surface, or whether there was a considerable depth to the sediment surrounding them. Soundings at SHR 362 aimed to consider the nature of construction at this large circular enclosure, as well as preservation, depth of sediment and presence/absence of artefactual material. The results of these excavations are presented in Chapters 5-6, with all notes, plans and photographs in Appendix 5.3. Three detailed plans using a Leica differential GPS (cm accuracy) were also completed. These took place at SHR 362, 666 and 63 (Figures 1.10-1.12). Survey at SHR 666 and 63 demonstrated the potential relationships between cairns, wall lines and structures. Mapping at SHR 362, in addition to recording potential structural relationships, was also aimed at making a detailed record of this monument prior to its foreseen destruction.

All transects, cairns, general pick-up areas and associated features were recorded using a Garmin GPS (5m accuracy). This allowed all surveyed features to be entered into a GIS database (see below). Recorded details could then be added to these layers via GIS-Access database joins and patterns of attributes could be mapped.

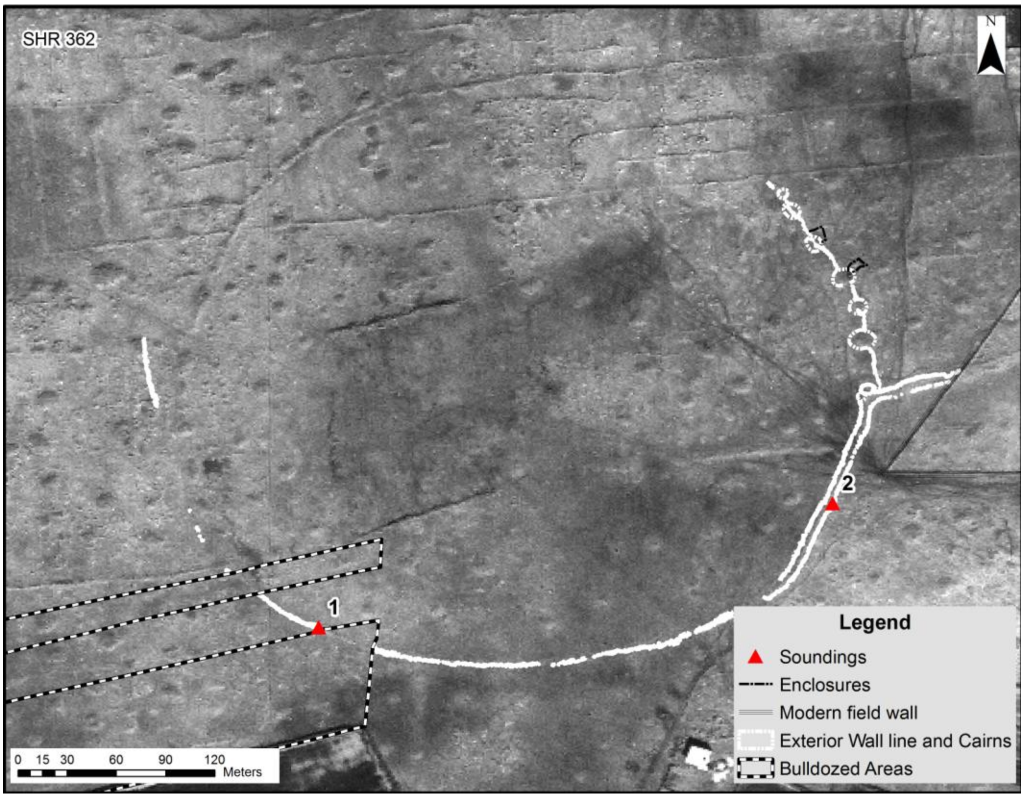


Figure 1.10. GPS plan of SHR 362

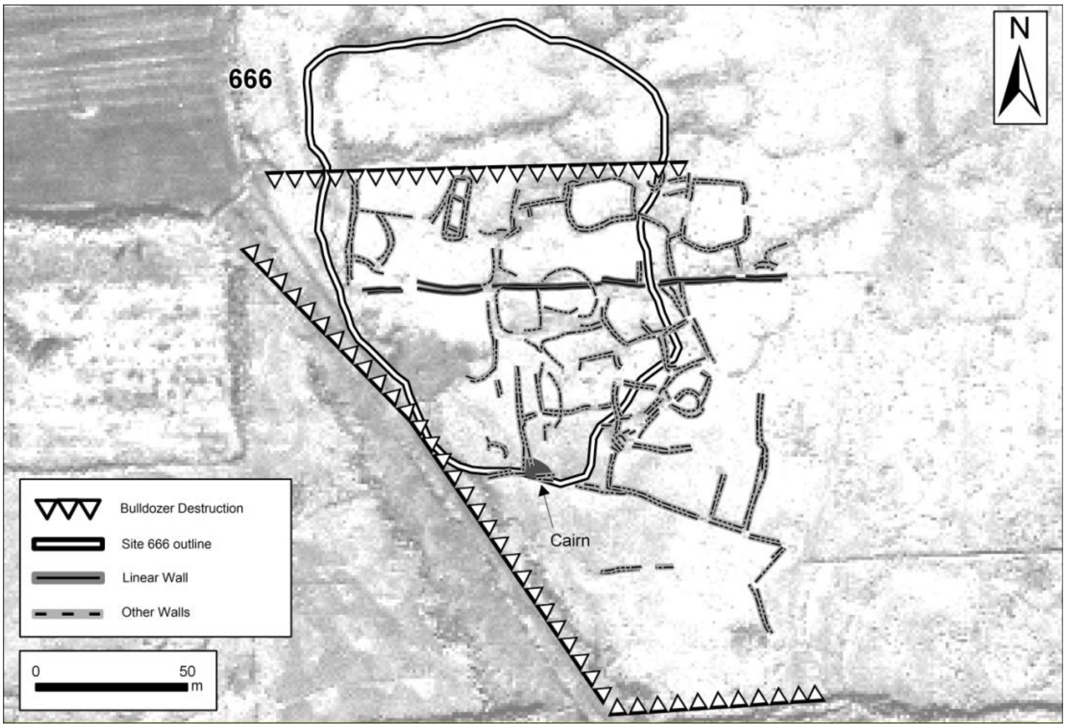


Figure 1.11. GPS plan of SHR 666

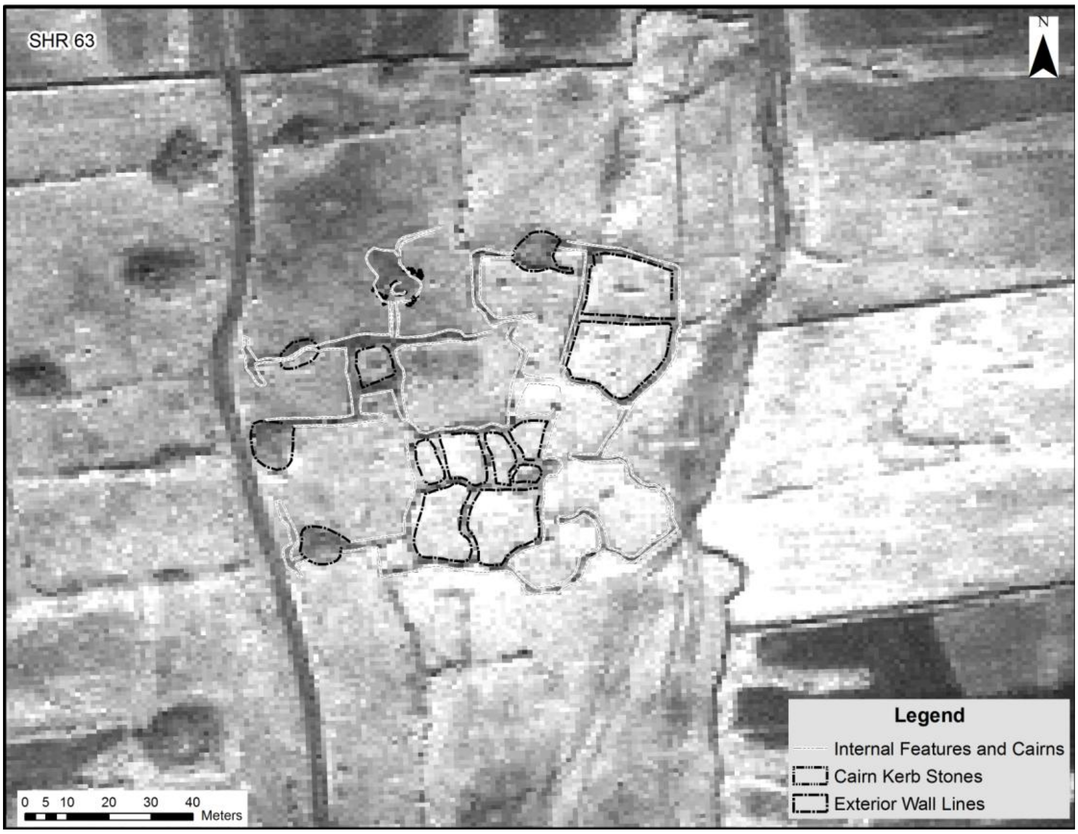


Figure 1.12. GPS plan of SHR 63

1.4.3. Databases and GIS (see Appendix 5.1)

All field data collected during this thesis was entered into an Access 2007 database. A unique ID was generated for every cairn and this was then used to link all the information in the database tables. In addition, a point shapefile within ArcMap was produced using the GPS co-ordinates taken at each surveyed cairn, each point was assigned the same unique ID as its corresponding data file. All photographs were linked via a unique photo ID rather than being embedded within the database, reducing the file size. Additional information concerning the areas of transects and general pick-up carried out for this thesis was, when appropriate, linked with cairn records. These records were given their own unique IDs corresponding to those assigned to them by the SHR project.

1.4.4. Literature and Field/Antiquarian Reports

1.4.4.1. Anthropological and Archaeological Theory

A considerable range of anthropological and archaeological literature has been consulted during this thesis. Several concepts have been of primary importance:

1.4.4.1.1. *'Taskscapes'* (Ingold, 2000: 194). This term implies a series of complex relationships between humans and their environment, whereby different interpretations and beliefs concerning time (chronological, cyclical etc), social action and environment co-existed within daily life. This concept has been given various terms and employed in different ways by different researchers (e.g. Bradley, 1998, 2000, Heidegger, 1971), however, Ingold's (2000) term is employed here.

1.4.4.1.2. *Life histories* (e.g. Boivin, 2000, Ingold, 2000: 187, McFayden, 2005). The idea that society, as well as its material representations (i.e. houses and monuments) has the potential to be re-interpreted or change meaning and importance over both the short term and "longue dureé"

1.4.4.1.3. *'Connectivity'* (Horden and Purcell, 2000: 54). This concept has been employed in order to facilitate an understanding of the pulses of activity in the Homs Basalt. It is an approach which emphasises the importance of considering regions alongside wider social, political and economic contexts. Thus whilst a region, such as the Homs Basalt, may show distinct social, economic and material trajectories, outside factors may have play and influential role in facilitating or preventing developments from taking place.

1.4.4.2. Field Reports

Published and un-published field reports have been widely consulted during this thesis. A number of individuals and research projects should be specifically mentioned. Professor Frank Braemer for allowing the use of material and maps currently unpublished or in press (see Chapter 8 for further details) and the Homs Regional Survey and Vanishing Landscape Projects [and various individuals involved (for details see acknowledgements)] for the use of primary un-published data. For further details concerning the use of unpublished data the author directs the reader to the acknowledgements.

1.4.4.3. Antiquarian records

Reports and survey maps dating from the 19th-early 20th centuries were employed during this thesis and where appropriate were geo-corrected for use in ArcMap 9.3.

1.5. Outline of thesis

The thesis is composed of ten chapters organised in four main sections:

Section 1: Landscape, Environment and Methodologies

CHAPTER *2:* ENVIRONMENT, GEOLOGY AND CLIMATE

This chapter gives an overview of the current literature and evidence concerning climate and environment during the Holocene across the Levant. It considers ethnographic and modern conditions within the main case study regions, assessing the extent to which these can be viewed as indicative of past conditions.

Section 2: Landscape, Burial Monuments and Archaeological Interpretation

CHAPTER 3: SETTLEMENT, BURIAL MONUMENTS AND ARCHAEOLOGICAL ACTIVITY

Chapter 3 examines the distribution of stone 'burial' monuments across the Levant, considering their location in relationship to a variety of landscape features. It questions the usefulness of typological approaches for the study of burial monuments in the ancient Levant. In addition, it considers the influence of patterns of research upon the identification and recording of such monuments.

CHAPTER 4: BEYOND THE BRONZE AGE: A HISTORIOGRAPHY OF STONE MONUMENTS

Chapter 4 presents a summary of the historical, ethnographic and literary evidence surrounding the utilisation and conceptualisation of cairn monuments post-3rd millennium BC.

Section 3: The Homs Basalt, Syria: Cairns, Settlements and Landscape

CHAPTER 5: MORPHOLOGY AND CHRONOLOGY

Chapters 5 and 6 present the primary data from the Homs NSA and wider Vanishing Landscape region. This chapter presents a detailed analysis of the material derived from fieldwork.

CHAPTER 6: DISTRIBUTIONS, DENSITIES AND IMAGERY

This chapter reviews evidence collated from satellite imagery and map sources concerning the distribution, density and location of archaeological sites across the NSA and Vanishing Landscape region. It provides a background context to the detailed analysis carried out in Chapter 5.

CHAPTER 7: LIVING AND DYING IN THE WA'AR: THE 4TH-3RD MILLENNIA BC IN THE HOMS BASALT, SYRIA.

Chapter 7 presents an overall interpretation of the Homs Basalt. It specifically focuses on a discussion of 4th-3rd millennia BC activity within the Homs NSA considering the role of cairns, structures, natural features and settlement patterns across the region.

Section 4: Interpreting the Sub-optimal: The Homs NSA as a model for the 4th-3rd millennia BC Levant

CHAPTER 8: CHRONOLOGY, MORPHOLOGY AND INTERPRETATION

This chapter is composed of three sections reviewing current evidence for 4th-3rd millennia BC activity and occupation within the main comparator regions (Hauran, Jaulan and Negev).

CHAPTER 9: THE HISTORICAL, SOCIAL AND ETHNOGRAPHIC CONTEXT OF THE CONSTRUCTION OF MONUMENTS IN THE 4TH-3RD MILLENNIA BC

Chapter 9 presents the final interpretations of the thesis. It reviews the current evidence and interpretations surrounding the development of complex societies, new technologies, subsistence practices and incipient statehood during the 4th-3rd millennia BC and questions what research into sub-optimal regions has added to debates on these subjects.

CHAPTER 10: 'LANDSCAPES OF BURIAL?' FUTURE RESEARCH IN A SUB-OPTIMAL LANDSCAPE

This chapter concludes this thesis, summarising the main findings of research and highlighting potential directions for future investigation.

1.6. Summary and Conclusions

This chapter presented the aims and objectives of this thesis, outlining the main methods and datasets employed. This thesis focuses primarily on a small region within central Syria, however, it is hoped that it will serve as an important example of the potential wealth of archaeological information which may be present within similar 'sub-optimal' zones across the Levant. Moreover, it highlights that this evidence is at a pronounced risk of destruction from modern activity and as such, represents an archaeological resource which requires study before it is destroyed forever.

CHAPTER 2: ENVIRONMENT, GEOLOGY AND CLIMATE

Over the past few decades there has been an increasing emphasis on placing sites and archaeological features within the broader context of the historical environment. To some degree this has led to elements of environmental determinism within academic literature. Associations are made between environmental catastrophes/fluctuations and the collapse or development of various social and cultural groups within the Levantine/Arabian region (e.g. Brooks, 2006, Cullen *et al.*, 2000, di Lernia, 2006, Staubwasser and Weiss, 2006: 372). Environmental determinism should be avoided. However, we have to question how the environmental, climatic, geological and hydrological conditions within different regions may have influenced and defined the rural economy, geography and society of that area (Na'aman, 1951: I). This chapter aims to examine the modern climatic and environmental conditions within the various study regions (Homs Basalt, Hauran, Jaulan and Negev) used within the thesis. In addition, it reviews current research pertaining to past climatic conditions within these areas. Finally, it shall assess our wider understanding of the role of climate and environment within the lives of ancient populations.

2.1. Climate and ecological indicators over the Holocene and modern period within the Near East

The modern environmental history of the Levant is complex and varied, with the limits of vegetation and ecological zones not always being clear (Zohary, 1973: 167). In addition, whilst sedimentological and palynological data is available from a number of areas such as, the Ghab Valley, Birket Ram, Lake Huleh, Lake Tiberias and the Dead Sea (see Appendix 2.1. for a summary of these sources). The degree to which these are representative of local/regional climatic and environmental trends can be debated. Sources of environmental data are unevenly distributed across the Levant and vary in accuracy and reliability (Bottema and van Zeist, 1980: 112, Valsecchi, 2007: 106). Based on the current, albeit diverse data sources, it has been suggested that evolution of palaeoclimates across the Middle East has been broadly synchronous, facilitating cross comparisons between different areas (Sanlaville, 1997: 249-50). Moreover, researchers argue that whilst changes have occurred within the historical record, the climate has remained broadly similar over the past five to six thousand years (Bar-Matthews *et al.*, 1998: 204, Danin, 1985: 41, Rosen, 2007: 70). This broad continuity is important. However, changes that appear insignificant in relation to the longue dureé, may have had profound impacts upon population distributions, settlement patterns and daily life at a localised level (Bar-Matthews *et al.*, 1998: 204, Rosen, 2007: 70). Various approaches have been developed in order to consider the climate of the Levant over the course of the Holocene (Appendix 2.1.). These range from sedimentological, palynological and archaeological plant composition analysis (e.g. Baruch, 1986, 1990, 1994, Bottema and van Zeist, 1980, El-Moslimany, 1994: 121-129, Frumkin *et al.*, 1994: 320), to reconstruction of the climate based on weathering, lichen growth and pedogenic carbonate formation at archaeological sites (Danin, 1985: 39, 41, Frink and Dorn, 2002, Pustovoytov *et al.*, 2007a, Pustovoytov *et al.*, 2007b, Riehl *et al.*, 2008).

The current climate of the Levant is dominated by a Mediterranean regime characterised by mild and rainy winters. In contrast, summer months are hot and dry, with a prolonged period of summer drought (El-Moslimany, 1994: 121). This broad characterisation is diversified at a regional scale in relation to different altitudes and local weather systems (Baruch, 1986: 39). Baruch (ibid.) has suggested that along both a north-south and east-west gradient the climate rapidly changes, with precipitation decreasing from around 1600mm p.a. in the Mount Hermon/Jebel Sheikh region, to below 100mm in areas such as the Negev. This is easily seen from maps displaying patterns of modern rainfall distribution, with large areas of land below the 100mm isohyet existing in the east of modern Syria and Jordan, as well as within the regions of the Negev and Sinai (Figures 2.1-2).

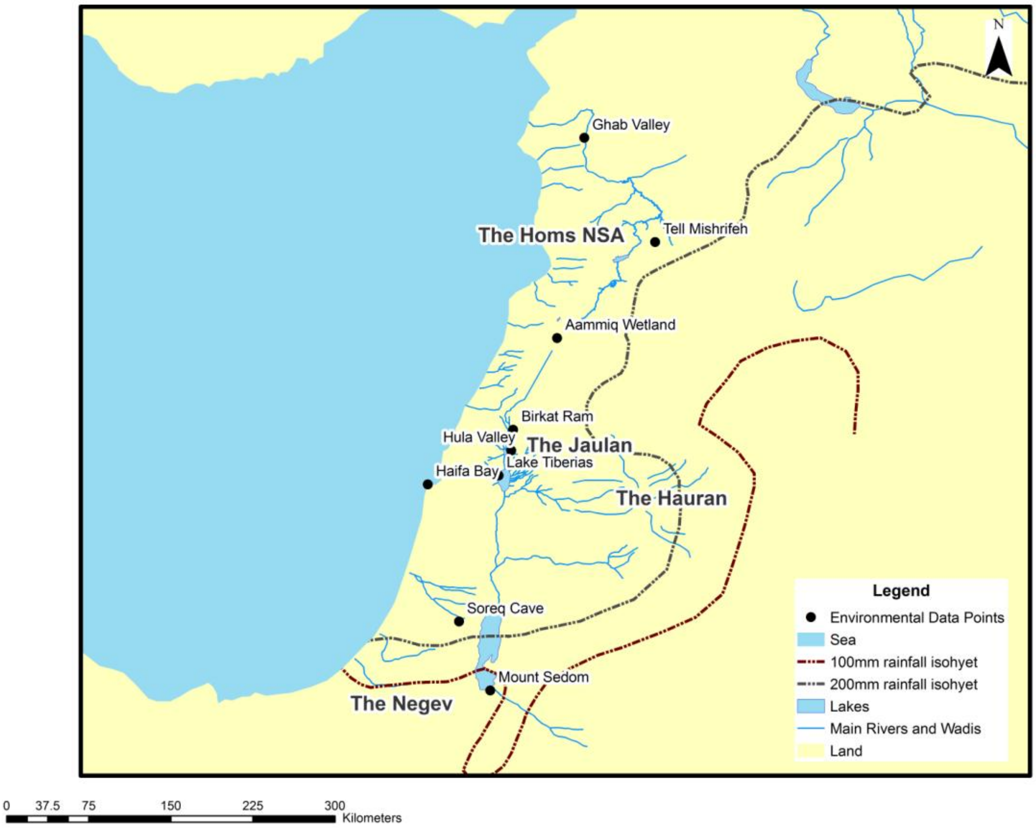


Figure 2.1. Rainfall isohyets and main locations discussed in chapter

Current vegetation distributions divide the area into a number of different zones; *Mediterranean*, *Irano-Turanian* and *Saharo-Sindian* (see Figure 2.2), which exist along the continuum between semi-arid and arid (Fiorentino *et al.*, 2008: 52, Riehl, 2008: 43, Schwab *et al.*, 2004: 1723). These areas are dominated by shrub, grassland steppe and desert, with areas of maquis forests, dwarf shrubs and xeromorphic species in steppic areas. Tree species, such as pistachio, olive, pine and juniper are found in the Mediterranean zone (see Appendix 2.3 for glossary). In addition, it is clear that the soil types found throughout Levant (Figure 2.3.) alongside a range of other factors, such as topography and geology, profoundly affect the vegetation found in a specific area. As such, the vegetation zones represent only a broad overview, with the different densities of plant species within these communities being dependant on a range of other interacting factors and local conditions (Hole and McCorriston, 1991: 54-5, Riehl, 2008: 43, Wolfart, 1967: 5, Zohary, 1973: 135). Whilst in some cases the modern landscape features of the Near East have developed over hundreds of thousands of years others, such as the formation of the modern vegetation landscape in the *Saharo-Arabian* region (Lioubimsteva, 1995: 16) and the down-cutting of the Jordan River and disappearance of Lake Bisan over the course of the Late Holocene (Smith and Koucky, 1986), have had a relatively short term development.

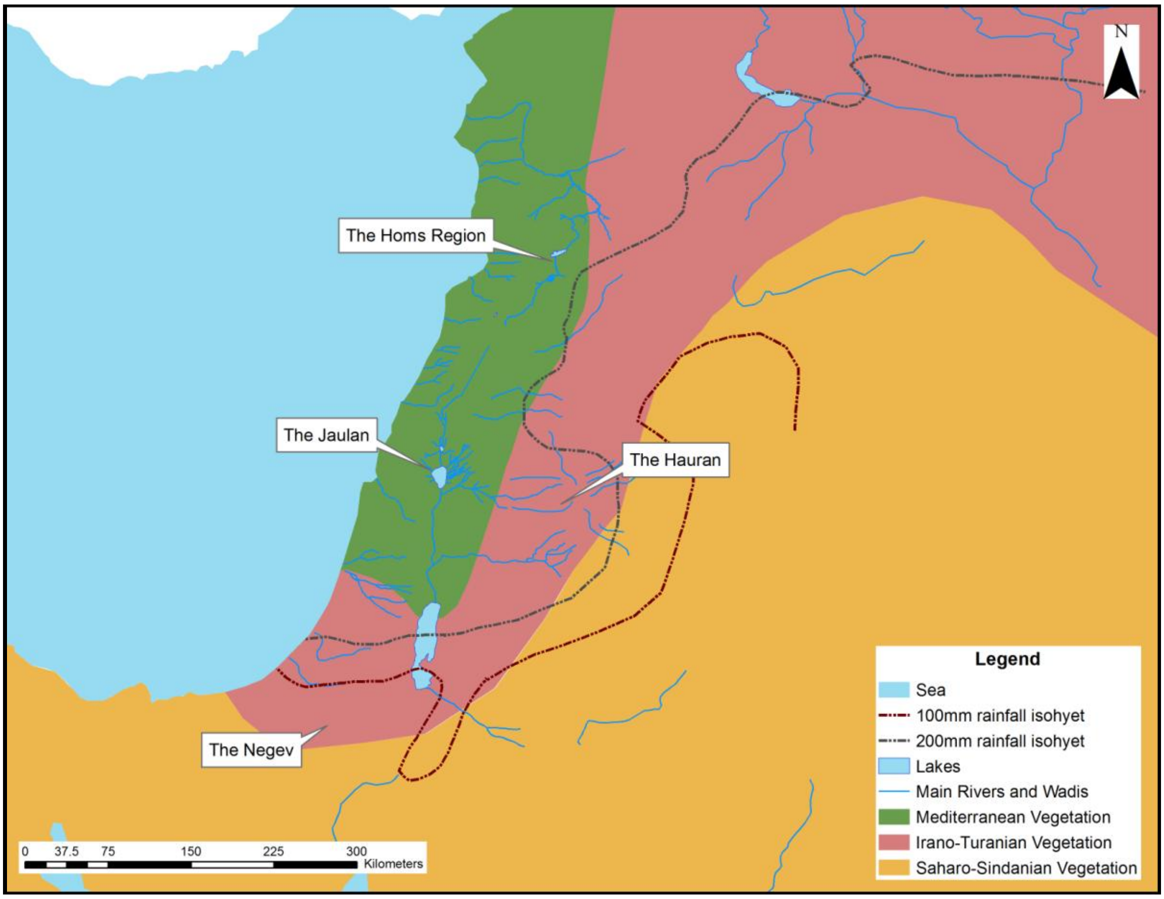


Figure 2.2. Vegetation zones of the Levant [(after Fiorentino et al., 2008: 52, Riehl, 2008: 43, Schwab et al., 2004: 1723) and see Appendix 2.3 for glossary of terms]

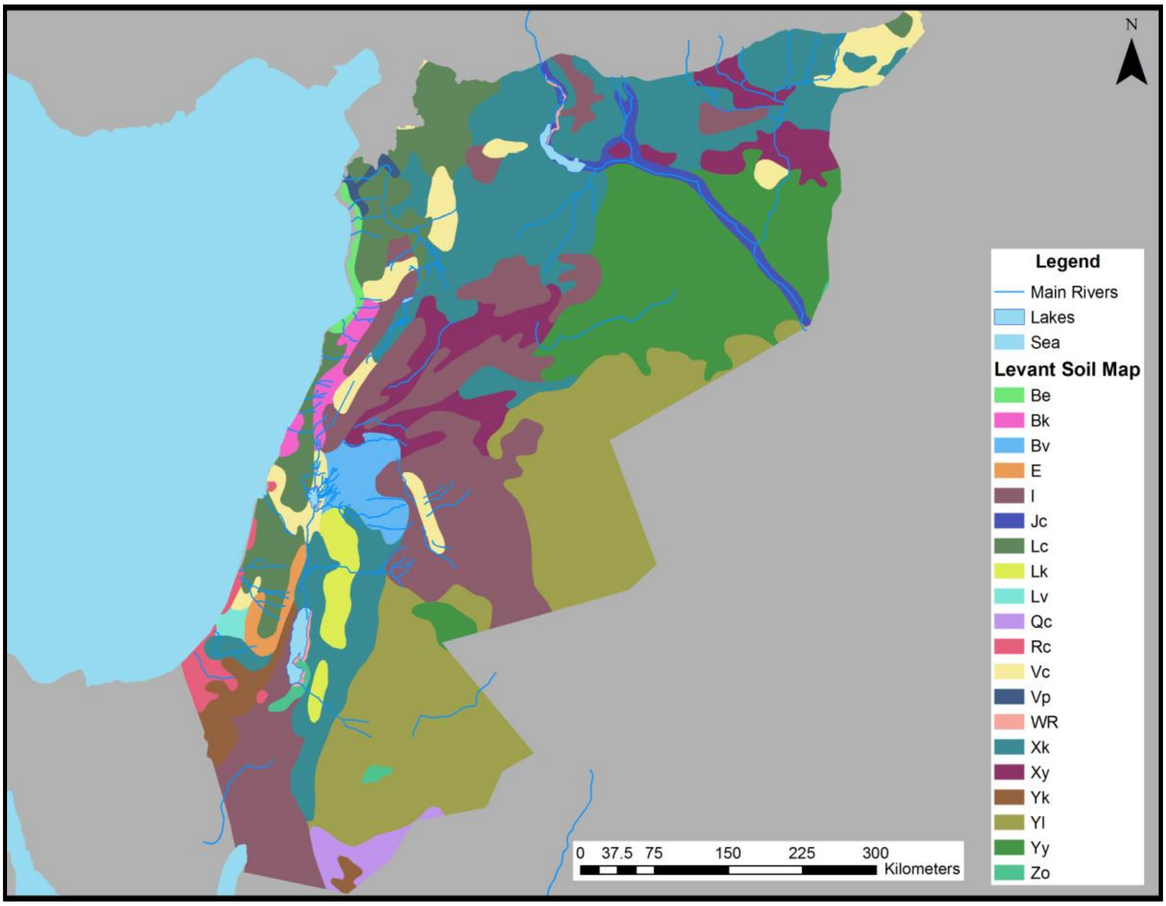


Figure 2.3. Soil zones of the Levant [(after FAO, 2003) and for a full list of the soil types see Appendix 2.3]

2.2. Modern climates of sub-optimality

2.2.1. The Homs Basalt

Located in central Syria to the NW of the Homs-Tripoli gap, this area is characterised by a dry season lasting from May to October, with July temperatures reaching c.24-28^{o}c on average. The yearly rainfall of around 400-600mm generally falls between the months of November and April (Fish, 1945-8: 95, Figure 3, Fish and Dubertret, 1945-8: 120, Figure 3, Na'aman, 1951: 25-6, Wolfart, 1967: 4, Figure 10). However, substantial seasonal and yearly variability exists in terms of precipitation. al-Dbiyat (1995) noted the clear variation in precipitation which could be seen between good and poor years in Homs (Figure 2.4.). The Homs basalt (east of Massiaf and west of Homs) generally has a higher rainfall than that of the modern city; however, it is equally affected by variations in precipitation. This may have had a profound impact on occupation during the past, as well as the present exploitation of the region.

Annual Precipitation in Central Syria from 1950-1988 (Meterology Service, Syria 1990 in al-Dbiyat 1995: Table 45; 111)

	Massiaf	Hama	Homs	Palmyra
mean annual in mm	1263	347	450	135
good year 1967	2028	514	759	122
poor year 1960	703	127	190	58.5
Jan-59	243	62	40	12.5
Jan-68	807	159	217	21

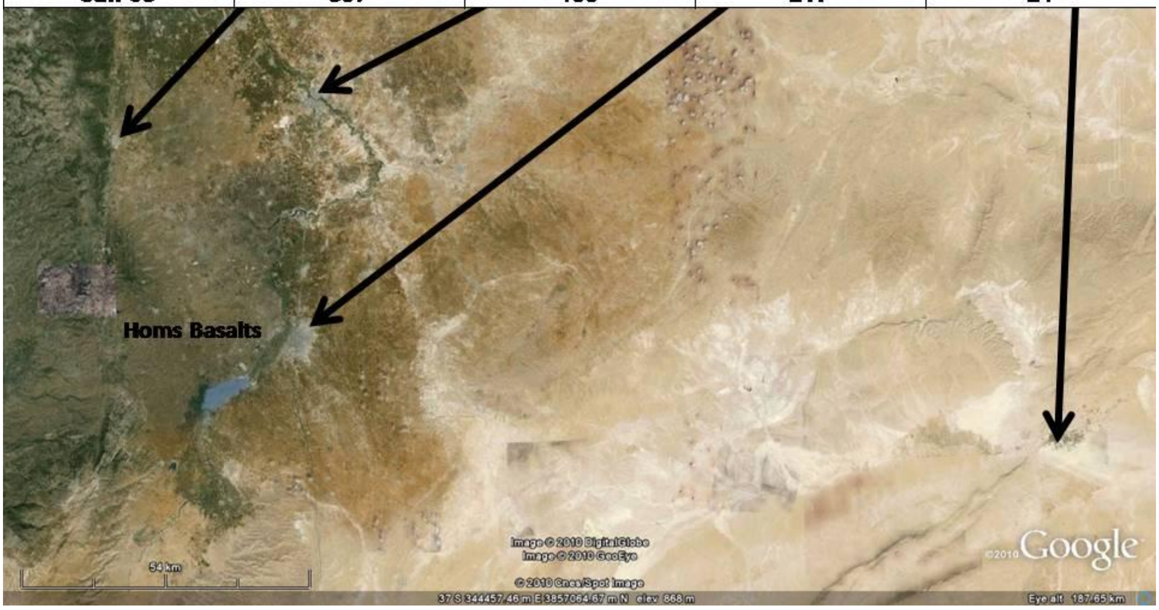


Figure 2.4. Precipitation means from Central Syria 1950-1988 and GoogleEarth image showing the location of the places in the table.

In addition to seasonal and annual variability in precipitation, the distribution of resources is varied across the Homs NSA. This region, locally known as the *Wa'ar*, is part of a series of basalt flows which extend northwards towards Hama and date to between 6.5 and 2.0 million years ago (Chorowicz *et al.*, 2005: 261). The part of this formation lying within the NSA (Figure 2.5), consists of a series of low ridges, alluvial valleys and depressions which range in elevation between 400-600m above sea level (Vaumas, 1957: 163-4). This plateau is roughly defined by the edge of the River Orontes to the east and the Homs Lake (Qattina) to the south (Figure 2.5.). Sections of the basalt flow, now broken up in many places, extend across the River Orontes to the east and overlie areas of limestone and marl (Butler *et al.*, 1997: 758, Na'aman, 1951: 5, Vaumas, 1957: 103, 196). The origin of these flows, the Jebel Helou, is a relict volcanic mountain chain located on the Lebanese-Syrian fracture [for further details on the history and formation of this regions geology and landscape features see (Dubertret, 1945-8: 216, fig.11., Ponikarov *et al.*, 1967: 217, Vaumas, 1957: 163-5)].

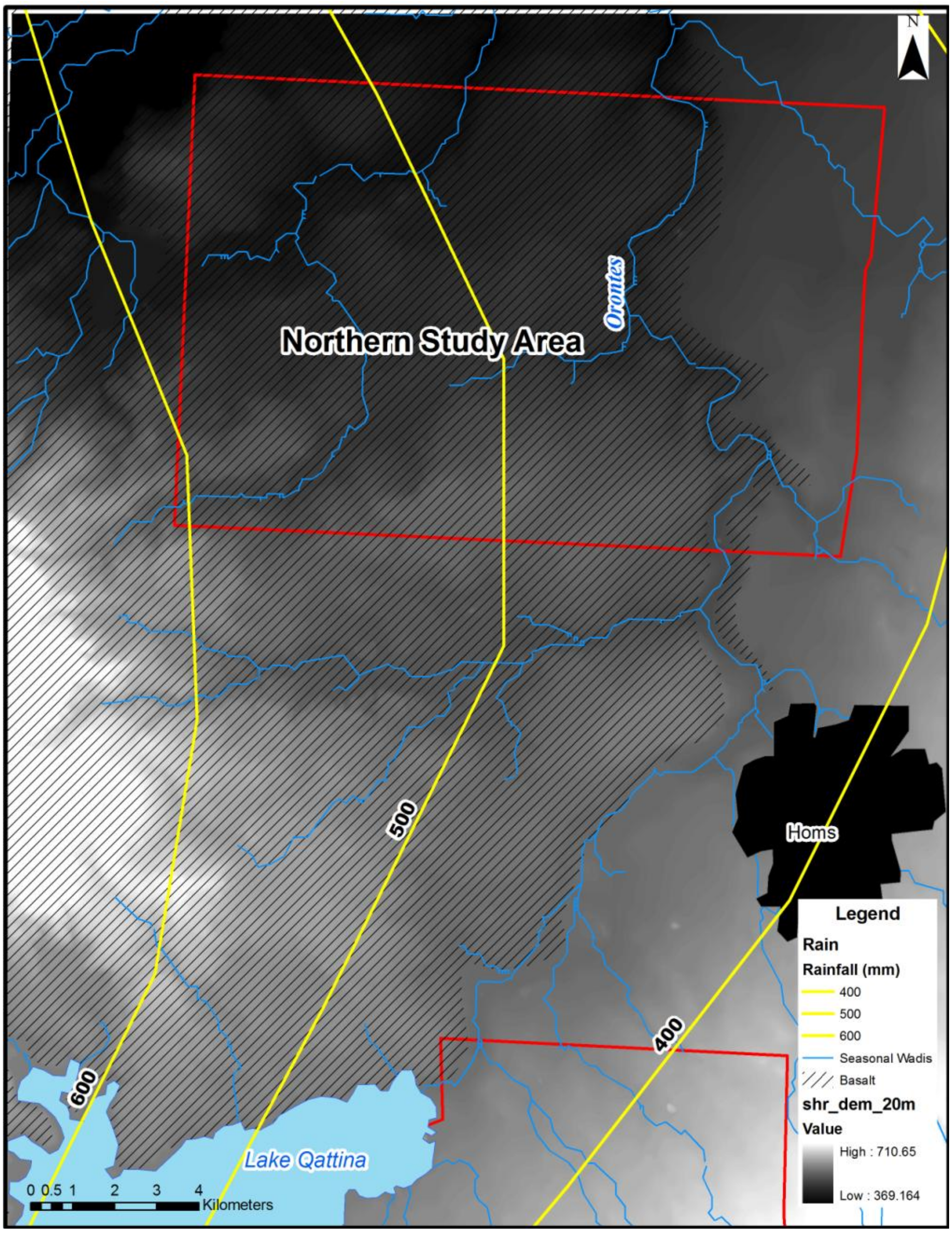


Figure 2.5. Map of Homs NSA and the main seasonal wadis, rainfall isohyets and local topography, as shown by the 20m DEM.

In contrast to the neighbouring arid steppe the Homs basalt receives sufficient precipitation to support reliable rain-fed agriculture. The region is dissected by several seasonal *wadis,* which flow from the beginning of the rains until as late as June [(Naʻaman, 1951: 25) Figure 2.6]. In addition, small seasonal pools and a few larger internal depressions, which capture both rainfall and underground flows, can retain water well into spring. Water scarcity during the summer is problematic and modern populations rely on cisterns, stone-lined pools (*birqat*) and natural basins, during the summer months (Wirth 1971: 252-4). Two main drainage systems are present within the NSA, both of which trend south-west to north-east. The first and most important in terms of ancient (and modern) settlement is the *Wadi al-Qasab* (Figure 2.6D), which runs in a long broad valley extending eastwards from the Ghour–Tlil basin, past the village of Samalil (SHR 860), turning northwards and passing close to SHR 49 (Philip and Bradbury, 2010: 141-3). The *wadi* then runs through a narrow valley to the east, before widening out as it joins the *Wadi Harb Nasfe* (Figure 2.6E), a tributary of the Orontes which now flows into Rastan Lake.

The second *wadi* system, *Wadi Khirkhir* (Figure 2.6F), is much shorter and flows east towards the Orontes. As already mentioned SHR 860 and 49 are located alongside the *Wadi al-Qasab*. A number of Islamic-Roman settlements can be seen further north along this *wadi* and a further tell (Tell Kissine) has been identified from the Syrian 1:50,000 map at the junction between this *wadi* and the *Wadi Harbe Nasfe*. The village of Refayn is located along the *Wadi Khirkhir*, close to the start of the system with a small tell (SHR 81) also located at the point where the stream enters the Orontes Valley. The large number of ancient settlements located along the *Wadi al-Qasab*, and the presence of check-dams along its course, suggests that it carried a reliable seasonal flow in recent history and offered good valley-bottom lands for agricultural purposes [see (Philip and Bradbury, 2010) for further discussion of the importance of these *wadi* systems].

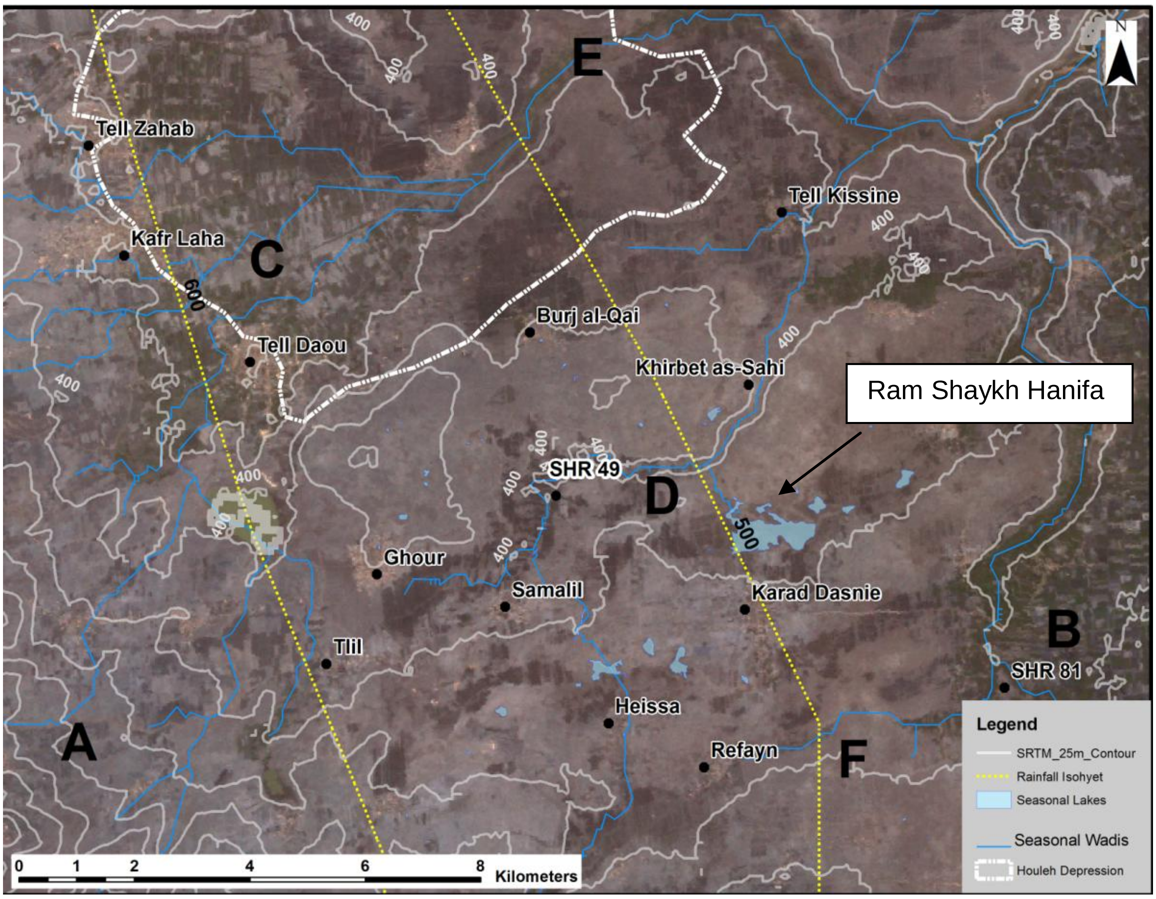


Figure 2.6. Distribution of main settlements in relation to wadis and Huleh depression. (A: Jebel Helou; B: Marl Landscape, east of the River Orontes; C: Houleh Depression; D: Wadi al-Qasab; E: Wadi Harb Nasfe; F: Wadi Khirkir)

The NSA is but part of a wider region. 20th century settlement patterns suggest concentrations of occupation at Tell Daou, Kafr Laha and Tell Zahab, (all of which are ancient tells), located around a lowland basin known as the Houleh [See Figure 2.6 C (Na'aman, 1951, 55)]. This depression is fed by *wadi*s draining the eastern slopes of the volcanic Jebel Helou, which pass through the Houleh before joining the *Wadi Harb Nasfe*, and eventually the Orontes. The Houleh is located to the north-west of the NSA. However, the concentration of resources in this area during the 20th century is important for an overall understanding of the region. Na'aman (1951: 30-1) also identified a second focus of settlement around the villages of Ghour al-Gharbiyah and Tlil (Figure 2.6.). Here, a smaller lowland basin, into which the *Wadi al-Qasab* flows, is present. Both this and the Houleh are inundated in winter, thus, as in the case of the seasonal lakes and depressions in the NSA proper, are of limited value for winter cultivation. However, as witnessed in recent centuries the alluvial fills were/are used for the cultivation of summer crops such as sorghum, as well as pasturing of animals. Despite the presence of this apparent 'hub' of 20th century settlement (ibid: 55) the evidence for Chalcolithic-Early Bronze Age (Chalco-EB) and Roman-Islamic activity along the *Wadi al-Qasab* suggests a rather different, perhaps more multi-focal, distribution of population in the past [see (Philip and Bradbury, 2010) and Chapter 7 for further discussion].

Na'aman (1951: 19-20, 68), in his study of the Homs Basalt, described it as a desolate and depressing landscape, characteristics accentuated by the lack of summer surface water and vegetation. However, as outlined above and indicated by the variety of Roman-Islamic period activity in the region (Figure 2.7.), potential for exploitation exists. Having said this, a number of factors limit, or at least make it necessary to make a substantial investment in the region in order to fully exploit it. The region (20th-21st centuries) is composed of three types of land, with the richness and productivity of the soil varying over very short distances (Na'aman, 1951: 21, 25). Firstly, rocky ridges covered in masses of fallen rocks and degrading basalt outcrops are present throughout the region and severely hinder circulation and communication (ibid: 21). Secondly, depressions of various dimensions and forms composed of small collapsed alluvial plains are often filled with water. Several of these capture flood water and due to the humidity of the region become highly marshy and swampy e.g. *Ram Shaykh Hanifa* [see Figure 2.6 (ibid: 23)]. In addition, small alluvial plains and valleys, some of which are very narrow, are present and have been cleared and cultivated over the centuries (ibid: 21-22).

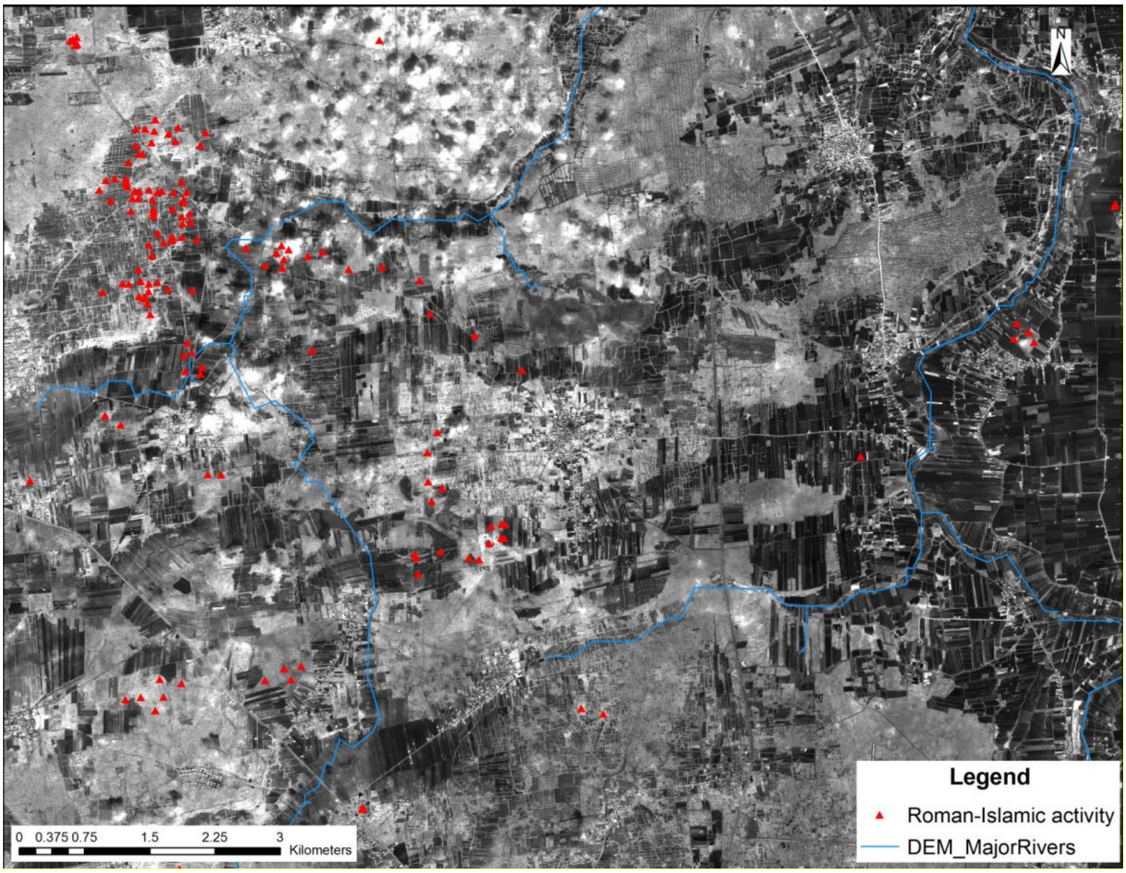


Figure 2.7. Distribution of Roman-Islamic period settlement and activity within the NSA

Numerous fissures within the basalt rock increases permeability of the geology (Weulersse, 1940: 31), although the high clay content of the soil hinders drainage during the winter months. The resulting accumulation of water in planted furrows can impede the development of vegetation, leading to plants rotting *in-situ*. The rocky nature of the region when combined with the presence of sticky, wet clay hinders movement (Na'aman, 1951: 24). During the dry season soils can form a crust restricting the moisture obtained by plants (ibid.). Despite the possibilities presented by the soils and precipitation, due to the high concentration of stone scattered across the surface (decomposition of the original basalt pavement), significant labour input would have been required in order to create productive agricultural land.

As Figure 2.8 shows, land use mapped on the basis of 2002 Ikonos imagery varies. The majority of the area is composed of ploughed crop land (40%) and un-ploughed rough-grazing (36%). Tracts of market gardens (c.3%) and forested land (c.3%) also exist. The former is predominantly located around built-up areas. In 2002, around 7% of the land appeared to have been recently bulldozed. Much of this clearance destroyed areas of relict fields; with only c. 2% now being visible and used for both pasture and crop cultivation (see Appendix 2.5A for full break down of land-use). This mixed resource strategy base is very similar to that recorded by Na'aman (1951: 23) in the early 20th century. Cultivation of crops, such as sorghum, melons, cucumbers and squashes, was focused within the seasonal depressions and alluvial valley bottoms. Key cereal crops (wheat, barley and sorghum) in the 20th century differed across the region, based on local environmental conditions of topography, soil fertility and moisture retention (Na'aman, 1951: 40). Sorghum is not documented in Syria until well after the Bronze Age (Zohary and Hopf, 2000: 88-90) and thus can be disregarded in relation to Chalcolithic-EBA cultivation practices. Thus, the potential of this landscape as a summer resource would have been considerably reduced, with agriculture presumably focusing on winter crops such as wheat and barley. In contrast, pictorial evidence for melons, gourds and associated species are suggested from the 4th-3rd millennium BC in Egypt (e.g. Leach, 1982: 8-9 and further references therein). This does not definitively suggest their presence within the Homs region during the Chalcolithic-EBA. However, it does indicate their presence within the Near East. A situation whereby barley was grown on the less attractive soils, with basins providing fodder crops over the summer can be imagined. In addition, the cultivation of crops, such as melons and gourds may have played a role within the resource base of the area.

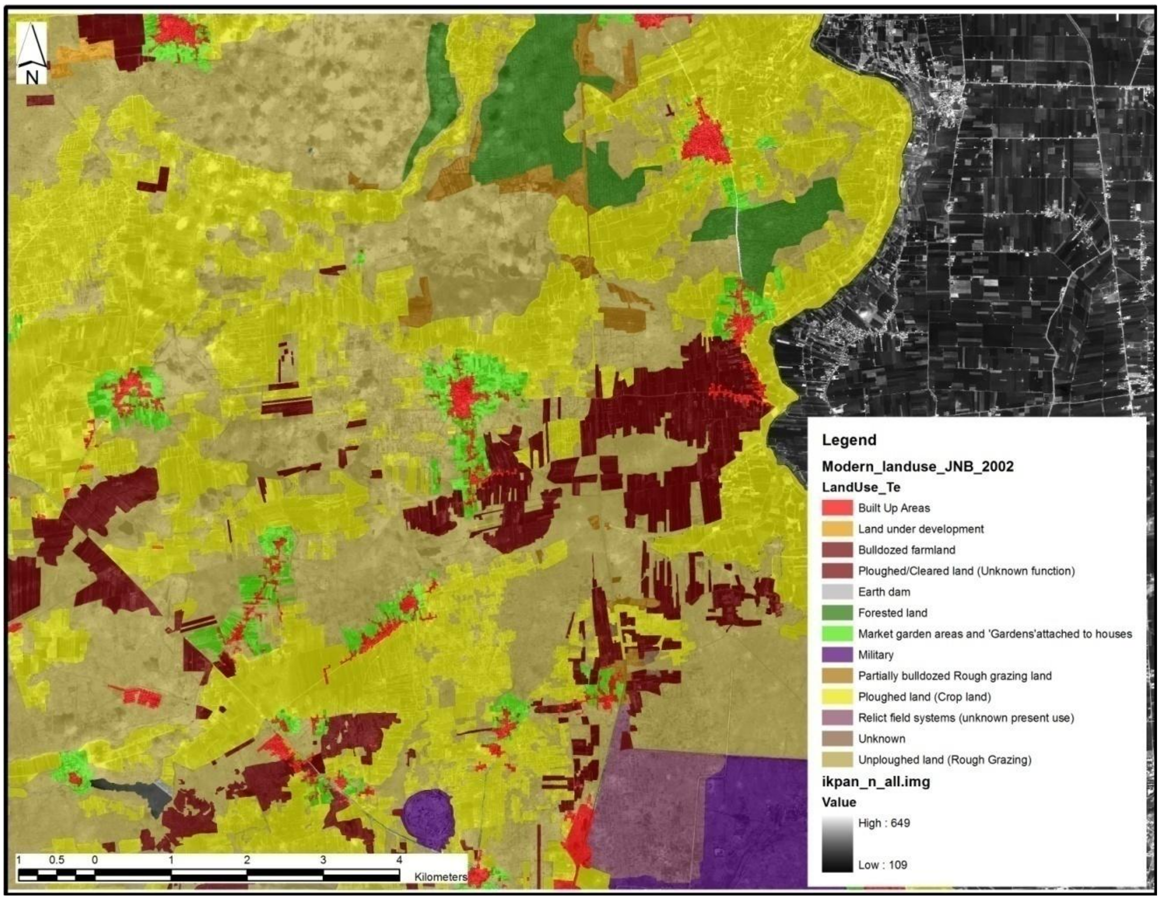


Figure 2.8. Land-Use within the Homs Basalt (based on Ikonos 2002 imagery)

Pasturing and wool production is also mentioned within the early 20th century, a practice which also dominates the area today (authors own observations). According to Na'aman (1951: 54) animals were raised on green pasture from March to May, with caprines surviving on the available pasture for the rest of year. Cattle apparently required fodder in winter, with grasses growing in fallow areas being harvested and then stored in walled enclosures until needed. The pasturing of animals varied across the region (Figure 2.9.) and also annually. The local sheep were small and thin, with levels of milk production per animal being lower than other parts of Syria. Moreover, once the harvest stockpile was exhausted, populations often depended upon wild plant foods from February onwards (Na'aman, 1951, 54). Such a situation can easily be imagined particularly if, as the figures in Figure 2.4 demonstrate, there had been a year of low precipitation.

Village	Sheep	Caprine	Cattle
Charklieh	300	100	160
Ghour	50 to 60		3 to 12
Tlil	180		200
Source: Na'aman 1951			

Figure 2.9. Animal herds across the NSA in the 20th century (Na'aman, 1951)

In addition to cereal and pastoral products, grapes for wine, arak, dibis and dried fruit, are also mentioned by Na'aman (ibid: 41-5). Again it appears that such practices have longevity within the region, with evidence for olive presses and other agricultural activities being seen at Roman-Islamic sites in the region. The major alteration which has taken place within this area is linked to the mechanisation of land clearance activity. Na'aman mentions clearance of fields being a time consuming and problematic activity (1951: 22). However, large fields are now being created across the *Wa'ar*, linked to a European funded initiative (http://www.ifad.org/pub/pn/syria.pdf, 2007), with the use of bulldozers, facilitating the clearance and subsequent planting of cereal crops and large fields of olives and vines (Figures 2.10 and 11).

Figure 2.10. Image of bulldozed and ploughed fields located near a modern village in the NSA (image courtesy of Arthur Anderson)

Figure 2.11.Bulldozed and ploughed fields in the Homs NSA planted with olive trees

On the basis of the above description it is clear that the NSA should not be classed as a 'marginal' area. However, substantial effort, both in terms of initial clearance and exploitation, as well as maintenance was and is required in order to use this area to its full potential. The local toponym, *Wa'ar (wild)*, emphasises the difficulties of living and subsisting within this region, however, as will be shown over the course of this thesis it is clear that at some point it was decided that the effort required to exploit this area was worthwhile. The point at which this happened will be discussed in the following chapters.

2.2.2. Hauran

Located to the southeast of the Damascus oasis, the dry farming region of the Hauran is dominated by the Jebel-el Arab (also known as Jebel Hauran/Jebel Druze), a range of volcanic overthrust hills, which rise above the surrounding volcanic plateaus and extend for around 25km from north to south (Ponikarov *et al.*, 1967: 217). Precipitation is strongly related to altitude, averaging around 400mm per annum in the Jebel el-Arab region (c. 1500m a.s.l.) and falling to less than 50mm per annum to the south-east (c. 400m a.s.l.) (Allison *et al.*, 2000: 353, Newson, 2000: 86). The majority of this rainfall is concentrated into a period of 15 to 25 days. Temperatures at present reach a maximum of around 45^{o}c, whilst minimum temperatures of around -10^{o}c have also been recorded (Willcox, 1999: 712). The basalt plateaus within this region predominantly date to the Late Quaternary period, although outcrops of Middle Quaternary and earlier Lower Cretaceous basalt also exist (Ponikarov *et al.,* 1967: 163, 168-9). The majority of flows in this region post-date the Homs Pliocene basalts, spreading across an area of approximately 4,200km^2 (ibid: 167-8). Unlike the basalts of the *Wa'ar* the lithology is composed of flows inter-bedded with weathered layers which are less degraded than the former, varying from vesicular to massive varieties throughout the sequence (ibid: 168). As such, despite the similar lithology, the potential for subsistence strategies in this area, especially considering the lower rainfall regime in the region, are very different from those of Homs.

To the west of Jebel el Arab, the *River Yarmuk* and its tributary the *Wadi Zeidi* drain the western Hauran plateau, flowing south-west, passing the town of Dera'a before eventually joining the River Jordan (Epstein, 1936: 595-6). The western slopes of Jebel el-Arab are broad and gentle (Ponikarov et al., 1967: 217). In contrast the eastern slopes are more heavily dissected *"canyon-like valleys"* (ibid.). The *wadis* dissecting this region radiate from the relief of the Jebel el-Arab and provide the primary routes of communication for the area, with much of the modern and ancient settlement focusing around them [(ibid: 87-8) Figures 2.12 and see Chapter 8]. Schumacher (1886: 25-37) reports that many of these *wadis* were plentiful in water during the 19th century, ending in cascades and marshy areas, whilst others were brackish in nature, terminating in dry *wadi* beds. In particular, the *Wadi Umbashi*, which flows from the northern heights of the Jebel el Arab and drains past Khirbet al Umbashi should be noted as an important locale of ancient occupation (Figure 2.12). In addition to the *wadi*s dissecting this region there are a number of internal depressions, such as the Safa Basin, located at the eastern edge of the Hauran. This depression is seasonally filled with water and as such represents an important hydrological resource which has been used over thousands of years (Braemer *et al.*, 2004: 16). Smaller natural seasonal reservoirs also exist throughout the area and would have been an important source of water during winter months (Figure 2.12.).

Similarly to the Homs NSA, research in the 1930s highlighted the use of rock-cut cisterns, vaulted reservoirs and artificial pools, facilitating the storage of water within this region (Epstein, 1936: 597).

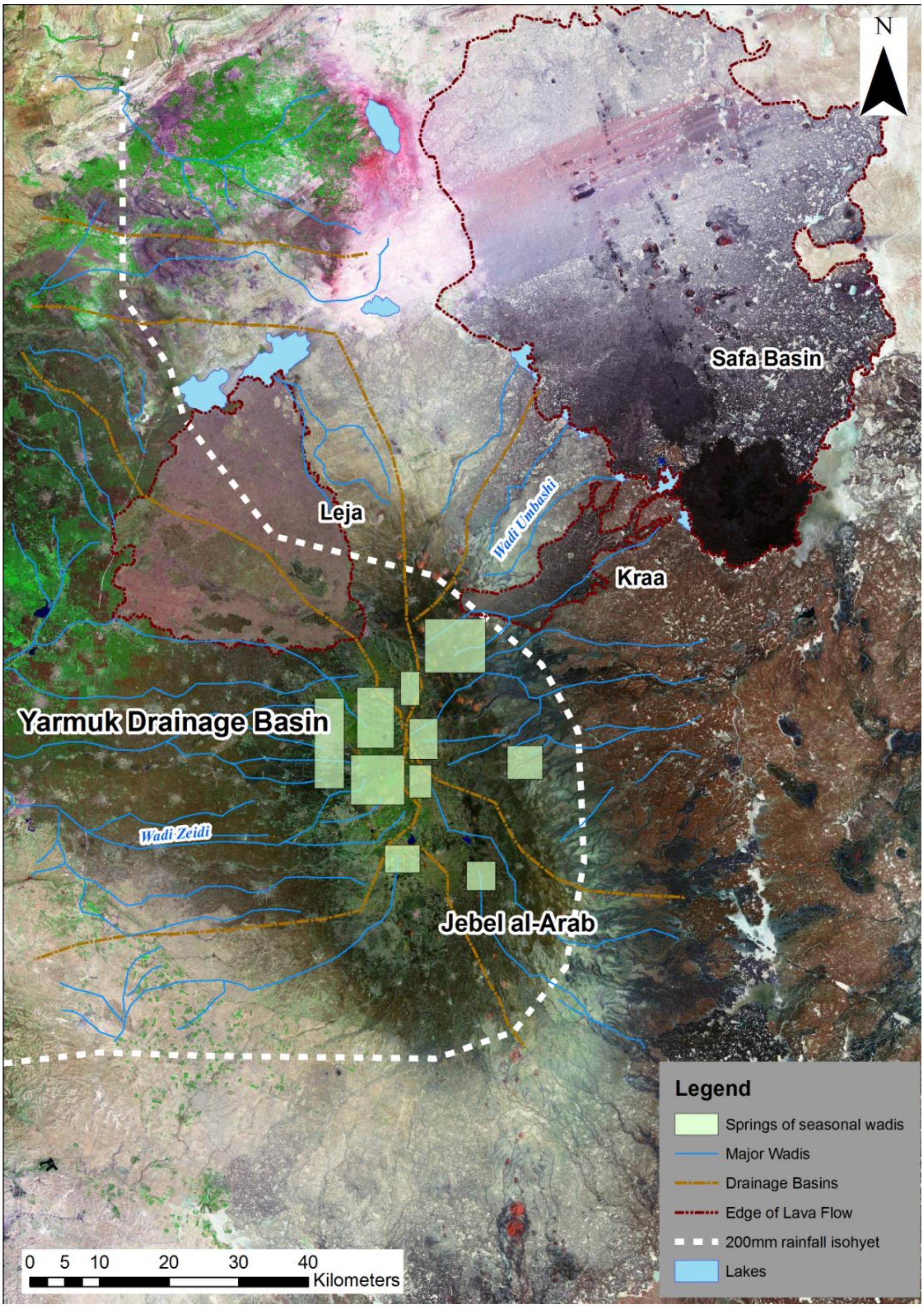


Figure 2.12. Map of topography and natural environment in the Hauran including features mentioned in the text (after Braemer et al., 2009: Figure 1)

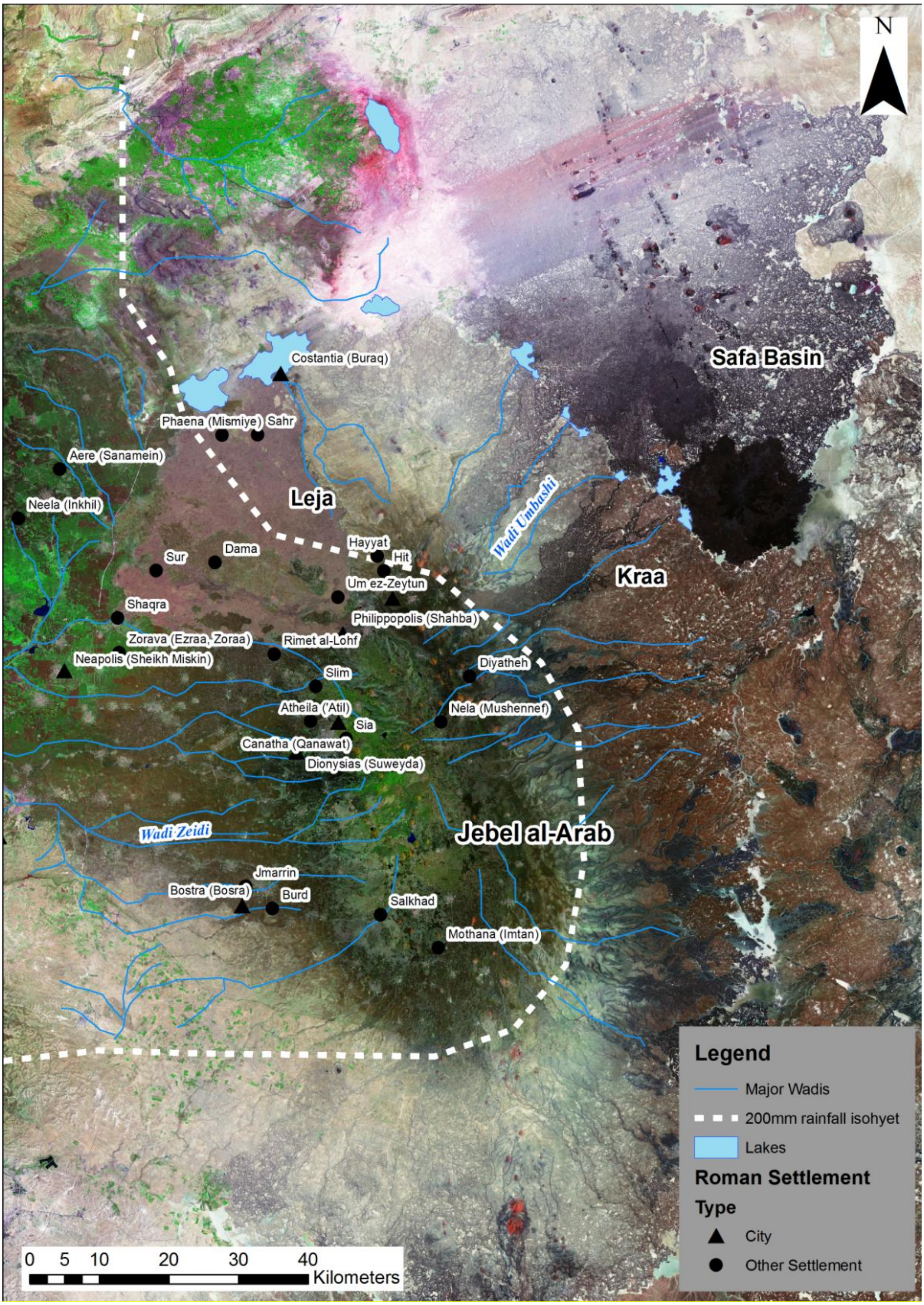


Figure 2.13. Map of Roman settlement in Hauran (after Butcher, 2003: 158, Figure 55)

According to Willcox (1999: 712) the region can be divided into three main vegetational regions. These range from Mediterranean forest on the western slopes of the volcanic mountains, to areas of plain, which at present are degraded but are suggested to have supported forest-steppe species in the past. Further east the land slopes steeply and due to declining rainfall in the area is dominated by dry steppe vegetation, such as *woody chenopod* species (ibid.). Zohary (1973: 10) describes this region as an unsown land composed of boulders and hillocks; however, Schumacher (1886: 25) in the 19th century makes references to the area being used for wheat cultivation eg. *'Belad el-Kameh'*. He observed that the north-west region of the Hauran was dominated by the volcanic mounds of Jebel el-Arab and characterised by sheep-folds and rocky outcrops. Areas further east and south were highly fertile and characterised by lava scoria and ash which, given enough water, were easy to cultivate (Schumacher, 1886: 20-1, Willcox, 1999: 711). Indeed, this area was the 'grain basket' of Syria during recent history (Epstein, 1936: 597, Scholch, 1981: 40). This productivity appears to have also existed during antiquity. Similarly to the Homs NSA an extensive network of Roman settlement and activity has been identified in the region [(e.g. Ball, 2000: 238) and see Figure 2.13]. Scholch (1981: 37, 40) in his review of the Palestinian economy in the 19th century mentions that large proportions of wheat were exported from the Hauran via the ports of Jaffa and Acre. The impact of drought years is also highlighted, with a year of complete crop failure being recorded in 1880 (ibid: 46). Epstein (1936: 609-11) records a similarly devastating failure in the early 20th century which, whilst not affecting all districts equally, was worsened by extensive farming, a focus on cereal crops, as well as lack of water and pasture for goat, sheep and cows. The primary crops in the region during the early 20th century were wheat, barley, maize, dhura, lentils and beans, with crops being planted in the "dry system", consisting of strips of summer/winter crops and areas of fallow, the order of which was altered annually (Epstein, 1936: 598-9). Recent land-use mapping demonstrates the range of different economic strategies being utilised in the area [(Figure 2.14.) and see Appendix 2.1 for Area calculations]. Whilst dominated by basaltic rock outcrops and rubble slopes (c.48%), substantial areas of rain-fed winter and spring field crops (c.19%) were present in the western Hauran. Moreover, areas of scrubland, deciduous forest and tree crops could be seen in patches.

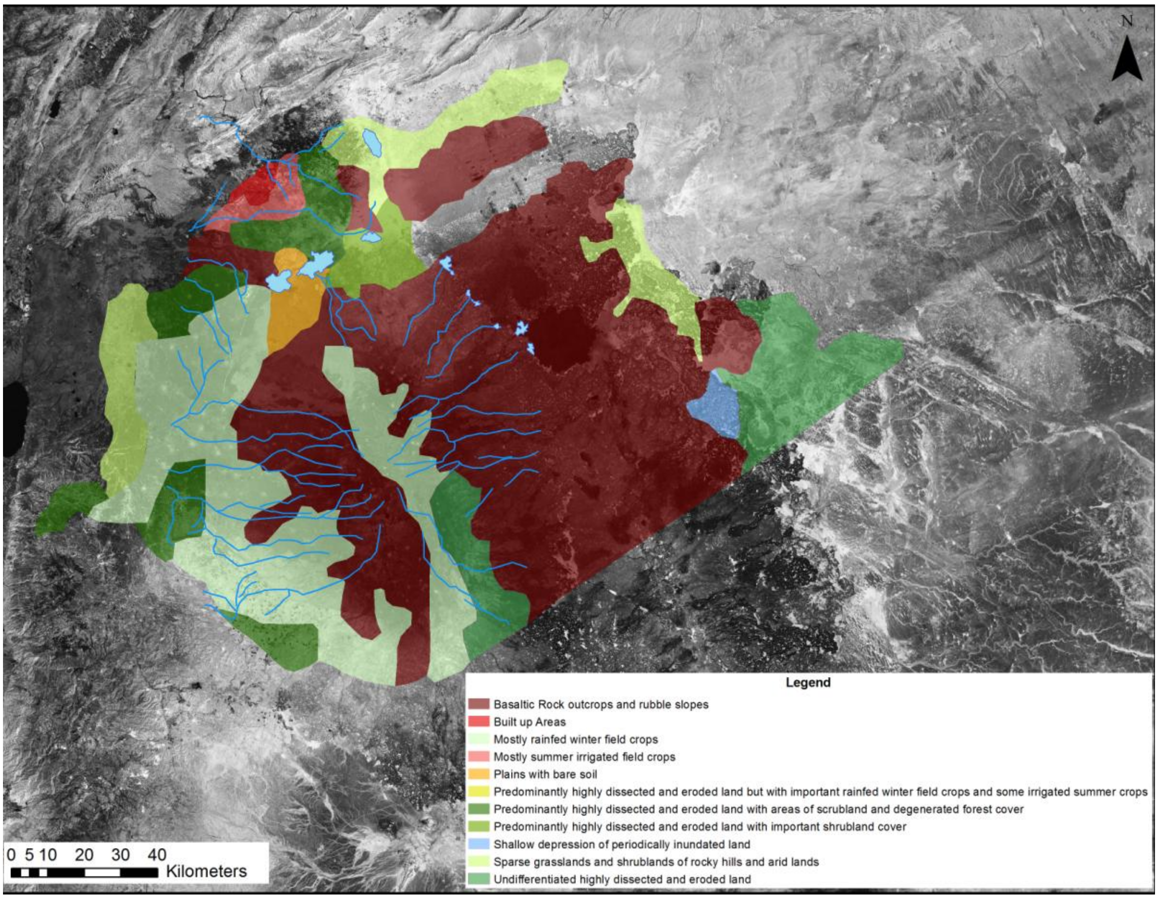


Figure 2.14. Land-use map of Syria [1989-1990 (after De Pauw et al., 2004)]

Archaeological and ethnographic work within the region has also emphasised the use of the area for grazing, particularly in the *Ruhba* district (Braemer, 1996: 1, Newson, 2000: 88). Faunal remains from the sites of Khirbet al-Umbashi suggest the presence of cattle, sheep and goats (Braemer *et al.*, 2004: 282). Furthermore, sampling at a number of Roman and Islamic sites has highlighted the potential utilisation of this region for both vine and cereal cultivation (Willcox, 1999: 712). Similarly to the Homs NSA, this region appears to have employed a mixed economy in both the recent and more distant past. Possibly, as a result of the demands of external markets this economy seems, at least in the 19^{th}-20^{th} centuries to have had more of a focus upon cereal production. Given the difficulties of drought and crop failure it again offers an example of a 'sub-optimal' region. Whereby, in this case, substantial investment and presumably subsistence diversity was needed in order to mitigate the impact of potential dry seasons.

2.2.3. Jaulan

The basaltic Jaulan covers an area of around 1,050 km^2 and despite its largely homogenous lithology, supports a range of environmental, geological and pedological zones (Mor, 1993: 226-233, Vinitzky, 1992: 102). Precipitation totals around 1000mm in the north, where altitudes reach c.1000m a.s.l, falling to c. 450-600mm further south-west in the region of Lake Tiberias [c. 210 b.s.l. (Brielmann, 2008: 42, Epstein, 1998: 4-5, Vinitzky, 1992: 102)]. Rainfall is concentrated in winter rains/snows, and the area has a distinct dry summer season, characteristic of a Mediterranean climate (Weinstein, 1976: 553). Mean temperatures in the region range from between 12-14^{o}c in the winter, to around 24-29^{o}c in the summer months (Epstein, 1998: 4-5). The region is also subject to strong easterly winds *('sharqia')*, which decrease towards the west (Epstein, 1998: 2). The geomorphology of this region is fairly complex and composed of five major rock units (Adiyaman and Chorowicz, 2002: 339, Mor, 1993: 223). The majority of the area, however, is dominated by two main basaltic strata (Figure 2.15.). The first is composed of a number of formations, which vary in date between the Lower and Upper Pleistocene (Mor, 1993: 228-229, Weinstein, 1976: 553). These are located in the central and northern half of the region, characterised by Brown Mediterranean soils (see Figure 2.16) and heavy accumulation of stones formed by the underlying basalt bedrock degrading and eroding [see Appendix 2.3 for glossary and Figures 2.15-16 (Epstein, 1998: 4, Mor, 1993: 228-9)]. In contrast the basalt of the south is much thinner and overlies softer limestone rock. As a result wadi courses in this area are deeper with more developed drainage basins (Vinitzky, 1992: 105). These outcrops date to the Pliocene and support brown grumsols, basaltic proto-grumsols and pale redzinas (Brielmann, 2008: 44-5, Mor, 1993: 227) (see Appendix 2.3. for glossary). The Korazim plateau, whilst not strictly part of the Jaulan, can be considered as a western extension of this region (Stepansky, 2005: 40). It is characterised by a series of stony hills and rocky spurs, which encompass small valleys flowing down towards the Jordan River and Lake Tiberias (ibid.). The moisture regime of the Jaulan soils can be defined as xeric (see Appendix 2.3. for glossary) due to the long dry summer season, however, further south this regime becomes more aridic (Dan and Singer, 1973 : 167). Furthermore, the nature of the soils of the region is substantially affected by the different topographical locations in which they are found (ibid: 187).

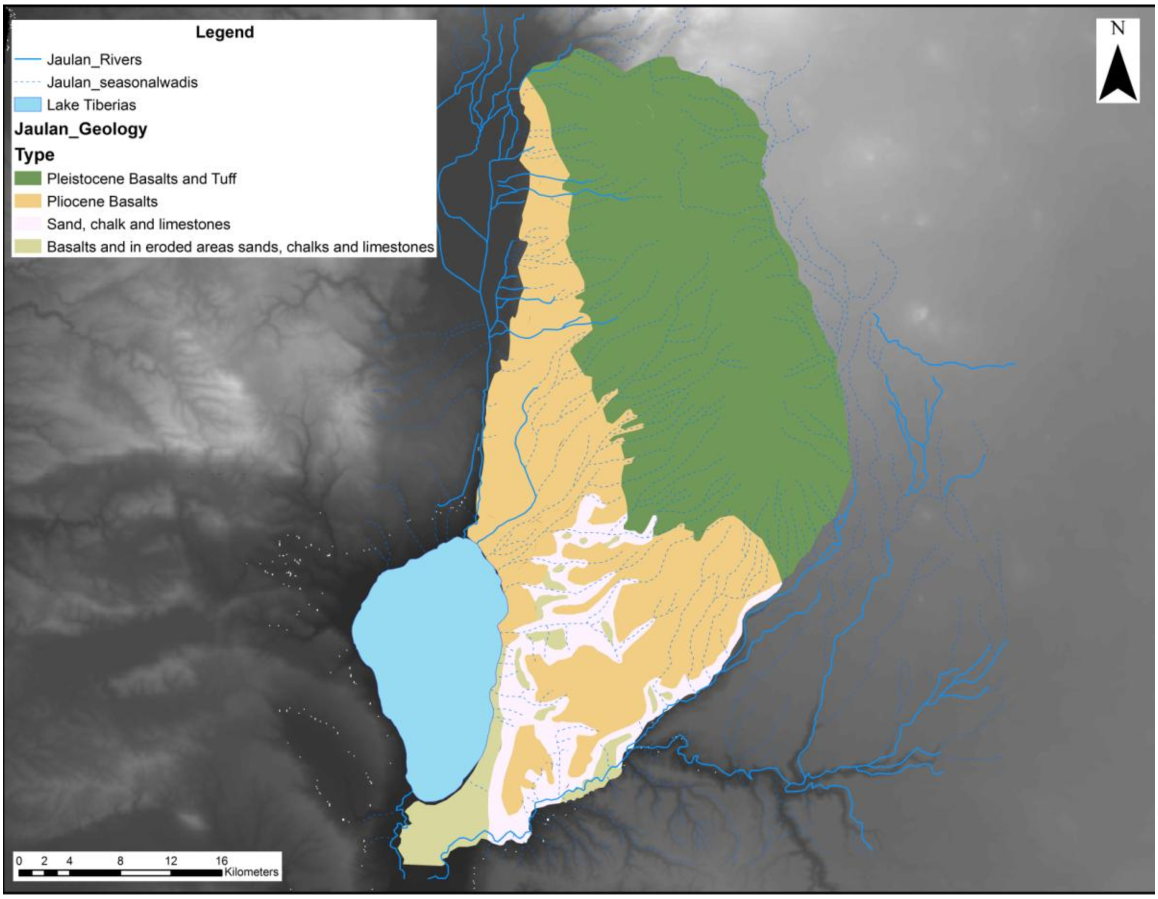


Figure 2.15.Geology of Jaulan (after Urman, 1985: 34-7, 55-7)

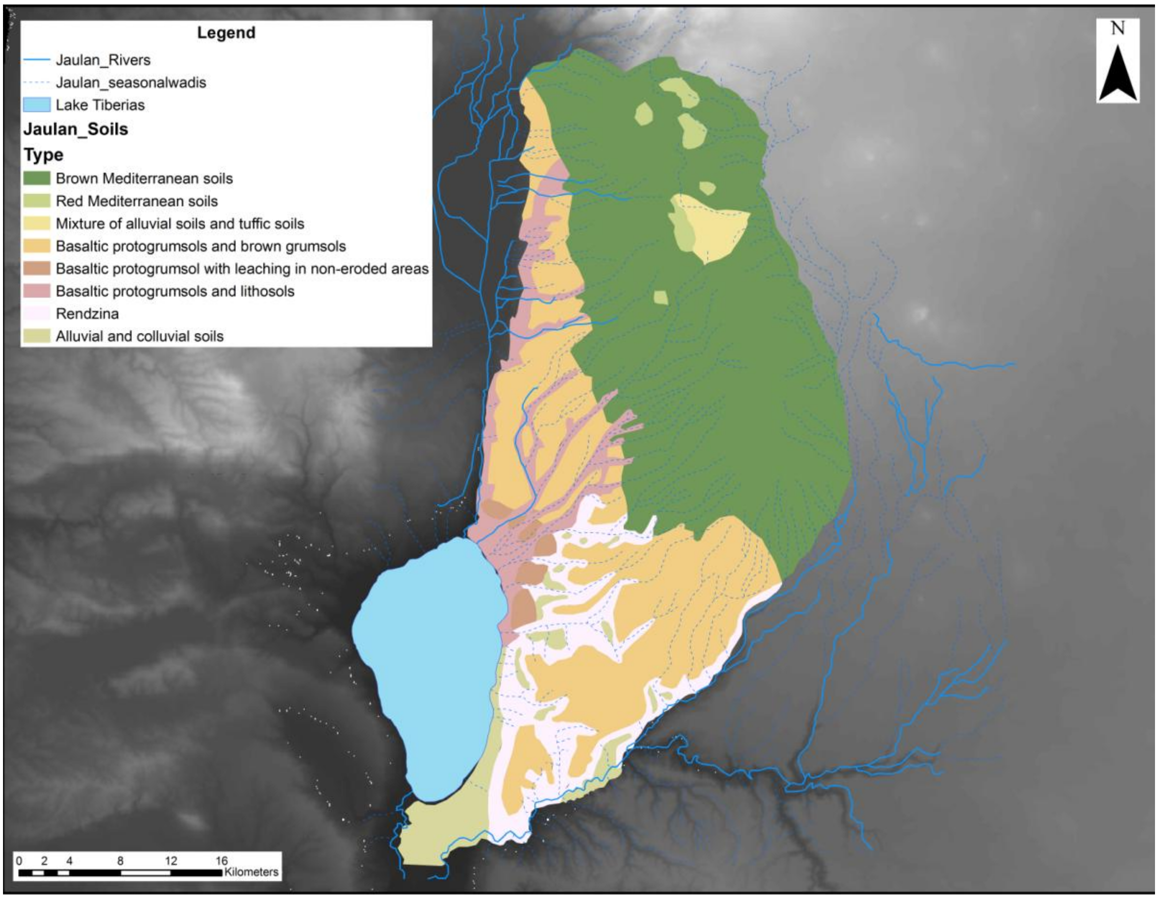


Figure 2.16.Soil regions of Jaulan (after Urman 1985: 56, Figure 10)

The *wadis* dissecting this region follow the lava flows in a south west direction, becoming progressively deeper before they finally descend as canyons into the Jordan Rift and Lake Tiberias (Epstein, 1998: 4-5), which mark the regions western border [(Kochavi, 1989: 2) Figure 2.17.]. In the north-east, water is no more than a few metres below the basalt surface (Epstein, 1998: 5). Several drainage basins can be identified in the region; the *Wadi Ruqqad* basin; *Hula Basin*; *Upper Jordan Gorge Basin*; *Lake Tiberias Basin* and the *Yarmuk River Basin (Figure 2.17 A-E)*. Due to the nature of the basalt soils within the area, which become quickly saturated with water, substantial run-off occurs leading to water flowing out the Jaulan into one of the above drainage basins. Thus, whilst benefiting from a fairly substantial annual rainfall due to poor water retention, availability and access to this water is limited (Urman, 1985: 42-3; Figure 4). Furthermore, the considerable run-off and soil saturation within the region during the winter months, especially within low-lying areas, often leads to substantial areas of standing water (Epstein, 1998: 4-5). Whilst this can be potentially beneficial, creating opportunities for good pasturing and agriculture (ibid.), as suggested for the Homs region, it may also lead to problems of plants rotting due to saturation and drowning of their roots (e.g. Na'aman, 1951: 24). The majority of springs within the region are located to the east of Lake Tiberias and are most abundant during the spring months, although there are some which continue to flow throughout the year (Urman, 1985: 46-47). It is interesting to note that evidence for settlement in this region, especially within the Chalcolithic appears to show a strong correlation with the location of springs (Chapter 8.1). Similarly to both the Homs NSA and Hauran there is an abundance of both man-made and natural '*birket*' within the region. In a number of cases, as within the Homs NSA, it appears that natural depressions have been improved in order to be used as '*birket*'. These appear in a number of occupied and abandoned villages within the region and hold water for most of the year (ibid: 47).

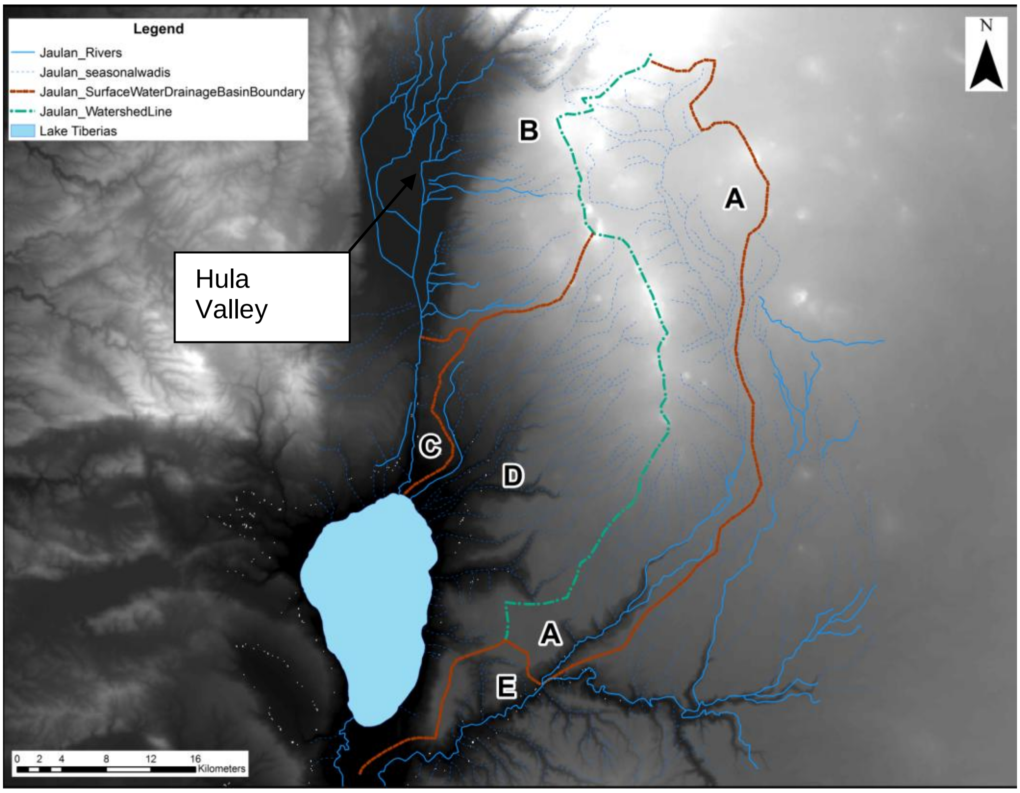


Figure 2.17. The Hydrology of the Jaulan (including major and seasonal wadis). A-E marks the major drainage basins [A: Wadi er-Ruqqad; B: Hula; C: Upper Jordan Gorge; D: Lake Tiberias and E: Yarmuk River (after Urman 1985: Figure 4)]. The lake of Birkat Ram is located to the north of this image.

In addition to *wadis*, springs and *birket,* two main lakes, Lake Tiberias (Figure 2.17) and Birket Ram should be mentioned (located around 14km NE of the Hula Valley). Lake Tiberias, which marks the southern end of this region, is around 22km in length, 12 km in width and c. 43m in depth (Baruch, 1986: 37-8). Its drainage basin extends over much of the eastern Jaulan, with a number of key settlements (e.g. Tiberias) being located on its shores. Birkat Ram, whilst much smaller than the former acts as an important water store within the region and is around 900m in length and 650m in width. Water depths fluctuate seasonally and whilst water depth in 1999 measured around 1.5m, Singer and Ehrlich record depths of 6-12m in the 1970s (Neumann *et al.*, 2007: 330, Singer and Ehrlich, 1978). The small crater lake has a limited drainage basin, receiving the majority of its water from precipitation and the full sub-aquatic springs in the region (Ehrlich and Singer, 1976, Neumann *et al.*, 2007: 330).

The current fauna and flora of the region is characteristic of a Mediterranean climate, dominated by Maquis type vegetation [(Weinstein, 1976: 555) and see Appendix 2.3 for glossary]. In the southern and central regions of the Jaulan plant communities form a steppe like landscape, with trees at present being rare (Ish-Shalom-Gordon, 1995: 67). In contrast, the northern area is composed of mixed grassland and forest communities (ibid.). Within this region species (see Appendix 2.3), such as oak (*quercus ithaburensis,* a smaller species than the *quercus cerris* which is also found in the Levantine region) and pistachio (*pistacia-amydgalus*) appear to be co-dominant (Zohary, 1973: 167). Tree cover has declined substantially since the 19th century and it has been argued that areas of forest, such as the *Tabor oak* open forest which currently cover the slopes of the area to the north and north-east, once covered a much larger area (Danin, 1995: 30, Epstein, 1998: 4). A relationship between different lithologies and plant species exists, with a correlation between the location of *quercus ithaburensis* and *Dalwe* basalt formations and conversely the *'En Zivan* basalt formations with *quercus calliprinos* being proposed (Epstein, 1998: 4) correlating. A greater diversity of plant species can be seen within the northern area, possibly due to the higher precipitation and rock cover in this area, creating a more heterogeneous ecosystem (Ish-Shalom-Gordon, 1995: 72).

Schumacher (1886: 25) in the 19th century described this area as grazing country and this is an impression emphasised by modern land use patterns (Brielmann, 2008: 45). Brielmann (2008: 45) suggests that the area was used predominantly for cattle grazing (dairy and meat), whilst Epstein (1936: 599) mentions the Jaulan being famed for its rich pasture and livestock. These areas of pasture can be seen as disturbed grassland, which have been subject to grazing, clearing, cutting and thinning over hundreds of years (Ish-Shalom-Gordon, 1995: 68). However, other exploitable vegetation types also exist. For example, in certain areas in the northern Jaulan where more permeable soils are present, orchards are present and along the steep *wadis*, springs and streams, willows and oleanders could be seen in the 19th century (Brielmann, 2008: 45, Schumacher, 1886: 25). Archaeological and ethnographic evidence for the exploitation of vine and tree crops can be seen via both modern observations, as well as the distribution of wine and olive oil presses known from Roman-Byzantine sites in the region (e.g. Urman, 1985: 145-6; Figures 54-56). These practices seem to have been unevenly distributed across this region with Urman (1985: 145) suggesting that wine presses occur predominantly in the Southern Jaulan, whilst olive presses appear in significant numbers in the central Jaulan. On this basis Urman (ibid.) suggests specific areas may have been specialised towards specific crops during the Roman-Byzantine period (ibid.). The Jaulan again appears to represent an area which, given appropriate incentive and effort, yields significant subsistence potential. Whilst the precipitation levels are higher than those of the Homs NSA and Hauran, this can be both beneficial and problematic, with access to this water being limited. Moreover, it appears that different localities, based on the natural availability of resources, were focused towards different subsistence strategies.

2.2.4. Negev

The Negev is composed of three main geographical regions; the southern Negev desert; Central Negev Highlands and Northern Negev [also encompassing the Western Negev as marked on the map (Figure 2.18)]. These regions are characterised by markedly different environmental potentials. The first supports a desertic *Saharo-Arabian* climate (Appendix 2.3). The region has sparse vegetation with precipitation varying between 0 to 150mm per annum (Evenari *et al.*, 1971: 8-9). Rainfall is concentrated into a limited period, often falling over less than 20 days (ibid: 33). The Central Negev (c. 2,000 sq.km), in contrast, is composed of a series of parallel ridges and valleys (450-1000m a.s.l.) and has an *Irano-Turanian* climate with rainfall varying from around 100-300mm. Limestone and sandstone strata dating to various periods, which in the case of the sandstone have weathered to sand, form interior sand dunes, plains and ridges (ibid: 49). The main *wadis* within this area drain to the Mediterranean and Dead Sea, whilst at the eastern fringe, only two main *wadis* drain into the adjacent Arava Valley [(ibid: 49, 51) Figure 2.18.]. The soils of this area are characterised by *hamadas* and shallow rocky desert soils, in addition to reg soils, gravels and coarse desert alluvium [(Evenari *et al.*, 1971: 51, Zohary, 1973: 46-8) and see Appendix 2.3]. The Northern Negev is characterised by an *Irano-Turanian* climate, with warm summers and cool winters. Composed of a series of lowland plains and limestone foothills predominantly dating to the Eocene, the area is dissected by *wadi*s (Thompson, 1975: 13), a number of which (e.g. *Wadi Beersheva*) have been the focus of settlement for thousands of years (Figure 2.19). The hillsides are covered with shallow, gravelly, relatively infertile soils, whilst the plains have developed 2-3m of loess deposits, which provide excellent pasturage (ibid: 13). This area is characterised by a highland desert landscape and receives on average between 200-350mm of rainfall per annum, with temperatures reaching around 40^{o}c (Avner, 1998: 147-8, Evenari *et al.*, 1971: 8). A narrow coastal strip borders the Mediterranean, consisting of mobile and semi-mobile sand dunes, which form brown arid soils (Evenari *et al.,* 1971: 43).

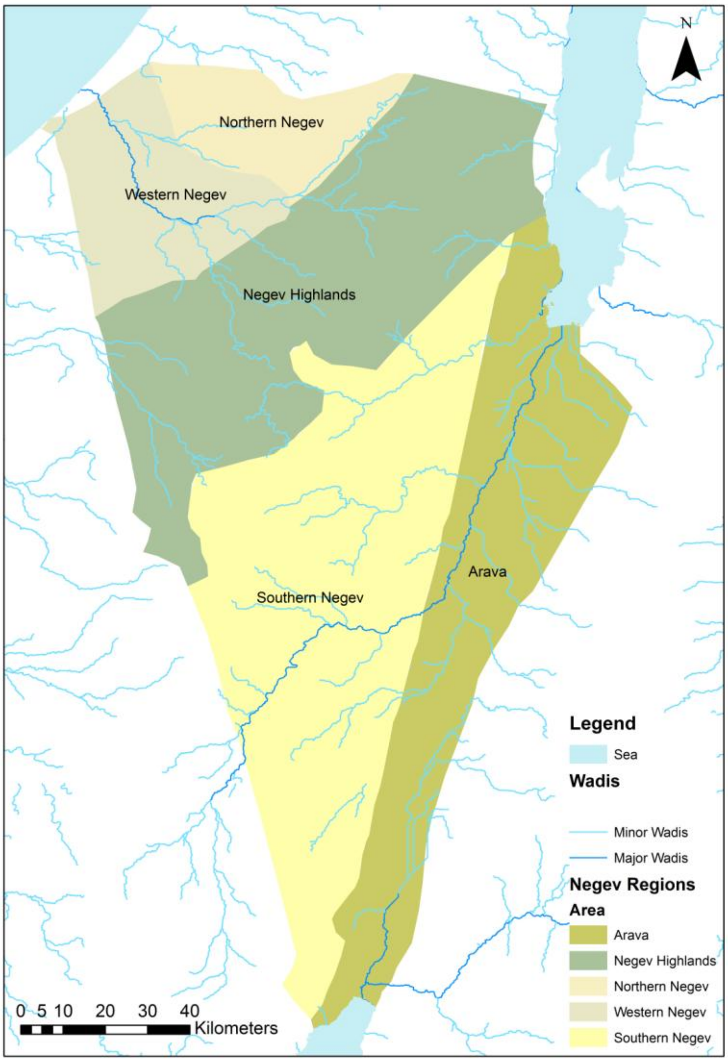


Figure 2.18. The main regions of the Negev

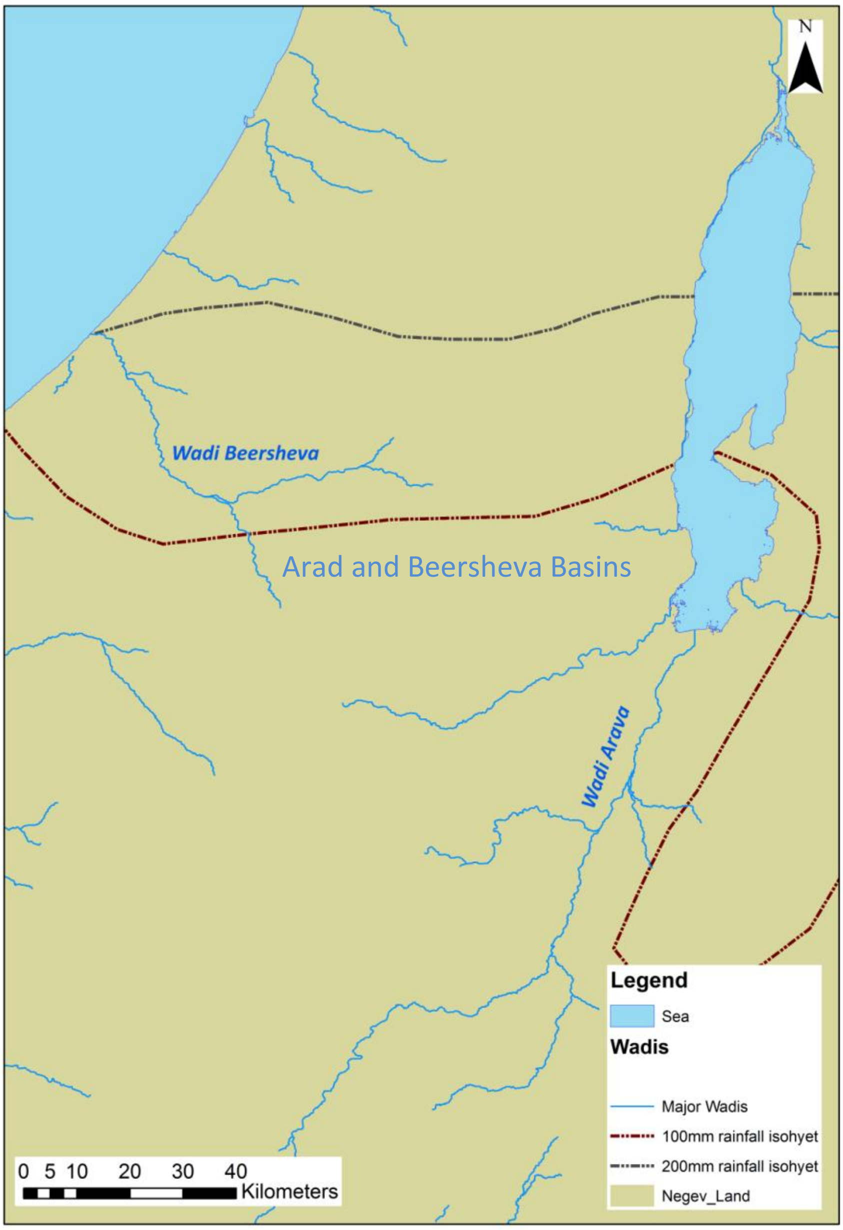


Figure 2.19. Main hydrological systems of the Negev

Vegetation cover within these different regions is heterogeneous. Within the rocky areas of the Negev, scrub vegetation such as sage and white broom are predominant, whilst the *Saharo-Arabian* vegetational area is dominated by dwarf shrub varieties [(Zohary, 1973: 168, 224) and see Appendix 2.3 for glossary]. Presumably some of the above species could have been (and still are) exploited as rough grazing by pastoralist groups within the Negev. According to a 2009 Negev Coexistence Forum for Civil Equality report, over 190,000 Bedouin live within this region, with the population in the late 1940s suggested to have numbered around 60,000 to 90,000 people, although some estimates are much higher (Noach *et al.*, 2009: 1-2). Marx (1967: 20) recorded that Bedouin groups in the 20th century were encouraged to settle due to the potential fertile nature of the soil, whilst the patterns of rainfall kept them on the move. Archaeologists have suggested that small ruminant pastoralism was the dominant subsistence practice until recently within this region (e.g. Avner *et al.*, 1994, Finkelstein and Perevolotsky, 1990, Rosen, 2002a). However, 20th century investigations within the Negev indicate that many Bedouin, at least in the latter half of this century, were farmers, rearing camel and sheep as only part of their income. While sowing crops following the first heavy rains around November-December, Bedouin groups in the Negev remained close to the fields. However, once this process was completed, groups only had to return to harvest crops around May or June and thus, for the rest of the year could pasture their animals where water and vegetation was present (Marx, 1967: 20). When and where rains have been plentiful spring vegetation can be found covering the land with Bedouin groups exploiting this resource only once the vegetation reached a certain height (ibid: 29). During this period sheep and goats needed watering infrequently, with camels not requiring any water. However, at best these conditions only lasted until the beginning of May, after which flocks had to rely on drought-resistant perennials, with sheep requiring hay or stubble pasture. Animals at this time had to be driven until suitable pasture (and water) could be found (ibid.). The above represents the modern situation and it is likely that mechanisation, as well as the introduction of the camel has fundamentally altered local subsistence strategies (see Chapter 9.4). However, it demonstrates the complex and multi-resource nature of Bedouin activity in this region.

The Arad and Beersheva basins both lie, at present, at the edge of dry-farming regions (c. 200-300mm rainfall per annum), with the Arad Basin being recorded as receiving c. 200mm of rainfall per annum between 1931-1960, whilst the neighbouring Beersheva basin received 150mm-250mm per annum over this period (Thompson, 1975: 5-6). During the 20th century, due to high temperatures and levels of annual evaporation, which on average reached around 2000mm compared to averages of 100mm of annual precipitation (Avner, 1984: 147-8), cultivation without irrigation was problematic. If we consider that wheat needs around 300mm of water per annum for a reasonable yield (Bruins, 1990: 88), without irrigation, or at least some attempt at run-off agriculture, the yields of crops would have been low. The presence of various agricultural features, such as terracing, check-dams and 'grape mounds', in areas, such as the Negev Highlands (Bruins, 1990: 88-9) as well as the 'Uvda Valley (Avner, 1998: 169) highlights the use of such practices in antiquity (see Chapter 9.4 for further discussion). Avner (1998: 172) in his investigations also identified the presence of threshing floors, wells and dams within the 'Uvda Valley. On the basis of an examination of one of the dam systems (which had the potential to contain at least 100 cubic metres of water) he argued that it would have been able to support one extended family with herds (ibid: 175). Furthermore, it is clear that where irrigation and water retention can be maintained within this region the presence of high quality soils can facilitate the cultivation of vines, bushes and small fruit trees (Avner, 1998: 170-2, Zohary, 1973:

148). Despite the modern aridity and relatively sparse vegetation within this region, it appears that many of the above features were still exploited by local Bedouin groups during the 20th century (Evenari et al., 1971: 97-9). In addition, ethnographic work suggests the presence of Bedouin groups sowing wheat and barley and living in tents during the seasons of sowing and harvesting and then returning to Aqaba with threshed grain following the harvest (Musil, 1928: 85).

The Negev is the most ‘arid’ region included in this study. As such, it has different characteristics and economic potential from those already discussed in relation to the Homs NSA, Hauran and Jaulan. However, it still appears to be an area, where, if considerable effort is spent, rewards can be gained. It is clear that within this region, cultivation cannot solely support subsistence. Instead, the evidence presented above appears to suggest the need for a multi-resource based approach to subsistence activities, an observation to which I will return to in Chapters 7 and 9.

2.3. Climatic reconstructions at the broad scale

Researchers often question how it was possible for the array of civilisations that are known from the Levant/Arabia to develop in a basically arid/semi-arid desert environment. Theories concerning the past fertility of areas have been developed, correlating palaeoclimatic events with social development and change (e.g. Cullen *et al.*, 2000, di Lernia, 2006, Staubwasser and Weiss, 2006: 378, Table 1). Despite this, as Horden and Purcell (2000: 54) have suggested, fertility and climatic suitability are not absolutes, rather they are culturally inscribed terms. The landscape and climate of the Near East is a complex mesh of varying micro-ecologies, to which humans have adapted and in some cases influenced in different ways both spatially and temporally (ibid: 78-80). We have no reason to believe that the situation was more uniform within the past. However, it may be possible to see widespread phenomena across the region, allowing us to understand climate at a broad scale (Watkins, 1997: 263-4). One of the main challenges is the contradictory evidence from different areas and proxies, which show diverse responses or impacts of climate change. Considering the variety of microenvironments and human societies in the Near East, during the past and present, this is not surprising. Rather than considering environment versus human life, we need to conceptualise climate change and associated adaptations as existing along a continuum or spectrum and being part of a series of reciprocal relationships (Horden and Purcell, 2000: 53, 58, Walsh, 2004: 1, Watkins, 1997: 264).

Our main period of concern is the Early to Middle Holocene (c. 9500-2000 BC) which, according to current research, witnessed a range of climatic fluctuations and associated adaptations (e.g. Rosen, 2007: 80-6). Figures 2.20-21 show the main sources of palaeoclimatic data which will be discussed in the following section. In addition, a summary of the main trends, methods and problems associated with these analyses can be found in Appendices 2.1-2. This data represents a broad overview, and problems exist in trying to correlate data from different regions and projects, due to the techniques used and dating accuracy. As Goodfriend (1991: 421) has indicated large uncertainties can exist for radiocarbon dates. Calibrating just a selection of these dates (using OxCal 4.1) demonstrates this (Figure 2.22.). In addition, re-assessment of sequences, such as those from the Hula and Ghab have lead some investigators to suggest that dates for these sequences need to be corrected by up to 5500 ^{14}C years (Meadows, 2005: 632). If this is the case, then any proposed casual relations between climate and social/cultural change may be inherently flawed.

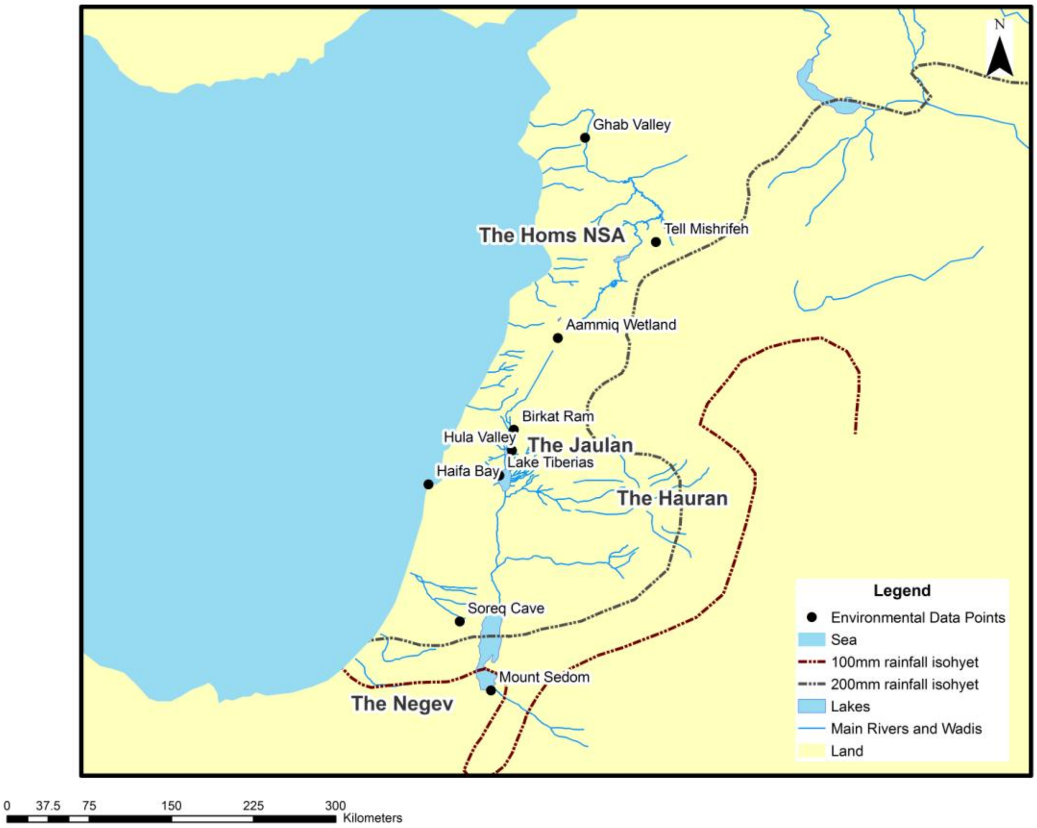


Figure 2.20. Map of palaeoclimatic resources from Levant and Arabia

Dates BC	Archaeological Period		Isotope Analysis: *Soreq Cave Speleothems*	Isotope Analysis: *Qatna Pollen records*	Isotope Analysis: *Negev Snail Shells*	Pollen Sequences: *Ghab*	Pollen Sequences: *Hula*	Dead Sea
2000	**Middle Bronze**			humid conditions (c. 2600-2500 cal. BC)	Modern $\delta^{18}O$ values	more olive Forest and Maquis expansion	Oak expansion-olive decline-inverse fluctuation of olive and oak	low level
					High δ18O moving towards modern values (c.3670 BP)			
3000	**Early Bronze**	*IV* *III* *II*	very dry dry moist moist	arid conditions (c. 2900-2800 cal. BC)	Low $\delta^{18}O$ values (c.3800 BP)			high level
		I	dry					
4000								
	Chalcolithc		Moist		Low $\delta^{18}O$ values (c. 6560-5950 BP)			lower level
5000			very dry					
	Pottery Neolithic							
6000			very wet		Generally declining δ18O values	Shift from forest to maquis more olive	more olive	
		Final	very dry					rising level
7000			very wet					
	Pre-pottery Neolithic B	*Late* *Mid* *Early*	Fluctuation					
8000						Forest readvance and more grassland	Forest Parkland	
9000	**Pre-Pottery Neolithic A**		increasingly warmer/wetter					
								low level

Figure 2.21 Main sources of analysis used in Chapter 2 (after Fiorentino and Caracuta, 2008: 156-7, Goodfriend, 1991, Rosen, 2007: 98, Figure 5.7)

Dates BP	Dates BC cal.		%
	From	to	
9700±360	10601	8247	95.4
6560±220	5972	5039	95.4
5950±290	5486	4260	95.4
3800±210	2873	1742	95.4
3500±220	2473	1318	95.4

Figure 2.22. OxCal 4.1. Calibration of dates from [(Goodfriend, 1991: 420-1) calibration using IntCal04 ^{14}C Calibration Curve-see Appendix 2.4 for all re-calibrations]

Rosen [(2007: 81) and see Figure 2.21], on the basis of current palaeoclimatic research, outlined a number of major phases of climatic variability and fluctuation within the Early (9500-5500 BC) to Middle Holocene (5500-2000 BC). Beginning around 9,500 BC a steady amelioration towards warmer and wetter conditions was indentified, progress was punctuated by two remarkably wet phases around 6,400 BC and 5,600 BC and by an abrupt and short lived cool dry event around 6,200 BC (2007: 99). Within the Middle Holocene three main phases were identified; **1)**. *A wet period, following the Early Holocene, succeeded by increased drying until around 4,500 BC and the beginning of the Chalcolithic, when a return to moister conditions was suggested*.; **2)**. *Alternating conditions of drier and then moister climates throughout the Early Bronze Age, with a distinct dry phase c. 3100-3000 BC and a subsequent steady return to moist conditions (ibid: 81-2)*; **3)**. *A drier climate at the end of the 3rd millennium BC, coinciding with the so-called collapse of Early Bronze Age society (ibid: 143)*. These patterns are very broad brush; however, they serve as a model against which to evaluate the current evidence for palaeoclimate. In order to provide a perspective of wider changes, palaeoclimate within the Early Holocene will also be considered.

2.3.1. The Early Holocene and beginnings of agriculture:

Amelioration towards wetter and warmer conditions from around 9,500 BC, with a number of arid and moist phases at 6,400 BC, 6,200 BC and 5,600 BC (Rosen, 2007: 99).

Climatic evidence for the Early Holocene can be seen as contradictory, with broad patterns of growing aridity (Burroughs, 2005: 241-2) and amelioration to wetter conditions being suggested (El-Moslimany, 1994). Contrary to Rosen's (2007: 99) general phase of amelioration, investigators such as Burroughs (2005: 241-2) have suggested that a phase of increasing aridity can be associated with the appearance of early farming communities. Based on the growth and retreat of sea level over the course of the Early Holocene, he has suggested that early farming populations in Mesopotamia began to irrigate on a very small scale, with this process eventually leading to population growth and city agglomerations, such as Uruk. Ancient irrigation features have been recognised widely across the Levant, ranging in both date, as well as complexity [e.g. qanat and canal systems spanning hundreds of kilometres; built barrages and simple check dams, and terraces utilising already extant resources (Wilkinson, 1998: 45-52, Table 4.2.)]. Avner (1998: 170-2), in his research in the 'Uvda Valley, identified a range of hydrological systems, some of which he dated to at least the 5th millennium BC and potentially much earlier. The presence of irrigation systems does not necessarily imply climate change and vice versa. However, studies of the GISP-2 ice core, have suggested a cold arid dusty event associated with low methane levels occurring around 8-8.4kya (Alley *et al.*, 1997: 484). Similarly, Burroughs (2005: 240-1) suggests that rising sea levels around 8.5kya, followed by a retreat c.7kya led to the Euphrates River region becoming filled with silt, combined with increasing aridity. Broad trends may be visible within the data; however, the local circumstances and attributes of these events may differ greatly. Indeed, isotopic evidence from Soreq Cave seems to suggest that this phase was characterised by high rainfall and flooding events [(Bar-Matthews *et al.*, 1997: 165) although see Appendix 2.1 and below for further discussion of possible dating limitations associated with this evidence].

In contrast to the above, other researchers have suggested a phase of increased moisture during the Early Holocene (e.g. El-Moslimany, 1994: 121, 122-3, 125, Miller, 1997: 201). Based on pollen diagrams from Southern Iraq and Kuwait (albeit outside our main study area), as well as interpretations of samples from archaeological sites, such as Tell Mureybet, El-Moslimany (1994: 122-3, 125) suggested that increased moisture and potential summer precipitation could be seen during this period. The analysis of pollen percentages led to the recognition of high representations of grass pollen, a species which requires adequate moisture during its growing season in order to flourish. Alongside this, remains of wheat species, which prefer summer rainfall, were identified at a number of archaeological sites currently located to the east and south of regions supporting summer precipitation (ibid: 127). Cores from Lake Zeribar, Iran have also been used to suggest that this period (c.10.5-6.5ka) showed evidence of increased moisture and temperatures [(Stevens *et al.*, 2001: 753) see Appendix 2.1 for the problematic nature of dating this evidence].

El-Moslimany [(1994: 125) and see figures 2.23-4] also argued that the high percentage of deciduous oak pollen in comparison to evergreen species within the Ghab, Lake Hula and Lake Tiberias pollen sequences, dating to the Early Holocene, might be indicative of summer precipitation. These findings are based on a wide range of sources; however, as El-Moslimany (1994: 129) suggests we have to be cautious in interpreting this evidence, as other factors might also have been involved. Firstly, summer precipitation, if extant may have been highly variable benefiting different places at different times. Furthermore, the observed high frequencies of deciduous oak in comparison to evergreen, may suggest an adaptation by this species to dry summer conditions, rather than the occurrence of summer precipitation (ibid: 127). If the pollen diagrams for the Hula and Ghab regions are examined in detail it is apparent that these trends of higher percentages of deciduous oak show fluctuations (Figures 2.23. and 2.24.). Furthermore, Yasuda *et al.* (2000: 134) suggest that the Hula diagram demonstrates the potential impact of clearance activity during the PPNA/B, a pattern which is also potentially visible in the Hula pollen sequence (see figure 2.23).

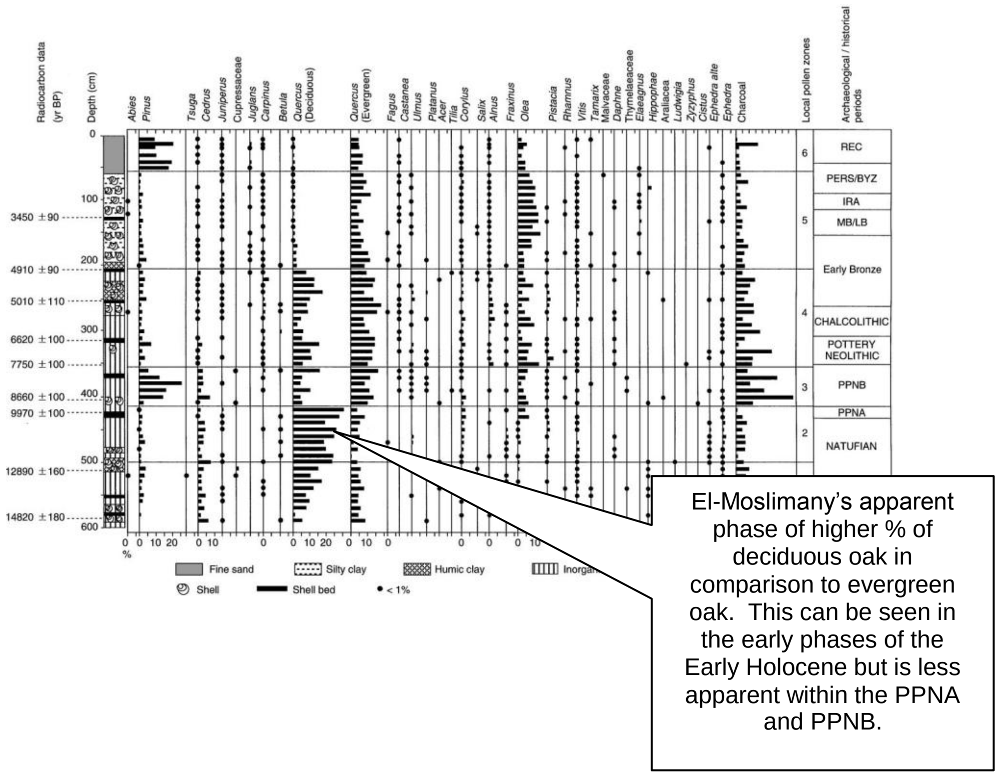


Figure 2.23. Lake Ghab Pollen Diagram (After Yasuda et al., 2000: 131; Fig.5.)

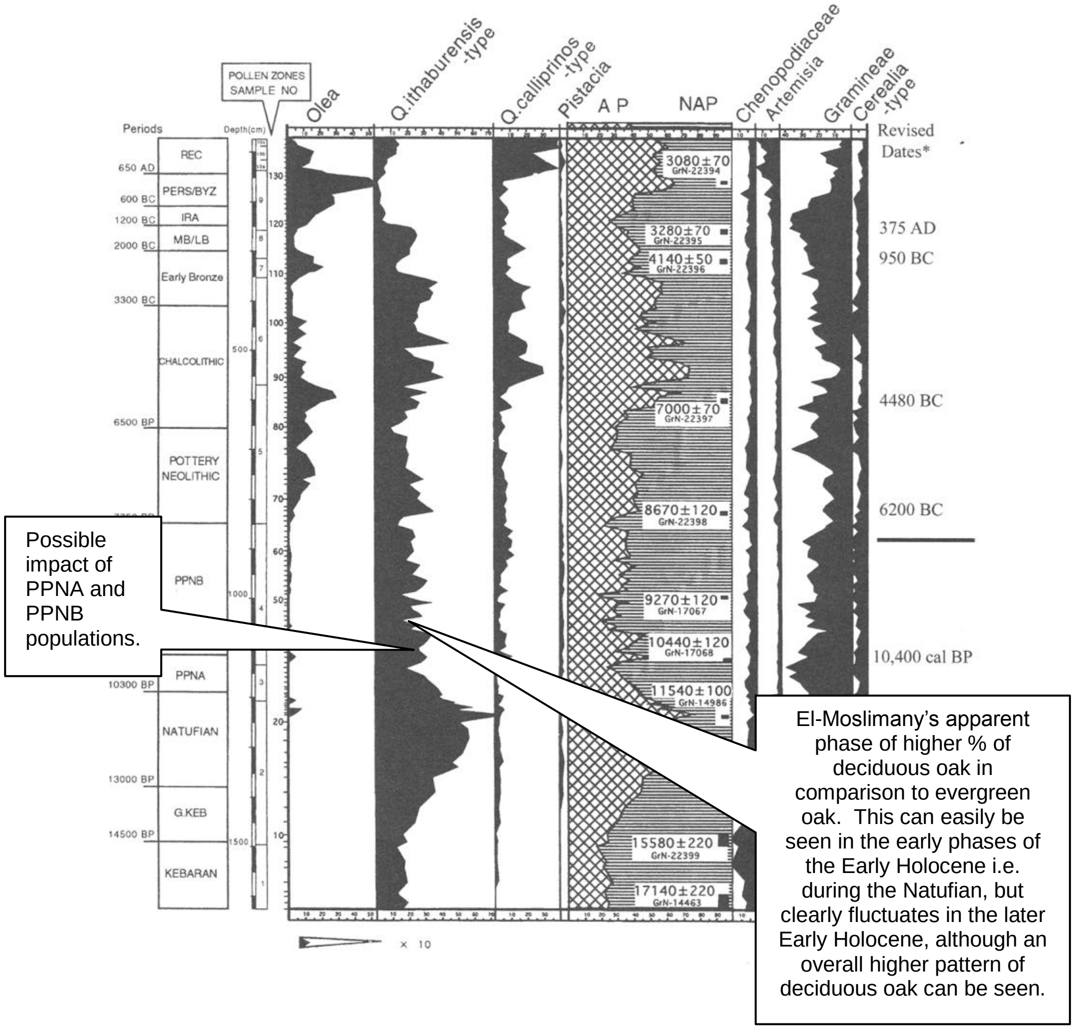


Figure 2.24.Lake Hula Pollen Diagram (After Baruch and Bottema, 1999, Revised chronology After Cappers et al., 1998, Compiled After Rosen, 2007, Revised Chronology After Wright and Thorpe, 2003)

Meadows's (2005) re-analysis of the Hula and Ghab sequences suggests that the Hula dates may need to be corrected by around 5.5kya, whilst the Ghab examples by around 4.5kya. There are problems with this re-analysis; primarily relating to the fact that Meadows (2005) relies on being able to identify the Younger Dryas period in the same manner across all pollen sequences (see Appendix 2.1 for a summary of this). However, the problematic nature of these dates does suggest caution in trying to associate climatic events with even a broad period such as the Early Holocene.

A variety of factors influence our interpretations of palaeoclimatic data (e.g. Garrard *et al.*, 1996, Miller, 1997: 203-4, Sanlaville, 1997: 260). From their examination of archaeological sites and subsistence strategies within regions of dry-steppe and sub-desert, Garrard *et al.* (1996: 204, 210) have highlighted the role of human adaptations, such as the keeping of mixed flocks, in ensuring against climatic variability. Their work identifying seed assemblages from early, middle and late PPNB and early-late Neolithic sites has emphasised the possible use of basic irrigation strategies. In contrast, to

Burroughs (2005: 241-2) hypotheses, Garrard *et al.* (1996: 241-5) have suggested that the simple use of drainage channels by Pre-Pottery and Late Neolithic groups can be seen during a period of increased rainfall. Alongside such adaptations, cultural preferences also need to be considered and are highlighted by modern ethnographic work, which demonstrate that in some cases cultural inclinations, rather than the adaptive qualities of animals or subsistence strategies can be given precedence (Tchernov and Horwitz, 1990: 208). Furthermore our conceptualisation of the impact of periods of aridity and climate amelioration are influenced by current issues and debates. In a modern society where aspects of climate change and global warming are seen as emerging catastrophes, climate change has become synonymous with disaster (e.g. http://en.cop15.dk/, 2009). McCorriston and Hole (1991: 47, 54), whilst characterising the transition to the Early Holocene as marked by phases of increasing aridity and seasonality, suggest that this was not problematic. Instead, they argue that it was responsible for the regeneration of Mediterranean flora within the region and emergence of new species and taxa as the homogenous cover of species fragmented. This, they suggest, enabled various local ecological responses and key cultural developments such as domestication to take place (ibid: 47).

2.3.2. The Onset of the Middle Holocene and the moister Chalcolithic period: Following the Early Holocene (9500-5500 BC), an initial moist phase followed by an increased drying stage was identified. The beginning of the Chalcolithic (c. 4500 BC) is marked by a return to moister conditions (Rosen, 2007: 81-2).

Researchers examining the development of complex societies during the Middle Holocene have often emphasised the increased water availability during this period (e.g. Bar-Matthews *et al.*, 1998, Bar-Matthews *et al.*, 1999, Baruch, 1990: 283, Hole, 1997: 39, 48, Horowitz, 1974: 413, Riehl, 2008, Riehl, 2009, Riehl *et al.*, 2008, Riehl *et al.*, 2009). However, as Riehl *et al. (2009)* have suggested data is relatively limited, with carbon isotopes from plant macro-remains not being present prior to c.5300 cal BC and the data that is extant being less systematic. Work around Lake Tiberias has suggested a higher percentage of tree cover within this area during the 4th millennium BC (Baruch, 1990: 283), potentially correlating with interpretations of a moister climate [although it should also be noted that later peaks in tree cover can also be seen from the pollen diagram (Figure 2.25.)]. Similar trends can be seen in the pollen sequence from Birket Ram (Figure 2.26.), where *quercus itahburensis* appears to be the dominant species. That being said, this species is present for much of the Chalcolithic to Persian period, suggesting that vegetation was not directly linked to climate change in this region (see section 2.4.3 for further discussion). The fact that these analyses show different trends highlights the localised nature of climatic and vegetation development.

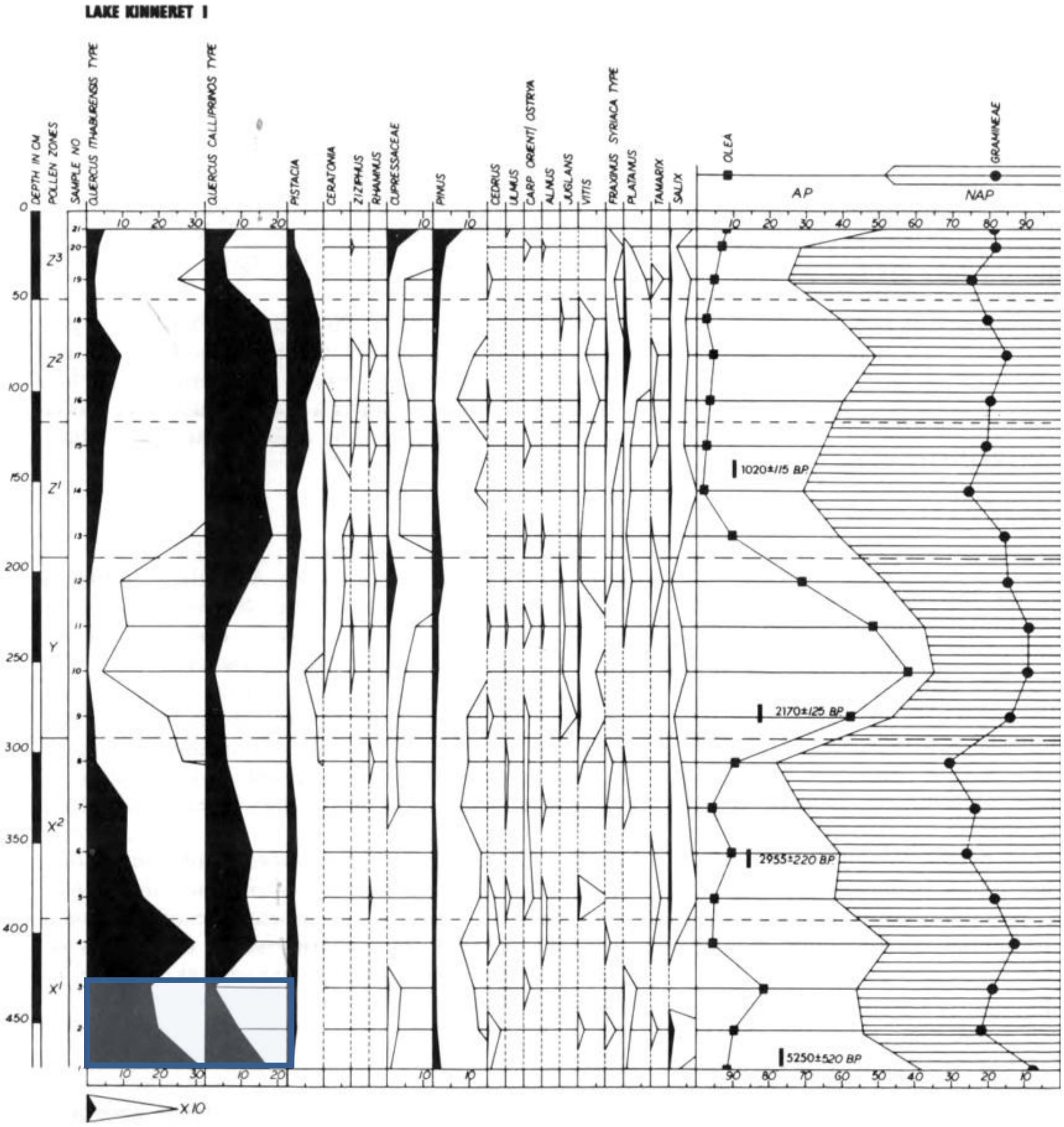


Figure 2.25. Lake Tiberias pollen sequence. Note the higher frequency of tree species (in the case highlighted oak) in the earlier part of the sequence (after Baruch 1986: Figure 4)

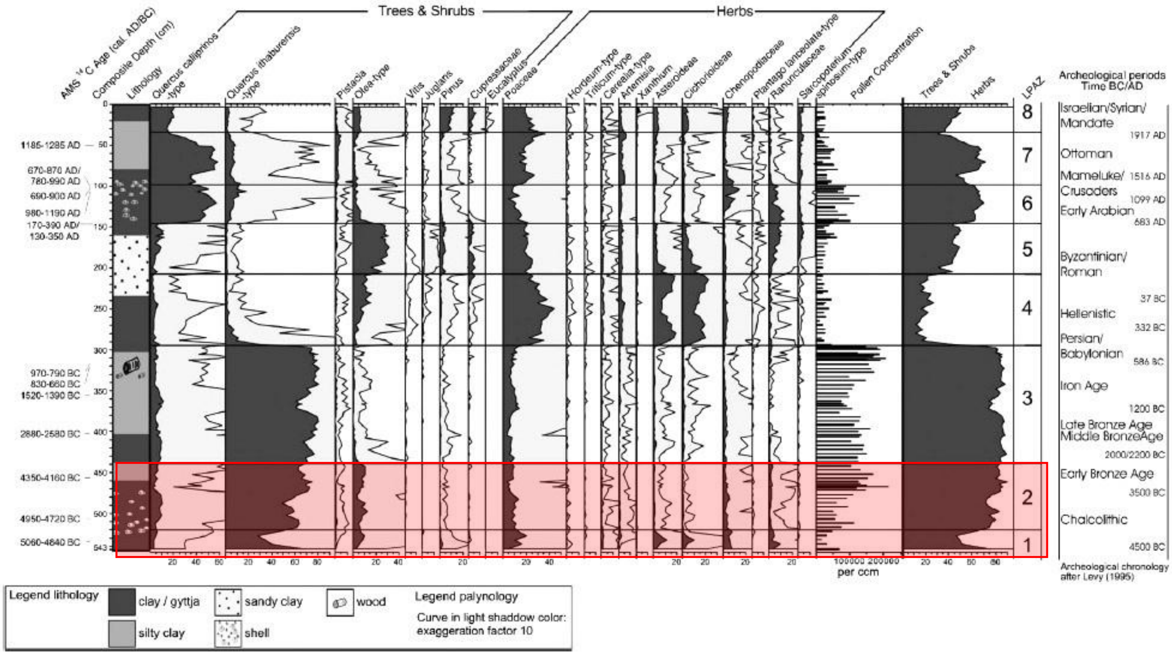


Figure 2.26. Pollen Diagram, Birkat Ram, Jaulan (after Schwab et al. 2004). The Chalcolithic period is highlighted (in red) and shows the high proportion of tree species seen during this phase. Also note the increase in olive during this phase and its decline after c.4350-4160 cal BC.

Analysis of the speleothems from stalagmites and stalactites within Soreq Cave, suggests a similar moist phase, with low $\delta^{18}O$ and $\delta^{13}C$ values being interpreted as indicative of a wet period, dating to around 6,500-5,400 BP, although the lowest correlating $\delta^{18}O$ and $\delta^{13}C$ appear around 4,200 BP [(Bar-Matthews et al., 1998: 203, Bar-Matthews et al., 1999: Figure 2) and see Figure 2.27]. Unfortunately, the relationship between low $\delta^{18}O$ and $\delta^{13}C$ are not fully understood, with the coupling of both low $\delta^{18}O$/high $\delta^{13}C$ and low $\delta^{18}O$/low $\delta^{13}C$ values being seen throughout the sequence and possibly relating to a number of different factors (e.g. Bar-Matthews *et al.,* 1999: 92). Moreover, as with many sequences from this region, dating at this site shows large ranges (Figure 2.28.), making chronological attributions difficult [it should be noted that these have since been refined (e.g. Bar Matthews *et al.,* 1999); although the dates are not listed in the 1999 publication preventing cross comparison with earlier ranges].

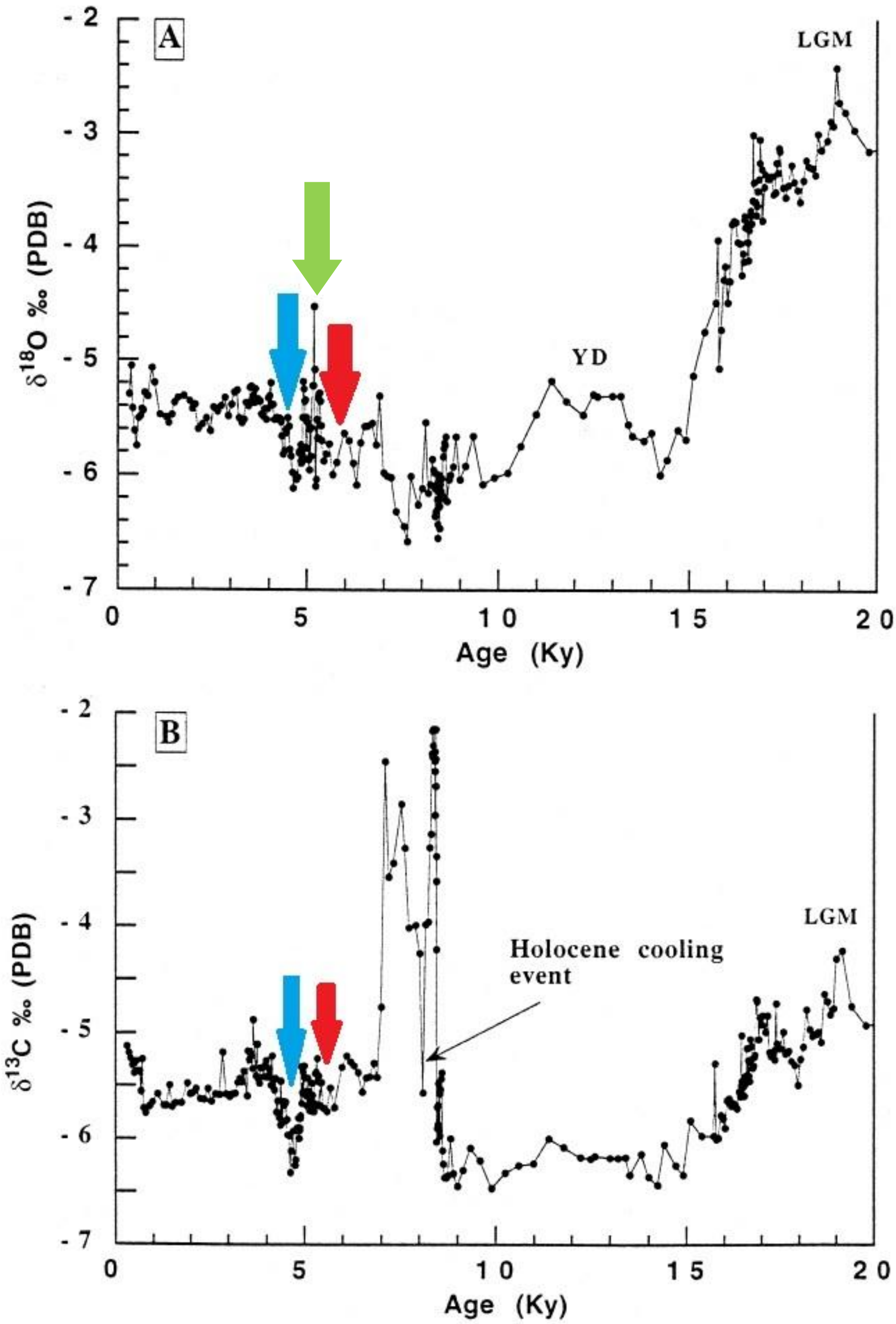


Figure 2.27.Soreq Cave isotope data, red arrows indicate the apparent moister climate and low $\delta^{18}O$ and $\delta^{13}C$ during the Chalcolithic-EB from c.6,500-5,400BP, whilst the blue arrows mark the correlating lowest values of low $\delta^{18}O$ and $\delta^{13}C$ at c.4,200 BP, the green arrow marks the oscillation in $\delta^{18}O$ seen c.5,200-5000BP (after Bar-Matthews et al., 1999: 90, Figure 2).

Soreq Cave Speleothems-U-Th dating		
Stalactite		
Sample	Corrected age years	±
2_N	1700	900
2_N	4400	900
1_1_72	4500	600
2_N	7200	2500
2_N	9300	2300
2_N	15,800	1700
Stalagmites		
2_Z	1300	1100
2_Z	5300	1400
12-Z	18,600	1500
12-Z	20,100	1900
8_4_7_3	20,600	2800
7_23	23,000	1200
12-Z	23,100	1600
7_23	25,300	3100

Figure 2.28. Dates from Soreq Cave speleothem (after Bar-Matthews et al., 1997: Table 1)

Burroughs (2005: 241-2) has suggested that the phase of increasing aridity, initially identified within the Early Holocene continues into the Middle Holocene, increasing the reliance upon irrigation agriculture. In turn, whilst decreasing rainfall in Mesopotamia can be seen during this period, increasing rainfall and snow in the Lake Van region, with winter run-off and spring melt into the Tigris and Euphrates, created the ideal conditions for irrigation agriculture, leading to the development of urban states and social complexity (ibid: 244). Increasing aridity during the Early-Middle Holocene (c.6.3-4.3kya) has been suggested via the Aammiq wetland core [Figure 2.29 (Hajar et al., 2008: 1097)]. Based on the increased magnetic susceptibility readings during this phase and plant macro-fossils suggesting soil disturbance, Hajar *et al.* (ibid.) suggest that similarly to later phases (e.g. 4.2kya event-see section 2.3.4), such disturbance may have been caused by increasing aridity. Such an assumption is problematic as disturbance may be caused by a variety of factors, including clearance, as well as heavy rainfall and increased surface run-off, although the impact of the latter would clearly be higher if preceded by a phase of aridity. Both examples demonstrate how climate reconstructions can be used in order to fit with or create grand narratives linked to social change. Moreover, both ignore the impact of human activities during this period, which considering the evidence for domestication and cultivation of species, such as the olive (see Figure 2.26. for the possible presence of domestic *olea* in Birket Ram sequence), as well as technological and cultural adaptations (see Chapter 9.4 for further discussion) limits our conclusions and interpretation of this evidence.

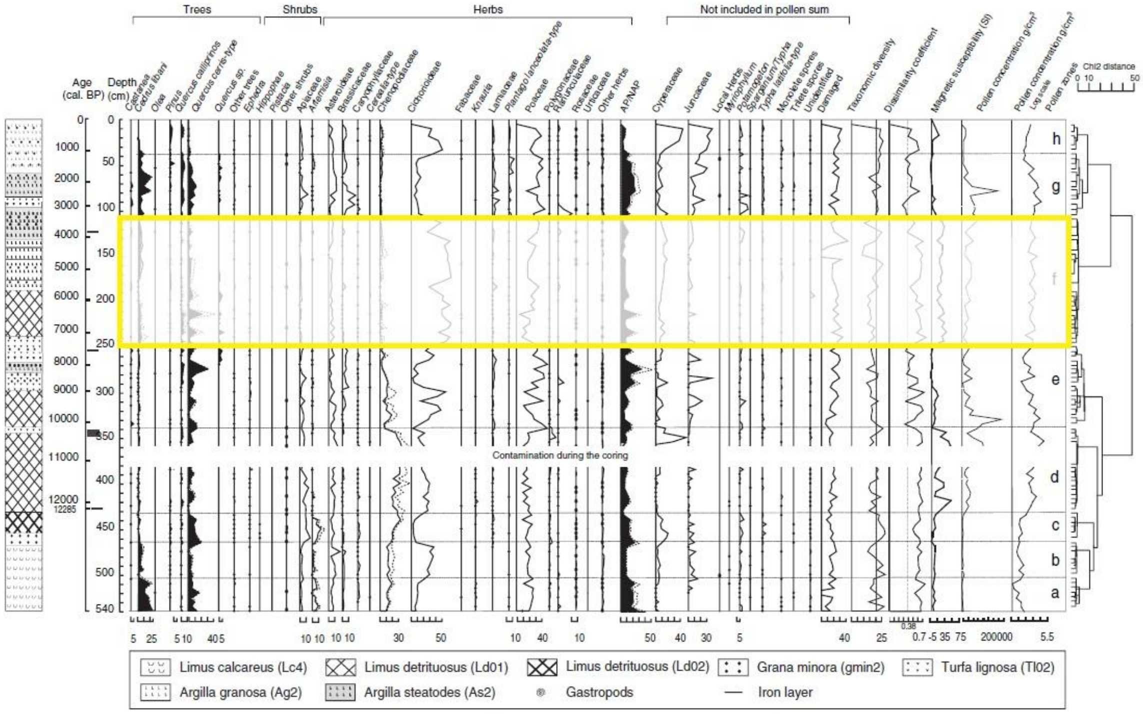


Figure 2.29. Pollen Sequence from Aammiq wetland, Southern Beka'a Valley (period of interest highlighted in yellow on the diagram) (after Hajar et al, 2008: 1096, Figure 6)

Investigators have also suggested that the transition between the Chalcolithic/Early Bronze Age may have been in part, related to climate, with a sharp oscillation in $\delta^{18}O$ being present c.5,200-5,000 BP [Figure 2.27 (Bar-Matthews et al., 1998: 206-210)]. A number of potential problems arise from this; firstly as outlined above the dating of these remains is associated with large errors (Figure 2.28.). Moreover, the interpretation is based on two assumptions; that the speleothems were deposited at similar temperatures as today and secondly, that the relationship between rain water and cave water has remained consistent over time (Bar-Matthews et al., 1998: 207-9). Both of these hypotheses need to be discussed in greater detail. Perhaps more fundamental is the hypothesis that a direct correlation can be made between the end of the Chalcolithic and the beginning of the Early Bronze Age [currently dated to c.3800-3600 cal BC (see Chapters 8-9 for further discussion)] and climate change. This is a highly problematic assumption, especially given our lack of precise understanding about the nature and dating of the transition between these two periods (Braemer et al., 2004: 33, 65), as well as the possible problems associated with being unable to precisely correlate or date palaeoclimatic records (e.g. Meadows, 2005: 635, Rosen, 2007: 97).

2.3.3. Early Bronze Age fluctuations:

Alternating conditions of dry and moist conditions throughout the EBA, with two distinct dry phases c. 3100-3000 BC (end of EB I) and then again c. 2600 BC, with a steady return to moist conditions c. 2500-2200 BC (Rosen, 2007: 81-2).

Research examining speleothems from Soreq Cave suggests that this period was the most climatically disturbed stage over the past 6,500 years, with fluctuating $\delta^{18}O$ and $\delta^{13}C$ levels being seen from around 7kya [Figure 2.27 (Bar-Matthews et al., 1998: 211)]. In contrast, other investigators, whilst acknowledging variability during this phase, characterise it as benefiting from generally moister conditions (Frumkin et al., 1994: 329). Investigations of pedogenic carbonate formations from the site of Göbekli Tepe suggest that the period between 6,500 BP and 4,000 BP can be seen as humid and warm, characterised by increased rates of carbonate growth and higher $\delta^{18}O$ and $\delta^{13}C$ values (Pustovoytov et al., 2007b: 324). It is interesting to note that whilst associated high levels of $\delta^{18}O/\delta^{13}C$ are considered, in this case, as relating to humid conditions, in other studies low values of $\delta^{18}O$ are considered as symptomatic of higher precipitation (e.g. Bar-Matthews et al., 1998: 203). This would indicate that it is often the association between these attributes and the broader patterns demonstrated by their fluctuations which facilitate interpretations. Interpretations which rely on a single variable may be misleading.

Investigations of the Lake Tiberias pollen sequence have focused on the manipulation of the local environment, with several episodes of local olive cultivation and declining oak values (subzone XI) being linked to the human management of the area [see Figure 2.30 (Baruch, 1986: 45, 1990: 284)]. Based on comparisons between this data and the En Gedi sequence, Baruch (1990: 288) argued that whilst supporting a localised history, the latter's dates should be rejected and that these cores record a synchronous event related to the large scale cultivation of olives. The beginning of the Lake Tiberias sequence [based on oxcal calculations and 99.7% accuracy ranges (see Appendix 2.1 for details)] is dated to c. 5879-2287 cal BC, whilst a date from the middle of the X2 subzone returns a date of c. 1977-398 cal BC. These large date ranges are highly problematic and emphasise the difficulties of comparing sequences within this region. Moreover, Baruch's (1990) generalisation highlights the problematic nature of dealing with contradictory data with researchers falsely rejecting the findings of one set of data due to their belief in another. Similar evidence for the anthropogenic influence upon the environment is recognised elsewhere, with phases of olive cultivation being seen in the Hula Pollen sequence [Figure 2.31 (Horowitz, 1974: 408, 413)] and Birkat Ram core [Figure 2.26 (Schwab *et al.*, 2004)]. In both of these cases a Chalcolithic, rather than EBA date, is suggested. The potentially conflicting dating of these different sequences highlights our potential bias, when interpreting evidence. As such, whilst vegetation change during the Late Pleistocene/Early Holocene is interpreted as relating to climatic events those within the later Holocene are often seen as anthropogenic in origin (Baruch, 1994: 103), assumptions which potentially need to be questioned.

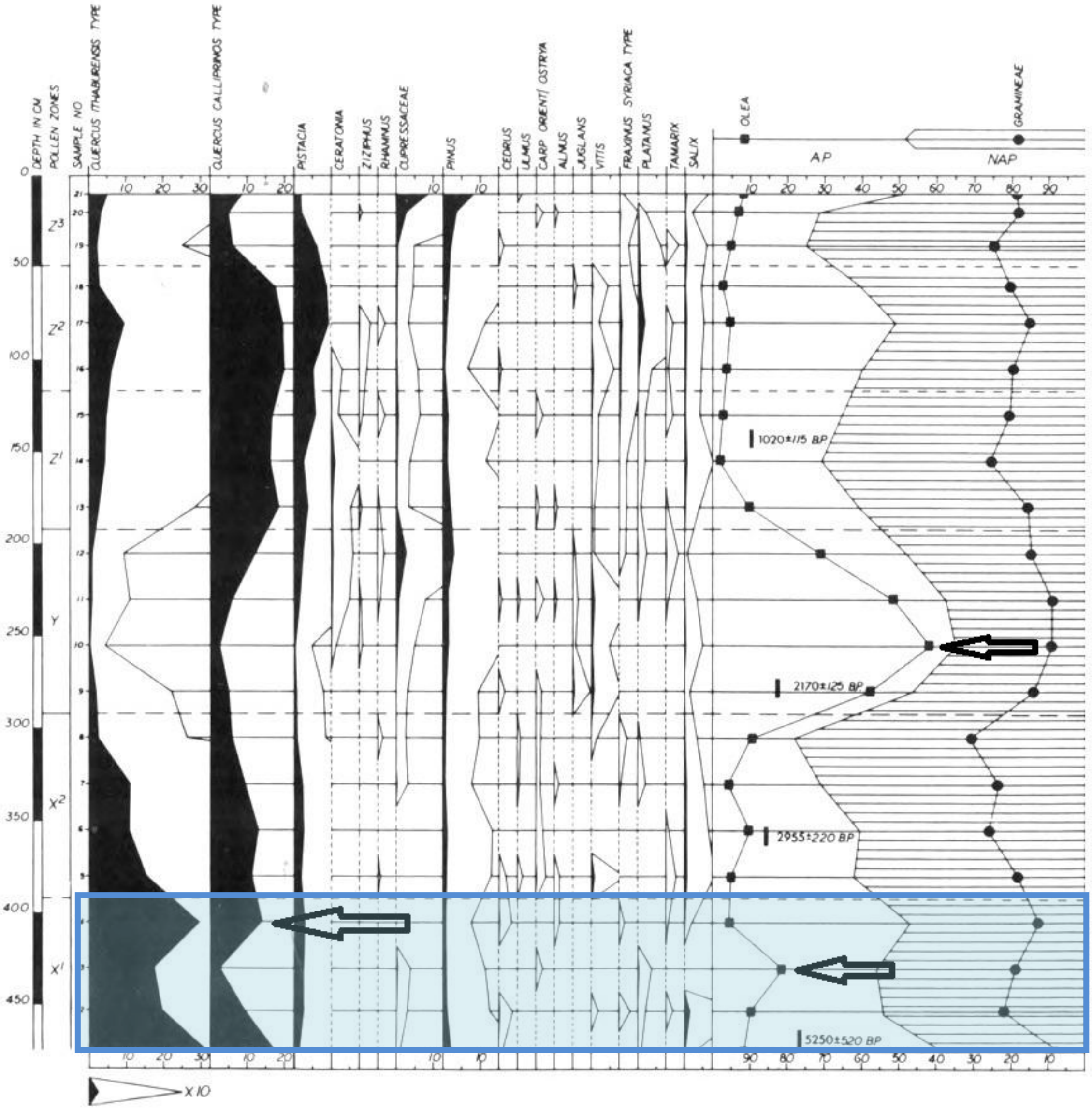


Figure 2.30. Lake Tiberias sequence showing a peak in olea (olive) cultivation marked by arrows on right, whilst decline and following peak in quercus (oak) can be seen marked on the left (after Baruch, 1986: Figure 4).

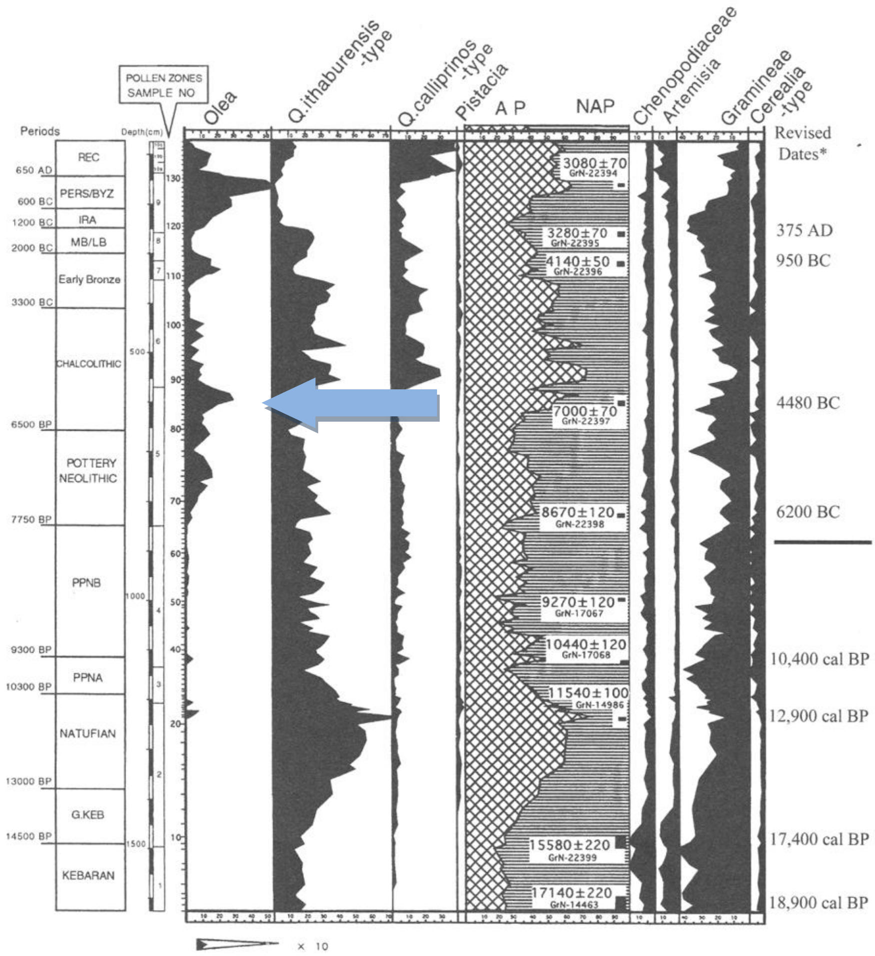


Figure 2.31. Lake Hula Pollen Diagram, the peak in possible olive cultivation is marked by the blue arrow (After Baruch and Bottema, 1999, Revised chronology after Cappers et al., 1998, Compiled after Rosen, 2007, Revised Chronology after Wright and Thorpe, 2003).

2.3.4. Early Bronze IV and the collapse of Early Bronze Age culture:

Increasing aridity at the end of the 3rd millennium BC, coinciding with the EBIV and so-called collapse of Early Bronze Age society (Rosen, 2007: 143).

One of the main periods discussed in relation to aspects of climate and associated cultural change is the end of the Early Bronze Age. Research has led to the suggestions that the abandonment of sites, across the Near East and particularly in Northern Mesopotamia, was associated with a major environmental change (Cullen *et al.*, 2000: 379, Riehl, 2008: 44). At Tell Leilan phases of thin volcanic ash, which were overlain by a thick accumulation of aeolian silts bearing no artefactual material, were interpreted as representing the onset of arid conditions (Cullen *et al.,* 2000: 379). Given the associations made by the authors between this apparent 400 year event and the collapse of Akkadian civilisation, an error range of +/- 150 years perhaps suggests that such a direct correlation is somewhat premature. Moreover, the Oman core samples appear to fall in the middle of values recorded for the Indus, Zagros and Mesopotamia, thus the Mesopotamian origins of the aeolian deposits can be debated (Figure 2.32.). We cannot necessarily assume that an onset of arid conditions led to population de-stabilisation (e.g. Cullen *et al.*, 2000: 382), with human groups adapting and reacting to climate change in potentially very different manners. It is also interesting to note, that whilst $\delta^{18}O$ values from the Soreq Cave sequence suggest a significant peak c. 4.1-4.0kya (Figure 2.27), this is not visible in the Oman Core data, emphasising the need to consider many climatological changes on a local, rather than regional basis (Figure 2.33). Similarly, investigations of the Jeita Cave speleothem record shows no evidence of an increased phase of aridity, indeed a relatively wetter period between 4.0-3.0ka is apparent (Verheyden *et al.*, 2008: 379-380). Although the absence of the 4.2ka in the record is partly dismissed by the investigators as relating to the low time resolution of this sequence (ibid: 380) it is clear that our understanding of the nature of this event across different regions is still relatively limited. Despite correlating climatic shifts with societal collapse and environmental crises, Frumkin's (2009) analysis of a *Tamarix* subfossil from Mount Sedom shows several peaks and troughs in precipitation throughout this sequence [also note the potentially large errors associated with the dating (Appendix 2.4; 2009: 325, Figure 7)]. This would suggest that rather than a single catastrophic event this period (c.2300-1900 BC) was characterised by a series of climatic fluctuations with a general progression towards increasing aridity.

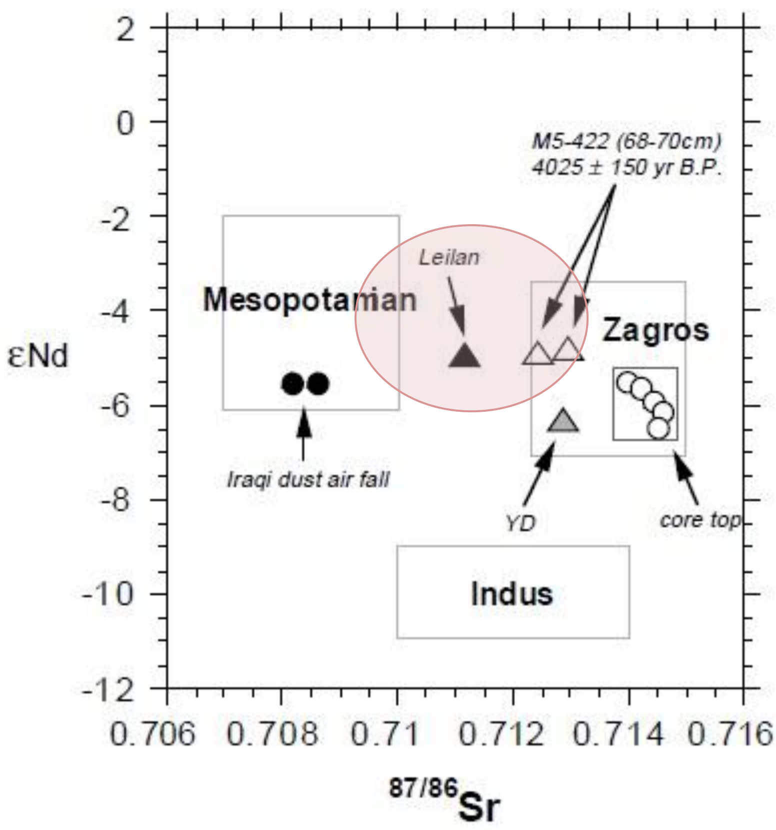


Figure 2.32.Isotope values from aeolian deposits at Tell Leilan and the Oman Core. Whilst very similar, values from the Oman Core also show similarity to Zagros and Indus values (after Cullen et al., 2000: Figure 3)

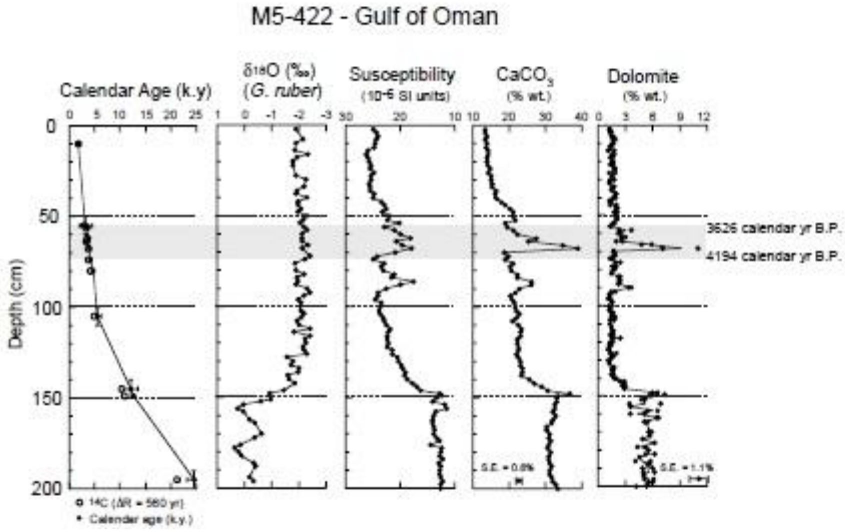


Figure 2.33. Data from the Gulf of Oman Core (after Cullen et al., 2000: Figure 2). Note the fairly consistent values of δ18O during the period highlighted.

Rosen (1997: 25) argues that failure to adapt to these climatic changes was due to both social and technological elements. However, as she also argues the response to this environmental stress would have been diverse and regionally variable (ibid: 26). Her analysis examining phases of alluviation and degradation of alluvial terraces within the area of *Nahal Adorayim, Nahal Shiqma* (Negev) suggests that whilst increasing aridity may have played a role, anthropogenic manipulation could also have impacted upon this region (ibid: 29-30). Riehl (2008: 49-50) has also highlighted the potential role of human exploitation or over-exploitation of the landscape, emphasising the influence of a range of socio-economic or political factors, which may have acted as inhibitors to economic adaptation. Correlating climate with agricultural developments, she also suggests that from the Middle Holocene onwards a trend towards increasing aridity can be seen via the increasing cultivation of drought resistant species, such as barley. Water demanding crops, such as flax and garden pea, are suggested to decrease into the MBA (Riehl, 2009: 103, 105, Figure 7 and 9). Drier conditions after c. 4kya are also suggested by Stevens, Wright *et al.* [(2001: 753), although again the dating of these sequences is problematic (see Appendix 2.1 for further details)]. It is also noted by Pustovoytov *et al. (2007b: 324)* that the accumulation of pedogenic carbonate appears to cease after c. 4000 BP, suggesting increasing aridity. Given the above substantiation, evidence for increasing aridity c.4000BP is fairly compelling. However, due to the problematic nature of dating such events precisely, as well as our lack of knowledge concerning the localised effects of such climatic change, direct associations with social and cultural events are challenging. With this in mind, the current evidence for palaeoclimatic reconstruction in the four main case study areas will now be discussed.

2.4. Reconstructing past environments in sub-optimal zones

2.4.1. The Homs NSA (Basalt region)

As of 2010 no palaeoclimatic reconstruction had been undertaken within the Homs region, partly due to issues of preservation, as well as the nature of work within the region (predominated by survey, rather than excavation). However, a number of researchers have begun to consider possible palaeoclimatic proxies from the nearby site of Tell Misrifeh [Qatna (e.g. Bonacossi, 2007, Fiorentino and Caracuta, 2007, Trombino, 2007, Valsecchi, 2007)]. This site is located within an area of around 350mm of rainfall per annum, with a moister foothill zone to the north and an arid steppe environment to the south and east (Figure 2.34.). As such, it is particularly sensitive to aspects of short term climatic variation and an important area for the consideration of human adaptation and reaction to short and abrupt climate change (Fiorentino and Caracuta, 2007: 154). Whilst this area, despite its spatial vicinity, offers no direct comparison for the Homs basalt, it highlights a number of palaeoclimatic trends, which may have had a profound effect upon the wider region, albeit in a varied number of ways. At present it offers the only potential indicator that we have for any aspect of palaeoclimate within central western Syria.

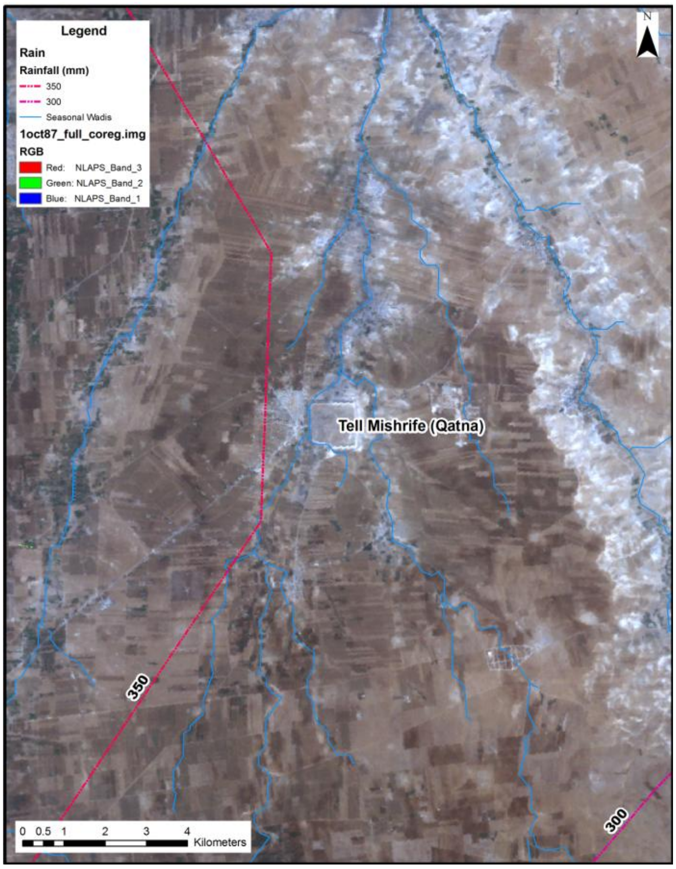


Figure 2.34. Location of Tell Misrifeh (Qatna) and distribution of rainfall isohyets across this region

A variety of palaeoclimatic reconstruction methods have been used at the site and within its vicinity. These range from the analysis of the stable carbon isotope values of plant remains from archaeological contexts (Fiorentino and Caracuta, 2007: 155-6), to micromorphological reconstructions of phases of colluviation and fertilisation (Trombino, 2007: 120). One of the major problems involved with such analysis is the degree to which the findings can be considered as relating to environmental and climatic change, rather than anthropogenic adaptation and preference. Analyses from the various research programmes at Qatna have suggested a number of broad phases of climatic and environmental change with increasing aridity within the region being proposed from c. 2800 BC (EB II), a pattern which is suggested to correlate with proxy data from the rest of the Levant (Fiorentino and Caracuta, 2007: 156). In addition, the phase of humidity seen in the Soreq Cave sequence c. 2600 BC (Bar-Matthews *et al.*, 1998: 206-11) is said to be demonstrable within the Qatna data, with Fiorentino, Caracuta and Trombino's research suggesting a more humid climate during the early 3rd millennium than at present (Fiorentino and Caracuta, 2007: 156; Trombino, 2007: 121). Rosen (2007: 81-2) in her review of the Levant suggested that a dry phase was apparent c. 3100-3000 BC, the end of EB I, rather than EB II, as the Fiorentino and Caracuta date would suggest. Additionally, she argued that the phase of humidity within the region appeared to date to c. 2500-2200 BC, rather than the c. 2600 BC as suggested by Fiorentino and Caracuta. These contrasting dates highlight the difficulties of trying to tie chronological patterns from various sources to single climatic events, especially when, as mentioned in the previous section wide error ranges are present. Furthermore, Fiorentino and Caracuta's (2007) work focused solely on $\delta^{13}C$ data, whilst $\delta^{18}O$ data might indicate a contrasting pattern of climatic development.

Despite these issues, if Fiorentino and Caracuta's (2007) proposed scenario is correct, albeit with some leeway for dating, such aridity/humidity would have had potentially profound effects upon occupation and utilisation of resources within the Homs basalt. A wetter phase prior to 2800 BC would have increased the availability of water within the basalt, although the seasonality of such availability may still have been a concern. In addition, it is not clear how the phases of increasing aridity and then increasing moisture identified during this period would have affected the region (e.g. Bar-Matthews *et al.*, 1998: 206-11, Fiorentino and Caracuta, 2007: 156, Trombino, 2007: 121). The suggested increase in aridity towards the end of the 3rd millennium BC would have restricted the way in which this area could have been exploited and may have influenced occupation patterns during this period (see Chapter 7).

One of the main issues with the analysis above is the applicability of climatic data from the Qatna region to the Homs basalt. In addition, even if we consider the scenarios to be correct and to have affected wide areas of the Levant it is clear that the impact and potential chronology of these fluctuations would have varied across different topographical, geological and environmental regions. As such, correlations between the possible climatic fluctuations during the Holocene and cultural and social developments, occurring not only within the Qatna region, but also the rest of the Levant (e.g. Fiorentino and Caracuta, 2007: 156) are problematic. Examination of the pollen sequence data from the lacustrine cores at Birket Ram, Jaulan has suggested that this region may have been buffered from various climatic events due its location within the shadow of the Hermon mountains [(see section 2.4.3 for further discussion (Neumann et al., 2007)]. Given the lower modern precipitation rates of the Homs region, in comparison to the Jaulan (see section 2.2.3), buffering may not play a role within this area. However, its location at the north-eastern edge of the Homs-Tripoli gap, as well as the presence of the limestone hills of Masyaf to the north-east may have played a role in creating a micro-environment within this region. Indeed, current conditions within the Homs basalt indicate a distinct environmental zone, with temperatures, wind and precipitation patterns differing from those of the neighbouring Marl region. Given the higher rainfall in this region today (400-600mm in comparison to 300-500mm for the Marl), it may have been that the impact of decreasing precipitation in this region was not as problematic as in areas further south.

Until palaeoclimatic work is carried out within the Homs NSA, these discussions have to remain conjecture. However, they highlight the need to consider climate within this area, both in relation to wider regional developments, as well as in relation to localised micro-environmental adaptations/changes.

2.4.2. Hauran

Relatively few considerations of palaeoclimate have taken place within this region and as such our understanding is limited. Recent work by Willcox (1999) has demonstrated the potential of analysing charcoal samples from archaeological sites, in order to consider their wider environmental context. However, obvious difficulties are apparent with such a study. Firstly, according to Willcox (ibid: 713), the precise identification of species from the charcoal samples was difficult and relied on comparison with a range of reference material from different localities across the Near East. Furthermore, we can never conclusively suggest that there is a direct relationship between proxy environmental data and palaeoclimate, especially when dealing with archaeological sites and the potential of anthropogenic choice and selection. Despite these issues, Willcox (ibid: 714) suggests that from the Neolithic until around the EBA forest steppe species, which today require a minimum of 350mm of rainfall per annum, were much more widespread within the region. In contrast, he argues that from the MBA onwards a reduction in forest steppe taxa could be seen, although whether related to anthropogenic over-exploitation of species or the onset of aridification can be debated (ibid.). It is suggested that this broad trend is reflected in pollen diagrams from Lake Tiberias (Baruch, 1986: 25), although Baruch mentions this process of clearance and forest taxa decline starting within the Early Bronze Age (Figure 2.30.), possibly challenging any direct comparisons between the two sources. Moreover, Wilcox's (1999) analysis is based on a comparison between only three sites (Figure 2.35.), all of which have been subject to differing levels of excavation, study, sampling and analysis. He gives little thought to differential levels of preservation and recovery of species both within and between sites. Additionally, the contrasting environmental locations and potentially different subsistence strategies employed by these sites are not sufficiently discussed. Thus, whilst the presence of a range of forest steppe taxa at the site of Umbashi may indicate that such species grew closer to the site than at present, equally we must be wary of the representative nature of such material, especially considering the small number of samples from the EBA in contrast to the MBA at this site (Figure 2.36.).

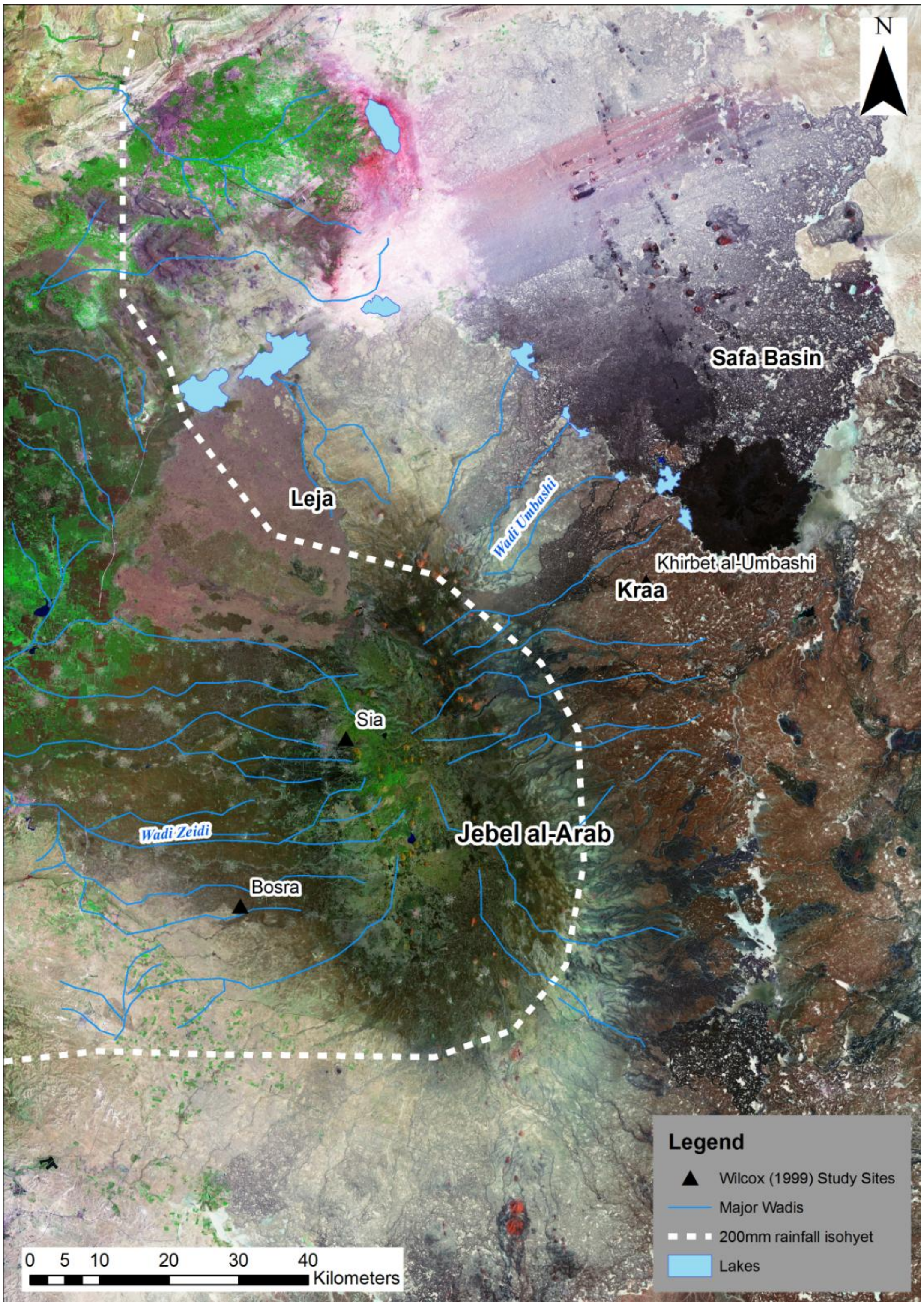


Figure 2.35. Location of sites used within Wilcox's study

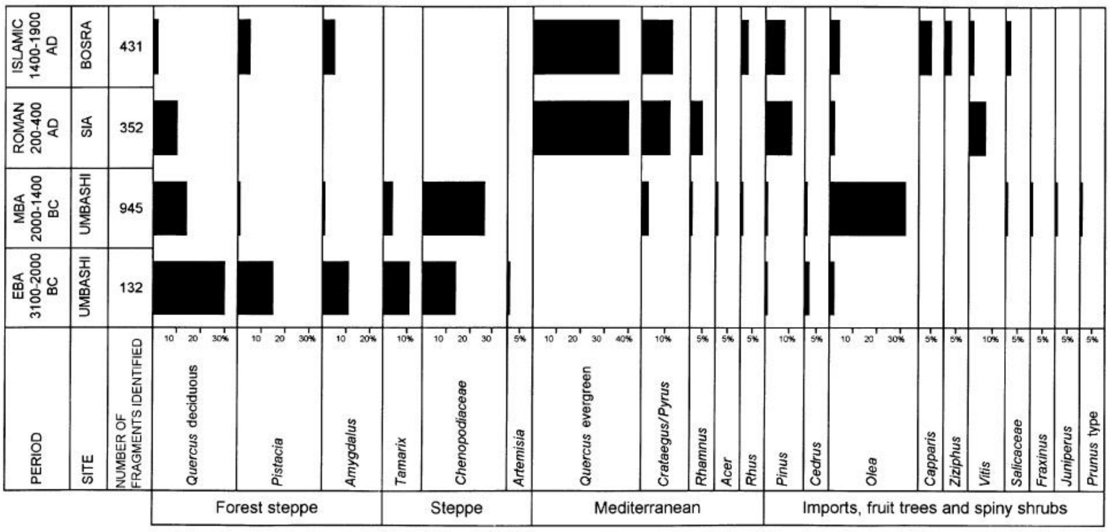


Figure 2.36.Charcoal remains by species from sites within the Hauran (after Wilcox, 1999: Figure 3).

Our knowledge concerning the local environment of the Hauran over the course of Early-Middle Holocene appears to be flawed. As such it is difficult to make any definitive statements concerning the influence of climate upon the utilisation of this region. However, given the location of this area on the edge of the modern dry-farming limit, as well as ethnographic data which indicates the severity of crop failure within this region in the late 19th century (Scholch, 1981: 46), it is clear that phases of aridity would have greatly impeded activity. They may have even prevented dry-farming activities, or at least made some level of irrigation or hydrological manipulation necessary. Conversely, given the fertility of the soils in this region (Wilcox, 1999: 711), an increase in moisture would have created new opportunities for exploitation and intensification, possibly leading to expansion into areas further east and south.

2.4.3. Jaulan

Schumacher's (1886: 25) observations suggest that tree cover within the 19th century Jaulan was significantly higher than currently observed in the area. This has obvious implications for our understanding of how this landscape was utilised within the past. Not only would denser tree cover have provided different opportunities in terms of building materials and fodder/forage for animals, it would have also potentially necessitated, at least in certain areas, clearance activities to take place. Archaeological interpretations of this area have often relied on climatic reconstructions from adjacent locales, such as the Huleh Basin (Epstein, 1998: 2). However, several pollen sequences exist within the region [Lake Tiberias (e.g. Baruch, 1986, 1990) and Birket Ram (e.g. Neumann *et al.*, 2007, Schwab *et al.*, 2004, Weinstein, 1976) and see figures 2.25 and 2.29.]. Weinstein's (1976: 561) research at Birkat Ram predominantly focused upon the Quaternary sequence, however, he suggested the presence of a dry Preboreal and Boreal stage at the beginning of the Holocene. Recent work, rather than suggesting such broader trends, has begun to indicate the localised nature of sequences within this region, with pollen cores from Lake Tiberias and Birket Ram being used to construct patterns of anthropogenic activity over the past 6000 years. These cores have demonstrated the effect of humans on the geo-biosphere, with Schwab *et al.* (2004: 1723) identifying four main phases of human occupation and anthropogenic manipulation of the environment, interspersed with regeneration of wooded areas. Their results highlight various fluctuations in the percentages of olives, evergreen and deciduous oaks, which they suggest could be related to human impact upon the palaeo-environment [(ibid: 1728) see section 2.3 for an outline of this research].

The most interesting approach to this region has been taken by Neumann *et al.* (2007). On the basis of the statistical likelihood of species identified within the pollen cores from Birket Ram being associated with particular climatic conditions, they constructed a model of climate change over the past 6,500 years. They concluded that this region appeared to be buffered from major climatic fluctuations with oscillations in pollen taxa being related to anthropogenic, rather than climatic factors [(Neumann *et al.,* 2007) see Figure 2.37.]. There are problems with the methodology, with the ^{14}C dates used in the sample requiring correction for reservoir effects. Furthermore, only nine taxa were employed for the climatic reconstruction. However, in contrast to other studies their approach is grounded within the concept that climate and associated subsystems are not always directly related to one another and as such it will not always be possible to directly correlate climate to palaeobotanical data. Given the tendency of some researchers to directly associate climatic models with cultural/social events (e.g. Cullen *et al.,* 2000), this approach is refreshing. Furthermore, it offers an interesting example of how an area, despite broader climatic fluctuations, may have in-built properties which prevent these changes from severely impacting the region. If this hypothesis is correct the Jaulan, or at least the micro-environment around Birket Ram, may have served as an important buffer for populations exploiting the region. Having said this, the good can also come with the bad, and just as this region may have only felt minor effects from increasing aridity it would presumably also have felt less of the benefits of increased humidity and precipitation.

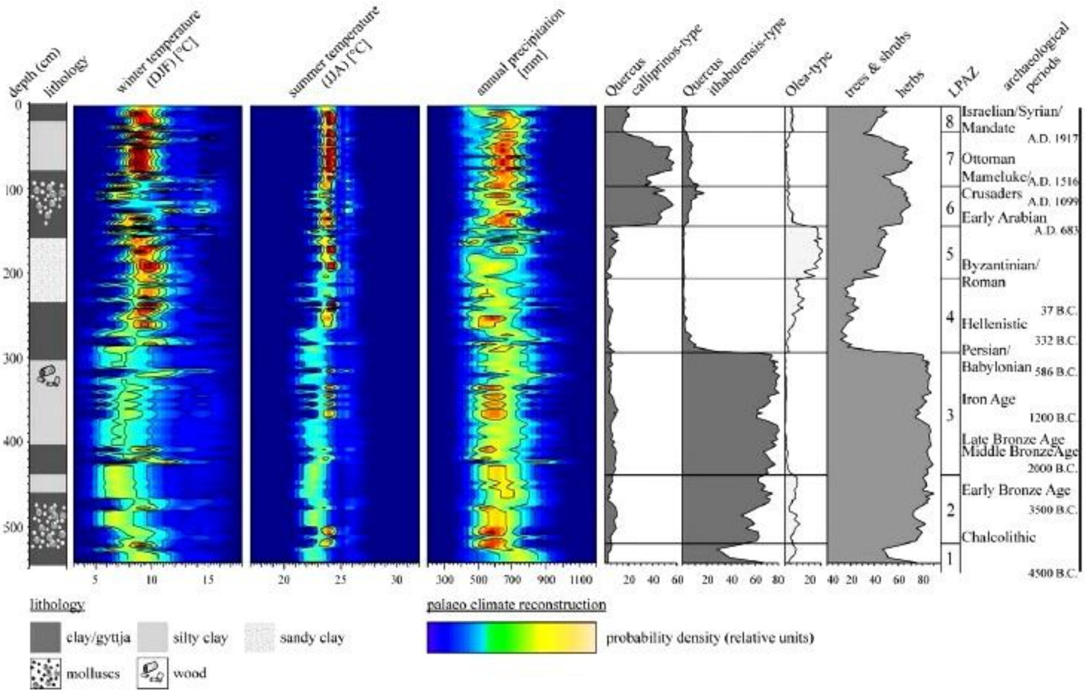


Figure 2.37.Probability figures for winter/summer temperatures and annual precipitation from the Birket Ram pollen sequence. Whilst the largest variability can be seen within winter temperatures it appears that annual precipitation and summer temperature has been broadly consistent over the Holocene, suggesting that this area has always been influenced by a Mediterranean climate (after Neumann et al., 2007: Figure 3)

2.4.4. Negev

Palaeoclimatic work within the Negev has suggested a number of important trends, which have profound implications for our understanding of past human occupation. Firstly, pollen sequences obtained from the Negev highlands have led to the suggestion that this region supported a wetter climate during the Neolithic and Chalcolithic than today's present regime. This has been suggested on the basis of the presence of species of trees, including oak, pine, almond and juniper within the Sede Boqer core, all of which are absent at present in the region (Avner, 1998: 183, Horowitz, 1976: 66, 1979: 248). These species were identified on the basis of small samples, often less than 200, and in most cases can only be broadly dated to the Chalcolithic (Horowitz, 1974: 408). Geomorphological research has also pointed to phases of alluviation and sedimentation at a range of ancient alluvial terraces and archaeological sites, possibly suggesting a larger amount of rainfall during the past (Avner, 1998: 184). This finding is somewhat disputed by the presence of ancient sand dune accumulations in the Mediterranean coastal valley, which are more indicative of a period of aridification during the Neolithic and Chalcolithic (ibid).

Despite these possible variations Goodfriend (1990: 193-4), through the examination of isotopic compositions of snail shells, has suggested the presence of a climatic regime similar to that of the present day. One major difference is suggested in relation to the position of the 150mm rainfall isohyet, which he argues would have fallen around 20km further south, during the period between c. 6500-3000 BP (Figure 2.38). In addition, based on analysis of the $^{18}\delta O$ of snail shells, rainfall during the first half of this period (c.6500-6000 BP) was boosted by a number of different rain bearing systems. This is also potentially reflected by the various phases of alluviation within the regions of Adorayim and Shiqmim [(Goodfriend, 1991: 423-4, Rosen, 1986) and see Figure 2.39.]. Several issues arise from this interpretation. Firstly, as Goodfriend (1990: 191) suggests, not all of the studied samples suggested this trend and cannot simply be rejected. Moreover, as already mentioned the dates obtained for these samples have substantial errors associated with them (Figure 2.22.). Corroborating evidence from neighbouring regions, especially relating to the effect of outside rain bearing systems is currently unavailable (Goodfriend, 1991: 424), preventing any conclusive arguments to be made. Furthermore, the impact and thus associated longevity of such trends are yet to be discussed and at present direct correlations between climatic events and settlement patterns cannot be made.

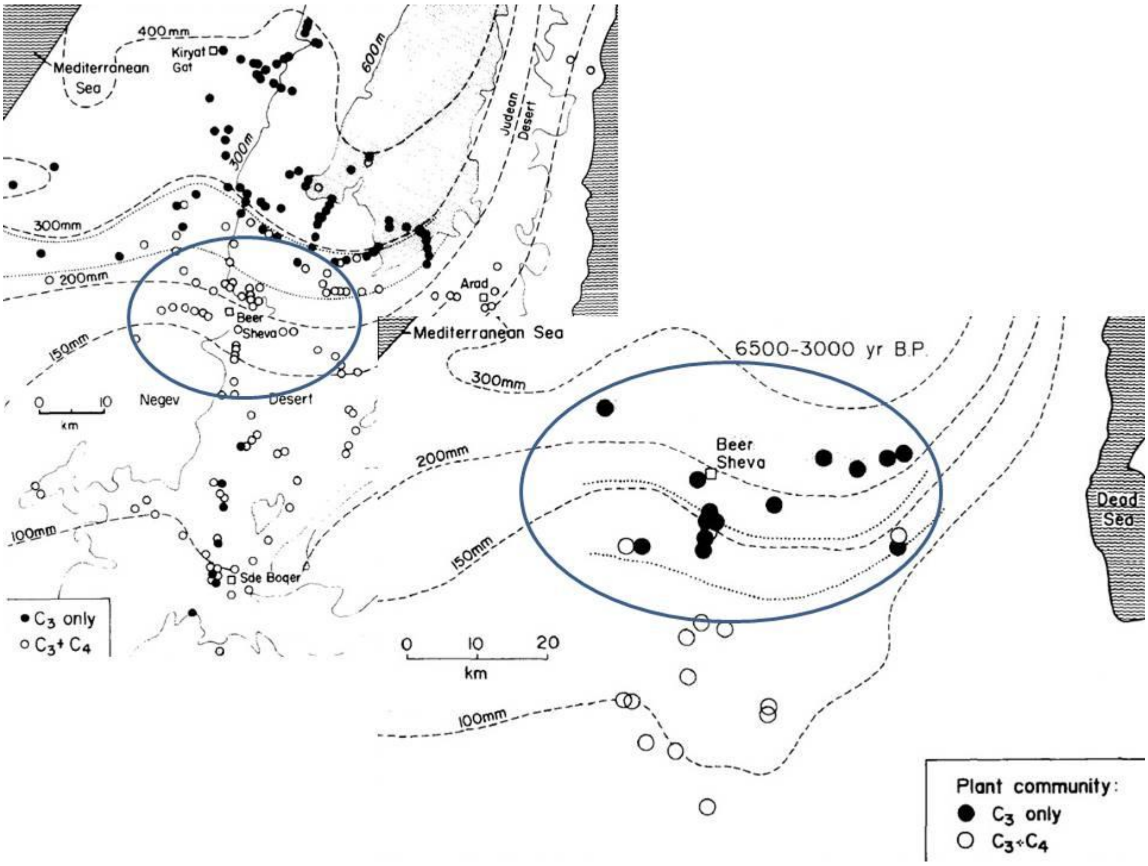


Figure 2.38. The distribution of C4 and C3 vegetation in 1990 compared to reconstructed distribution of C4 and C3 vegetation in 6500-3000 BP. Note the area circled which in 1990 showed no evidence for pure C3 communities, but which conversely was dominated by these species between 6500-3000 BP (after Goodfriend, 1990: Figure 1 and 5)

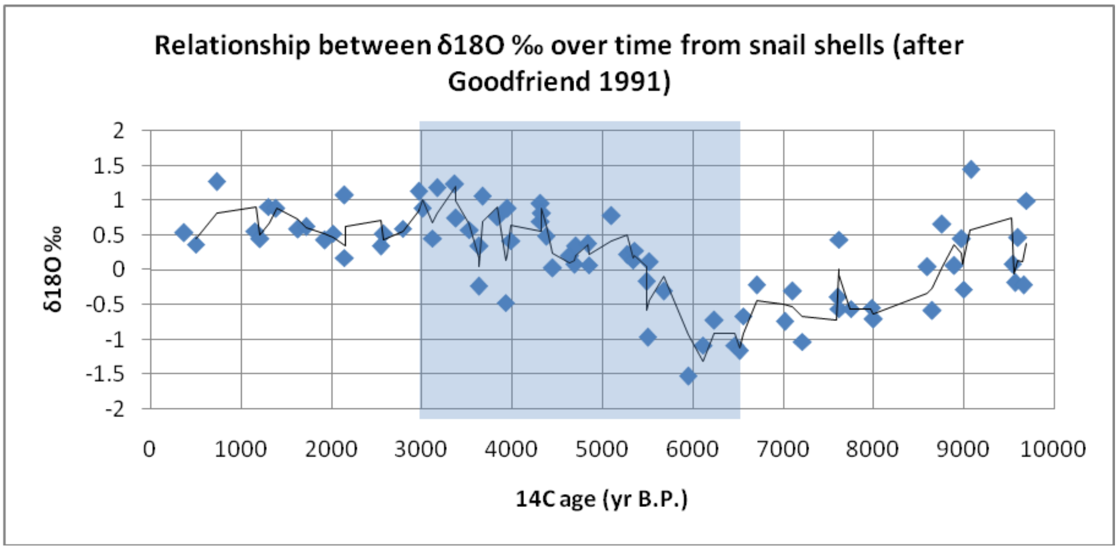


Figure 2.39. Plot of $\delta^{18}O$‰ based on 76 samples, errors for dates range between +/- 200 years and +/- 360 years (after Goodfriend, 1991) (see Appendix 2.4B for related Table).

Given the above evidence the potential for this region to have supported a higher rainfall pattern during the past is interesting and would have had a major impact upon subsistence activities, facilitating cultivation of crops and pasturing of animals. As such the lack of water, which Marx (1967: 20) mentions forcing Bedouin groups in the 20th century to move, despite the draw of the fertile soils may have been less problematic. Despite this, the ability for populations to adapt and exploit landscapes which appear relatively inhospitable to the modern eye should not be underplayed. Indeed, as ethnographic and archaeological work has demonstrated this region has been utilised in a wide range of different ways over time (see chapter 8). While increased moisture may have played a role in the intensification of activity in this region, until further evidence is collated it should not be viewed as the prime facilitator for settlement and utilisation of this landscape.

2.5. Summary and Conclusions

This chapter has presented an overview of our current knowledge concerning environment and climate within the study areas chosen for this thesis. In addition, it has offered a general interpretation of climatic data, in relation to social change and human adaptation over the course of the Early to Middle Holocene. In doing so, it has aimed to emphasize the importance of climatic interpretations and analyses for our understanding of past populations interaction with the 'natural' world, as well as highlight the need for caution when dealing with grand narratives of climate change. As many researchers are beginning to suggest climate change cannot be seen as an overarching phenomena, which imposes its conditions on human populations, but instead needs to be viewed as a series of reciprocal relationships between the elements of environment, hydrology, geology, climatology, human adaptation and social, economic and political change (e.g. Ingold, 1986, Ingold, 1996, Ingold, 2000, Rosen, 2007, Watkins, 1997). An awareness of the environmental complexities of the regions in which a researcher is carrying out their work is pivotal for any basic understanding of past settlement patterns and human adaptations. As such this chapter has provided the background against which to consider the social and cultural aspects of settlement and utilisation of the landscape in Chapters 5-9.

CHAPTER 3: SETTLEMENT, BURIAL MONUMENTS AND ARCHAEOLOGICAL ACTIVITY

Introduction

Stone monuments such as dolmen have been widely recognised within the Levant since the 19th century (e.g. Bliss, 1895, 1899, Burton and Drake, 1872, Conder, 1886, 1889b, 1892, 1881, 1882, 1883, 1885, 1889a, De Saulcy, 1865a,b, Irby and Mangles, 1868, Oliphant, 1880, 1885, Schick, 1879, 1890, 1889, 1890, Schumacher, 1886, 1888, 1899, Tristram, 1874, Tyrwhitt-Drake, 1872, 1874a,b). However, the majority of research has focused upon the typology of these monuments (e.g. Abel, 1922, Bahat, 1992, Baker, 1996, 1998, Epstein, 1972, 1973, 1985a, Gilead, 1968, Haiman, 1992a, Nasrallah, 1950, 1963, Steimer-Herbet, 2000, 2004, 2004-5, 2006, Steimer-Herbet and Braemer, 1999, Stékélis, 1935, Turville-Petre, 1931, Worschech, 2000, 2002, Yassine, 1985, Zohar, 1989), with a more limited consideration of their landscape location and associated environmental, topographical, geological and astronomical attributes (Aveni and Mizrachi, 1998, Bradbury, 2010, Bradbury and Philip, in press, Haiman, 1992a, Mortensen, 1992, Polcaro and Polcaro, 2006, Steimer-Herbet, 2004, Vinitzky, 1992). This chapter aims to place known stone monuments from the Levant within this wider context.

In order to complete a meaningful study examining the basic distributions in stone monuments a list of structures was compiled from published sources ranging in date from the 19th to 21st centuries AD (Appendix 3.1). The reliability of evidence is highly varied and ranges from records of merely sighted structures (e.g. Karge, 1917: 429) to detailed excavation reports (e.g. Dubis and Dabrowski, 2002). In some cases the location of monuments has been possible to within a few hundred metres accuracy or less, especially when structures are visible on satellite imagery, in other cases locations may be as much as several kilometres out. Due to this the results in this analysis should be treated as indicative of broad trends only. The majority of monuments are undated. Where available, dating material or chronological interpretations have been included, however, a full analysis has not been possible. What is apparent from the sample of records, which do have chronological interpretations, is the broad span of time periods represented ranging from the 6th-5th millennia BC [e.g. Eilat (Avner and Carmi, 2001: 1215)] to the Iron Age and later [e.g. MacDonald's Site 190 (MacDonald, 1992: 269)]. Such variation demonstrates the highly problematic nature of associating monuments with a single phase of use (see Chapters 4 and 6 for further discussion). Due to these problems no consideration of the distribution of monuments by period has been attempted. The below is an overview of a conglomeration of structures dating to c.10000 years of human history. Thus, we have to question how representative any examination of monument distribution can be.

3.1. Typologies: Useful Categorisations or Misleading Falsehoods?

Possibly the most comprehensive studies to have adopted a typological framework are those of Epstein (Epstein, 1972, 1973, 1985a) and Steimer-Herbet (2004). Epstein's work in the Jaulan region focused on the study of dolmen monuments. Her basic approach, whilst largely designed due to the need to reduce the time spent recording and examining monuments, has been widely adopted within this region (Stepansky, 2005: 41-2, Zohar, 1989) and indeed throughout much of the Levant (e.g. Steimer-Herbet, 2004). Epstein (1985a: 22-25) divided the dolmen monuments of the Jaulan into six basic types, each of which were broken up into a number of variants (Figure 3.1.). All of these she argued shared a common denominator, with hybridisation occurring between types. Her analysis differentiated between tombs with a single capstone and no covering tumulus (Types 1 and 3); tombs with multiple capstones and a tumulus, where the capstones were still visible (Types 2, 4 and 5) and tombs with multiple 'passage' chamber capstones which were entirely covered by a tumulus (Type 6). Building on this work other researchers have developed their own typologies which emphasize variations in building materials and the presence/absence of associated features such as, outer enclosures or rings of stone and covering tumuli (e.g. Dauphin and Gibson, 1992: 14-15). Epstein (1985a: 21) argued that the majority of dolmens were concealed by a tumulus of piled up stone.

In contrast, Dauphin and Gibson (1992: 25) have recorded large numbers of what they identify as 'free-standing' dolmen. They acknowledge the potential for many of these structures to have been covered by an earthen mound (ibid.). The effort required for the erection of such a mound, especially within a heavily stone covered region such as the Jaulan, is not fully considered. Neither is the impetus for the use of earth, rather than stone which, given the basalt surface cover, would perhaps have been more logical. Moreover, what both Dauphin and Gibson (1992) and Epstein (1985a) failed to address is the role of re-use, re-building and adaption of monuments. This is a strong factor within the critique of typological approaches which, in order to be effective, have to pre-suppose that the monument present in the modern landscape is representative of the original actions and objectives of those constructing it. Such a pre-supposition can be challenged on two accounts. Firstly, if we accept the traditional dating (4^{th}-3^{rd} millennia BC) for at least some of these constructions (although see below and Chapters 4, 6 for further critique) the majority have been re-used, dismantled and adapted during later antiquity or recent decades (e.g. Dubis *et al.*, 2004: 17, Nasrallah, 1963: 17-18, Rees, 1929: 391, Figures 2, 3), altering their original construction. Research within European and Levantine archaeology has also begun to challenge the primary role of the visual monument, suggesting that it may be the construction process and events surrounding this that was of central, or at least equal importance (e.g. Bradbury, 2010, McFayden, 2005). Investigations at the site of Khirbet al-Umbashi have suggested that various stages of construction existed in the erection of the tombs. The deposition of the corpse was just one of these stages with construction occurring prior to and following this event (Braemer *et al.*, 2004: 193). Given the fact that there appears to be evidence for secondary deposition at Umbashi, which in some cases required the dismantlement of at least part of the tomb, it is perhaps more beneficial to view these events as merely stages within mortuary practice. In this scenario, the deposition of the corpse and closing of the tomb were not necessarily conceptualised as a final act but merely part of the lifecycle of the monument or deceased (see chapter 9.6. for further discussion).

Bearing these arguments in mind, the applicability and indeed value of placing monuments in discrete categories is somewhat challenged. Whilst some researchers have attempted to interpret possible groupings (e.g. Steimer-Herbet 2004), others have developed a typology as the final interpretative product (e.g. Epstein 1985a), adding relatively little to our understanding of the use and conceptualisation of these monuments during the past. Can a typological approach ever add any further texture to our understanding of the lives of past societies? As a methodological tool, typologies allow archaeologists to both communicate and consider data which, on first appearance, is a muddle of corresponding and distinct attributes. However, given the development of technologies, such as database and GIS applications, we are now in a much better position to deal with more subtle characteristics. As such, we can perhaps move beyond the rigid typological classifications and categories previously used for the study of such monuments and begin to discuss the multifaceted nature of variations in monument morphology and landscape traits. This approach has been used for the primary research of the thesis (see chapters 5-6). However prior, to the presentation of this data it is worth briefly outlining the findings of the typological approaches discussed above and the present understanding of stone burial monuments in the Levant.

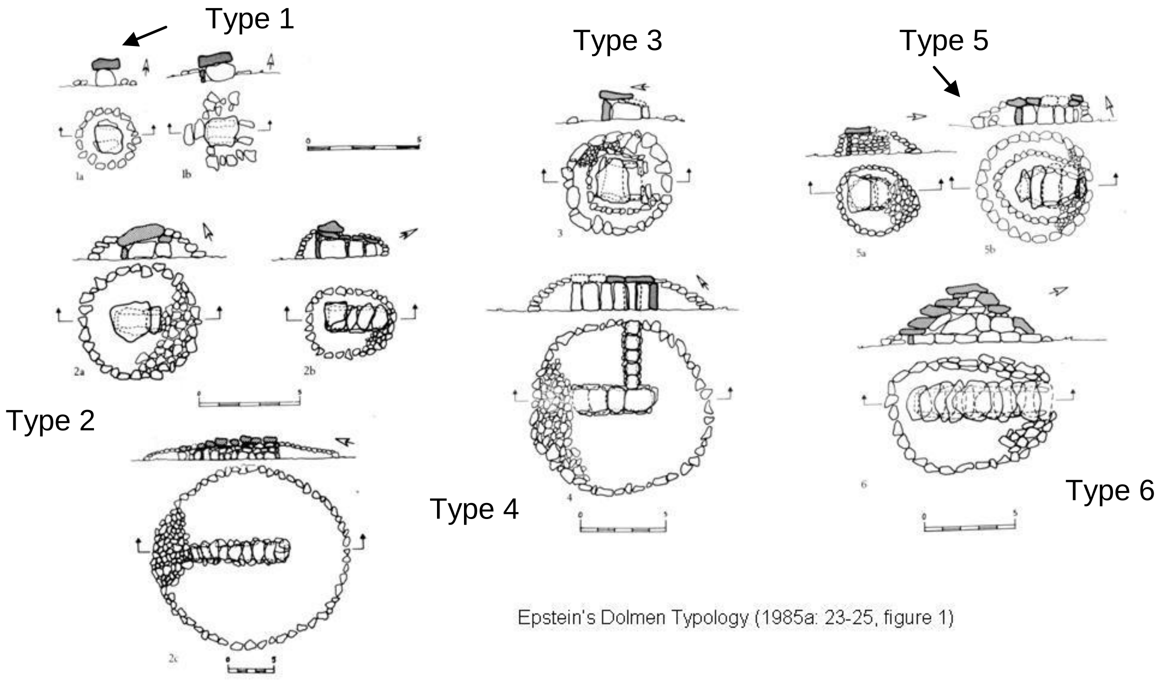


Figure 3.1. Epstein's dolmen typology

3.2. A typological approach to the study of stone burial monuments

If, for a moment, we disregard the above critique of typological groupings how then can we use them as meaningful categorisations? At this point the author merely acknowledges the wealth of post-processual literature which debates the possible versus impossible task of interpreting and understanding the past meaning of monuments and landscape location (e.g. Bradley, 1998: 3, Steadman, 2005: 298, Tilley, 1994). Instead, I will turn to some of the more region specific interpretations offered to explain variations in monument form and typology.

Epstein (1985a: 21, 57) argued that, despite difficulties in determining the edges of dolmen fields, monuments within the Jaulan tended to cluster into groups of one particular form (or occasionally two). These groupings were interpreted as tribal cemeteries, with variations in typological form being indicative of adaption and elaboration within tribal traditions. Steimer-Herbet's (2004) detailed study of stone burial monuments dating to the 4^{th}-3^{rd} millennia BC identified several major forms of burial structure via their morphological features (see Appendix 3.2.). These forms were classified into families based on the use of dressed stone, small stone blocks and dry stone superstructures (Steimer-Herbet, 2004: 34, 60, 70). In particular she highlighted, areas where single forms of monument were dominant or alternatively others where multiple forms were present (ibid: 92-3). On the basis of her three family groups, Steimer-Herbet (2004: 92) suggested that major concentrations of family A monuments (e.g. with a superstructure composed of dressed stones) could be seen in the areas of the Jaulan, Galilee and Jordan plateau. In contrast, Family B monuments (e.g. with superstructures formed from small stone blocks) seemed to be largely clustered in the Negev, with smaller numbers being seen in Yemen and Jordan. Family C monuments (e.g. dry stone superstructures covering tombs such as tower tombs, wall tombs and trapezoidal tombs) were focused in the areas of Sinai, Yemen and Saudi Arabia (ibid: 93). The following review of monument distribution (see section 3.3) highlights a number of similar trends. Steimer-Herbet suggested that variation in burial form may be related to chronology (2004: 93). Additionally, she suggested that monument areas east of the River Jordan, such as those around the *Wadi Zarqa* represent intermediary locations between the Levant and Arabia and thus a transitional zone between different forms of burial and possible cultures (ibid.).

Cooper's (2006: 245, 2007) review of burial practices in the Euphrates valley region suggested that differentiation in burial form may relate to aspects of ethnicity. She highlighted the differentiation that can be seen in cist and shaft grave distributions across the Levant, as well as the tendency for these monuments, even when found within the same site, to be spatially separated (Cooper, 2006: 245-7). Whether such practices can be associated with ethnic practice is debatable. Critiques of 'style zones' relating to ceramic typologies (e.g. Carter and Parker, 1995) emphasize the need for a greater contextual understanding of such distributions and the same can be suggested for burial groupings. As Hanbury-Tenison (1986: 205) suggested, it is possible for a shared notion of burial practice to exist, but yet be expressed and socialised in a variety of ways. Given the variations seen within each monument form (see section 3.1 and chapter 5), as well as the differential forms of burial with which they are associated (see below), these hypotheses may be premature. Particularly if we consider that the structures being discussed in this chapter may represent thousands of years of construction, re-construction and re-utilisation.

One further possibility is that monument form relates, at least in part, to the properties of local resources (see section 3.4. for further discussion). The Jaulan, Galilee and Jordan Plateau all represent stone rich areas, which offer clear potential for the construction of dressed stone monuments [Family A monuments (Steimer-Herbet, 2004: 93)]. In contrast the Negev, whilst in parts very rocky, offers less potential in terms of natural lithological resources, possibly limiting the nature of stone superstructures and necessitating the use of smaller, rather than large stone blocks [Family B monuments (ibid.)], especially when monuments were being constructed at some distance from rock outcrops. Research at the site of Khirbet Charaya has emphasized that, despite the variation in monument typology, uniform sized blocks were used for the construction of both oval tumuli and dolmen (Steimer-Herbet, 2006: 54). Similarly, Stepansky's (2005: 43) research on the Korazim Plateau highlighted the use of limestone slabs in areas where this resource was readily accessible, suggesting that there was no particular preference for raw materials and that it was merely the local surroundings which were being exploited. This adaptation towards local conditions has also been suggested at Khirbet al-Umbashi where one thousand three hundred and forty tombs have been discovered clustered in two zones along the course of the *Wadi* Umbashi (Figure 3.2.). Four hundred and eighty eight tombs are located within an eastern cluster, composed of groups of 5-10 tombs, with the eight hundred and fifty two tombs in the SW zone being concentrated in 9-10 ensembles of between 15 and 40 tombs. The clustering of these monuments, sometimes separated by surrounding walls, has been interpreted as linked to the natural topography of these areas (Braemer *et al.*, 2004: 187-189, 191).

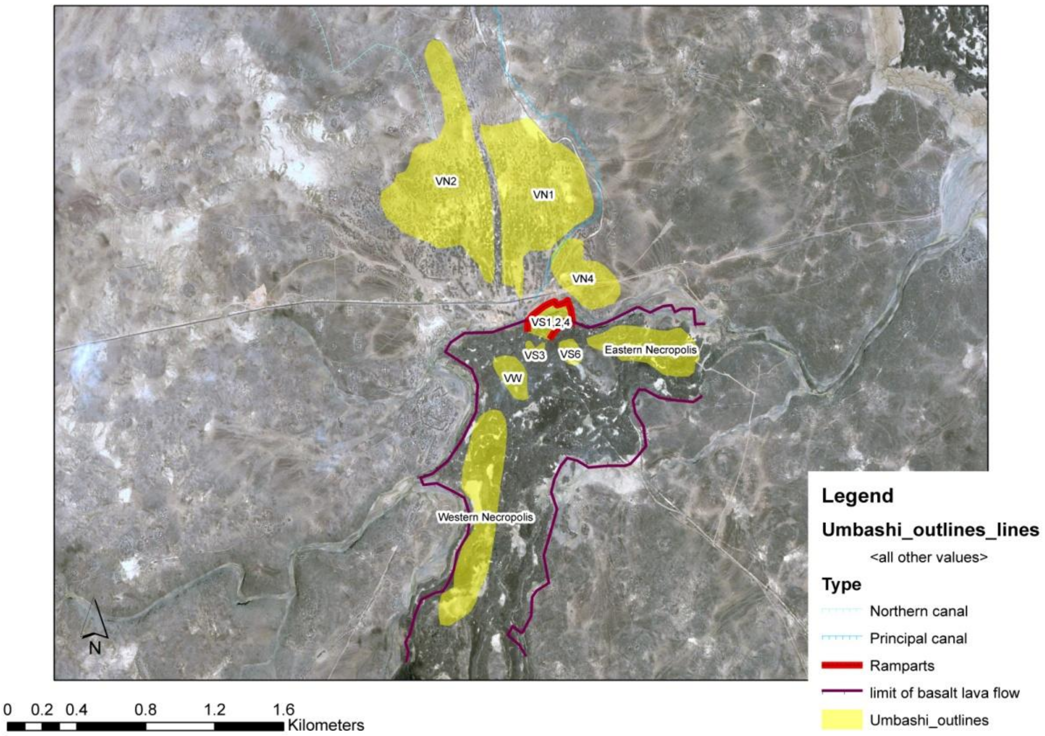


Figure 3.2. The location of the eastern and western necropolis at Khirbet al-Umbashi

It is difficult, however, to attribute all variation in aspects of monument appearance and position solely to local conditions of building material resources and topography. Indeed, Braemer *et al.* (ibid.) acknowledge the potential role of familial or tribal associations in the formation of monument clusters at Umbashi. Furthermore, given the use of similar sized blocks across different monument forms at Charaya the fact that the ninety three monuments found in association with basalt geology can be differentially classified as dolmens (80) and circular or oval tumuli (13) challenges the primary influence of lithology and building materials (Steimer-Herbet: 2006). As chapter 6 will outline the variation in a single region can be profound. The above explanations do not adequately account for the use of the same monument types for different types of burial. In addition, they fail to explain monuments which may show no clear evidence of associated burial chambers at all (e.g. Haiman, 1992a: 37, Stepansky, 2005: 45).

3.2.1. Monument typology and burial traditions

Unlike the site of Khirbet Charaya, where Steimer-Herbet (2006: 55-6) has suggested the preferential burial of certain individuals within tumuli, it has been argued that the Umbashi tombs represent multi-accessed family burials (Braemer *et al.*, 2004: 212). The insertion of secondary burials in some cases involved the partial demolition of the tomb structure (Braemer *et al.*, 2004: 192-4). This possibly negates the idea of a family burial structure, which presumably would have been maintained and kept open until burial ceased. In addition, it appears that there is a lack of mature adults and infants from these contexts (ibid: 209). Taphonomic processes may be partly related to this, although it would be expected that such processes would not be affecting both infants and mature adults equally. Both single and double tumuli have been identified at Umbashi, and it has been suggested that the smaller examples may represent the graves of children and infants (Braemer *et al.*, 2004: 191). Due to the lack of infant skeletal material (ibid: 209), this is something, which could be disputed. However, there are examples where infant burials do survive at the site and are marked out by specific rites [e.g. Tomb 13 where an infant burial was arranged with hands across its chest and a small basalt stone in its mouth (Braemer *et al.,* 2004: 197)]. This may suggest that the lack of infants and mature adults was linked to social practice, rather than taphonomy (see Chapter 9.6.3. for further discussion). The differential presence/absence of skeletal material has been noted elsewhere. Haiman (1992a: 37) suggests that only 7.5% of the cairns examined during survey in the Negev highlands could be interpreted as burials. At the ‘cemetery’ of Shiqmim (Mezad Aluf) 56% of the graves within Levy and Alon’s level 3 and 4 ranks contained grave offerings without any evidence of skeletal remains (Levy and Alon, 1982: 54). Adeimeh, on the Jordan plateau showed a similar phenomenon (Stékélis, 1935). One possibility is that remains were removed for secondary burial (Haiman, 1992a: 37), however, where was this secondary burial taking place? The presence of cairns/burials alongside a range of other features, such as platforms and walls [Figures 3.3-5 (Haiman, 1992a: 39-40)] throughout the Levant, suggest that complex activities, possibly associated with the manipulation of the dead were taking place at these sites (see Chapter 9.6.3. for further discussion).

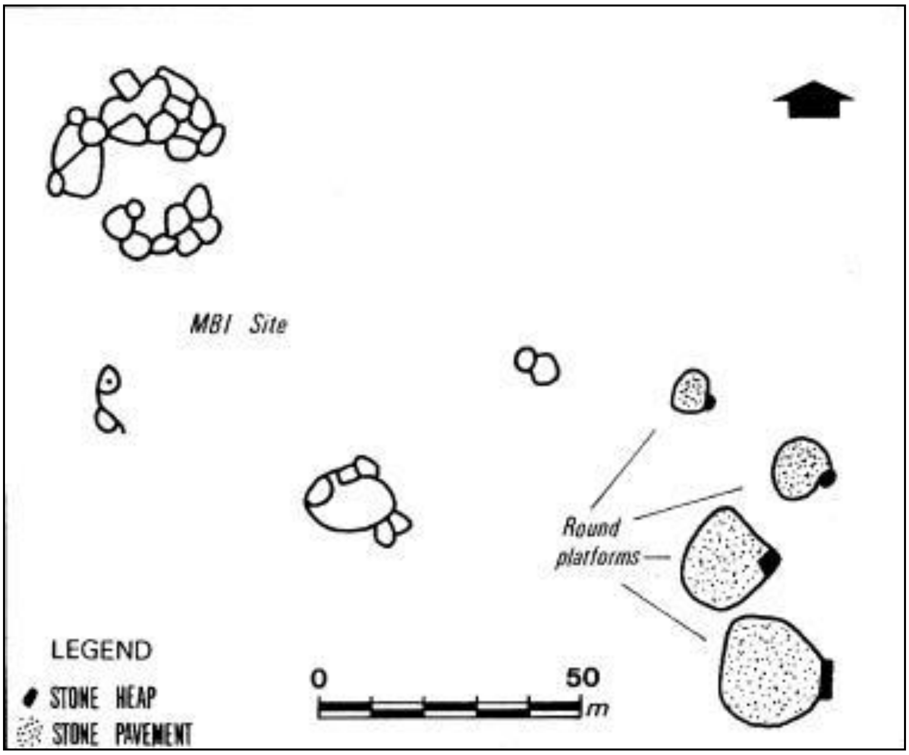


Figure 3.3. Cairns, platforms and associated features (Haiman, 1992a: 39, Figure 16)

Research at Khirbet al-Umbashi has revealed the presence of several enigmatic ellipsoid structures, the date of which are debated (EB II, III and IV all suggested), on the edge of the western necropolis. They contain deposits of ceramics, ash and human remains, possibly suggesting their use for incineration or cremation practices (Braemer *et al.*, 2004: 141). Associated with ten of the tombs are courtyards, which have been interpreted as a local feature by the researchers (Braemer *et al.*, 2004: 189-90). Whilst the precise layout of these courtyards may represent a local trait, exterior courtyards or activity areas are well known from different sites across the Levant [e.g. the Homs basalts (see chapter 5); Tomb 302 at Jerablus Tahtani (Peltenburg *et al.*, 1995)]. Furthermore, their presence at Umbashi may suggest that a range of activities, associated with burial and mortuary practice, were occurring outside the tomb structure (see chapter 9.6.3. for further discussion).

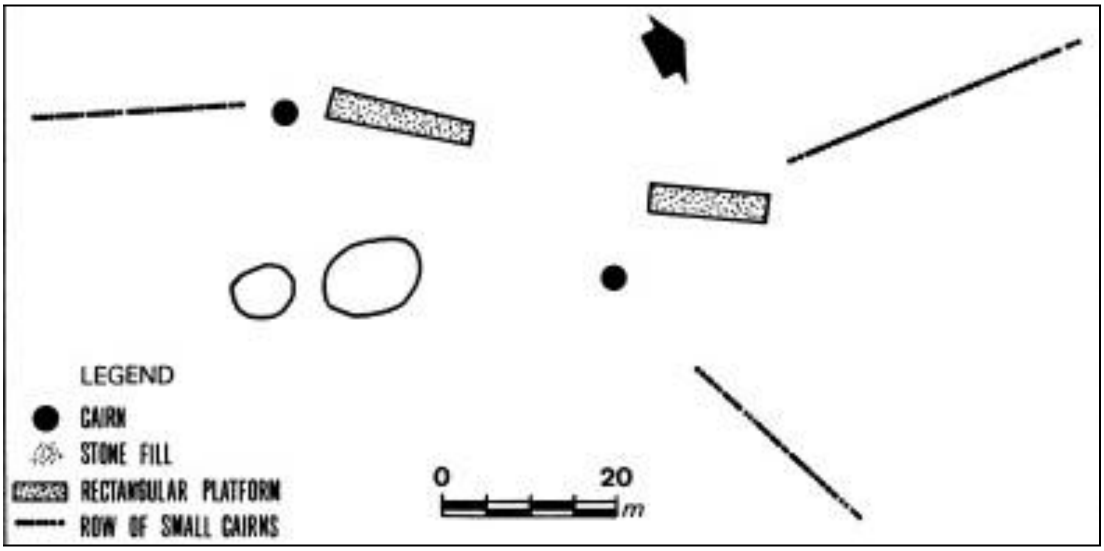


Figure 3.4. Mishor Haruhot (Haiman, 1992a: 39, Figure 15)

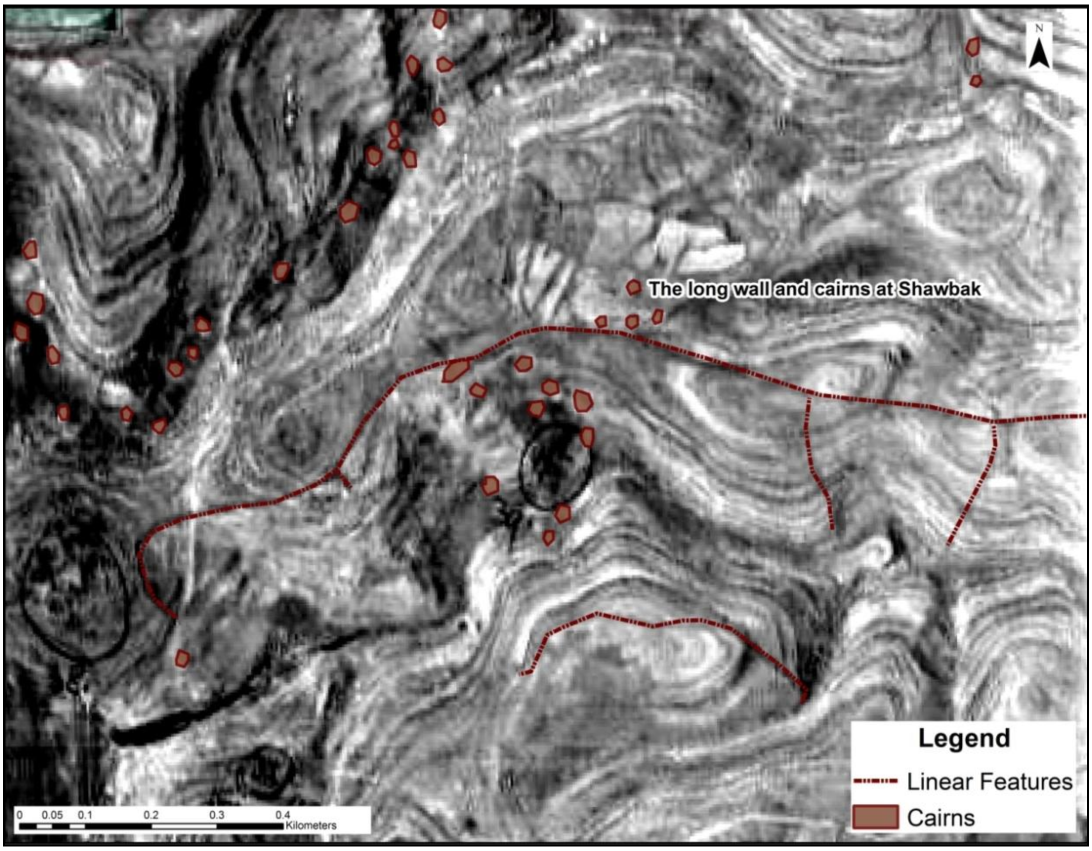


Figure 3.5. Shawbak-the long wall and tumuli mapped from Aerial Photographs and partly identified in the field by the author and Dr Charlotte Whiting. Image provided courtesy of the Royal Jordanian Geographic Centre and Dr. Charlotte Whiting, Southern Jordan Iron Age Project

This brief overview of burial traditions emphasise the role of social practice, rather than ultimate monument appearance. Moreover, it highlights the broad range of associated features which can be found alongside burial monuments/cairns/tumuli which need to be considered (and are often largely ignored when following a strictly typological approach) if we are to more fully understand the role of such monuments within the past.

3.2.2. Landscapes and typology

Alongside the traditional typological approaches research on Levantine dolmens and tumuli has often focused on their landscape location, with researchers emphasising their placement on slopes and promontories, where visibility is key (Anati, 1962: 280, Epstein, 1985a: 21). Their association with areas of water has also been stressed (Epstein, 1984: 35, Epstein, 1985a: 21). However, it is apparent that even at a localised scale such factors are not the sole variables influencing monument location. An examination of the distribution of dolmens in the Jaulan shows that whilst association between water and monument placement can be seen in some cases (16% of the monuments are within 100m of a water source) not all dolmens share this attribute [based on the hydrological survey presented by (Urman, 1985: Figure 4) and see Appendix 3.3 and Figure 3.6 for calculations and map].

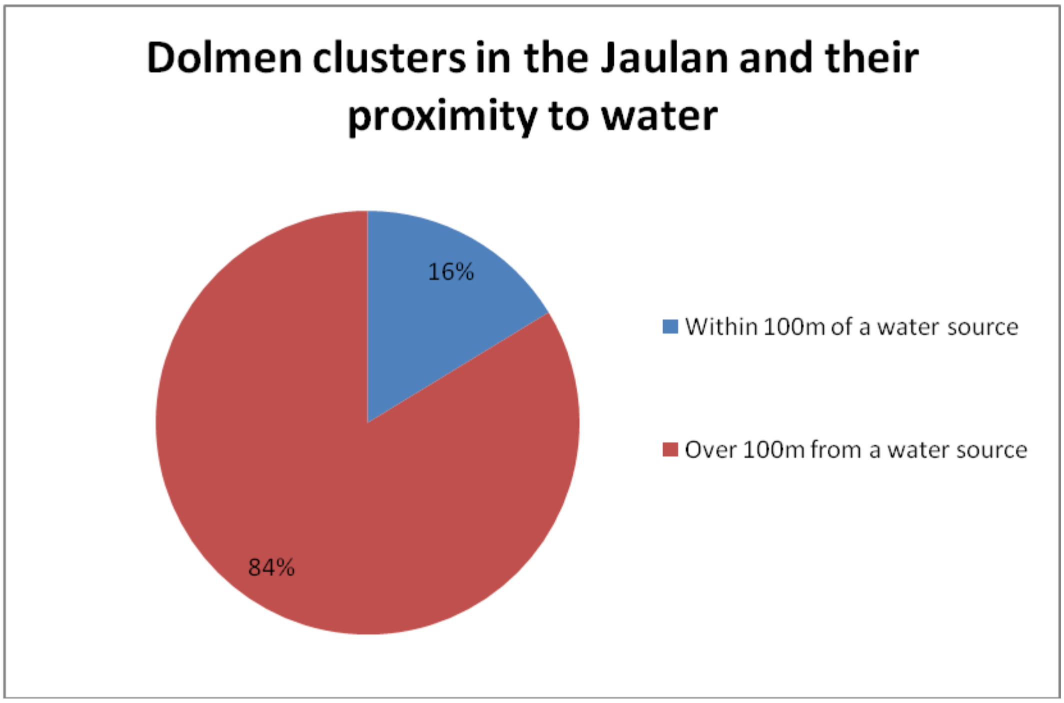


Figure 3.6. Showing the correlation between monument location and distance from wadis and lakes surveyed in the Jaulan (Urman, 1985: Figure 4).

Investigations within the Central Negev and Negev Highlands have focused on the association or lack of association between cairn structures and contemporary dwelling structures (Haiman 1992a: 30-41). Cairnfields identified by Haiman (1992a: 30-1) in this region appear to have a completely different character to those within settlements, composed of hundreds of cairns, mainly of one single type, with associated wall lines. One of the key questions is why would some groups choose to locate their dead within settlements, whilst others chose to isolate them? Traditional explanations have been based around the nomadic nature of populations. Indeed, cairns, dolmens and associated tumuli have been primarily interpreted as indicating the presence of nomadic 'tribal' pastoralists, with researchers often highlighting their potential location on pastoral migration routes (e.g. Prag, 1995, Ur and Hammer, 2009: 43). The applicability of such a model shall be discussed in more detail in Chapter 9. However, it is clear that associations between monuments, field systems, enclosures and settlements (Bourke, 2002: 14, Dauphin and Gibson, 1992: 14-15, 25, Stepansky, 2005: 45-7, Thuesen, 2004: 113-4), have often been overlooked in favour of those which emphasize the nomadic attributions of the monuments (e.g. Zohar, 1992). In several cases associations between groups of cairns found on Negev hilltops and Early Bronze Age settlements, which can be found at the foot of those hills have been suggested (e.g. Haiman, 1986: site 89, Haiman, 1992a: 31). Vinitsky (1992: 102) also concluded that a close correlation could be seen between the location of EB II-III sites within the Jaulan and dolmens.

This link, has been disputed in the Korazim area (Stepansky, 2005: 45-6) and caution is clearly required when basing chronological/social associations on the proximity of features within the landscape. In an area, such as the Jaulan, where dolmens and burial monuments are so prevalent, the average distance of 2-3km between features (Vinitzky, 1992: 102) is not necessarily diagnostic of a chronological or structural relationship. However, localised relationships between settlements, enclosures and monuments do exist [e.g. Horbat Berekh in the Korazim region (Stepansky, 2005: 45-7) and sites within the Jaulan (e.g. Dauphin and Gibson, 1992: 25, Stepansky and Damati, 1991: 74-5)]. Indeed, the presence of dolmen built into dwelling structures in the Jaulan may suggest at least some sort of relationship between domestic settlements and burial structures (see below and chapter 9 for further discussion). Evidence for re-use and integration of burials structures is also apparent in the Umbashi region. Kite 9 appears to incorporate two monumental tombs into its structure, which via association with the Kite have been dated to the transitional Chalcolithic-EB I period [dated on the basis of associated material (Braemer *et al.*, 2004: 216)]. Given the problematic nature of dating kites and associated features, we clearly have to be cautious in our interpretation of this date. However, their presence within the kite structure highlights that a strict distinction between the apparently 'utilitarian' and 'mortuary' cannot necessarily be maintained for this period.

3.2.3. Typology and Chronology

As the title of Steimer-Herbet's (2004) thesis indicates, the traditional dating of dolmen and cairns within the Levant and Arabia falls into the 4th-3rd millennia BC. Whilst this is the prime chronological focus of the present work, as Chapters 4 and 6 will demonstrate, this attribution can be debated. In terms of absolute chronology, dating these monuments is problematic. Later re-use, destruction and re-building, as well as poor preservation of artefacts, makes it difficult to make any definitive statements. Clear examples, however, do exist of monuments which on the basis of radiocarbon samples or well preserved artefact assemblages, can be assigned to the 4th-3rd millennia BC (e.g. Dubis and Dabrowski, 2002, Haiman, 1993b, Levy and Alon, 1982). In other cases, the contemporaneity of cairns and dolmens has merely been assumed on the basis of typological similarities (e.g. Haiman, 1992a: 35). Given the flaws (discussed above) in typological reconstructions, this does not immediately suggest that all structures are of the same date. Indeed, strong parallels can be made between monuments from antiquity and more recent (18th-19th centuries) burial constructions (Conder 1889a: 134). Tumuli found at the site of Yafit (Record 327) clearly demonstrate the difficulties in determining chronology via the morphology of monuments. These monuments contained material dating from the LBA to the 4th century BC (Magen, 2004: 294). The construction of these tumuli parallels other examples of LBA cairns, known from the region around Conder's Circle [pers comm. Thuesen 2007) and see figure 3.7.]. However, similarities can also be seen between the examples from Yafit and monuments attributed to the 4th-3rd millennium BC (Figure 3.7.). The images and plans from Yaift also show clear similarities to the so-called 'partitioned cairns' recorded in the Kerak region, which have been variously dated to the Chalcolithic to MBA (Clark, 1978/9, Miller, 1991: 26, Worschech, 1985: 28-31, 2000, 2002). Given the broad range of dates represented by the material from Yafit, as well as the lack of clear chronological patterns in terms of monument typology it is clearly difficult to maintain that stone monuments such as cairns and dolmens are a distinct 4th-3rd millennium BC phenomenon.

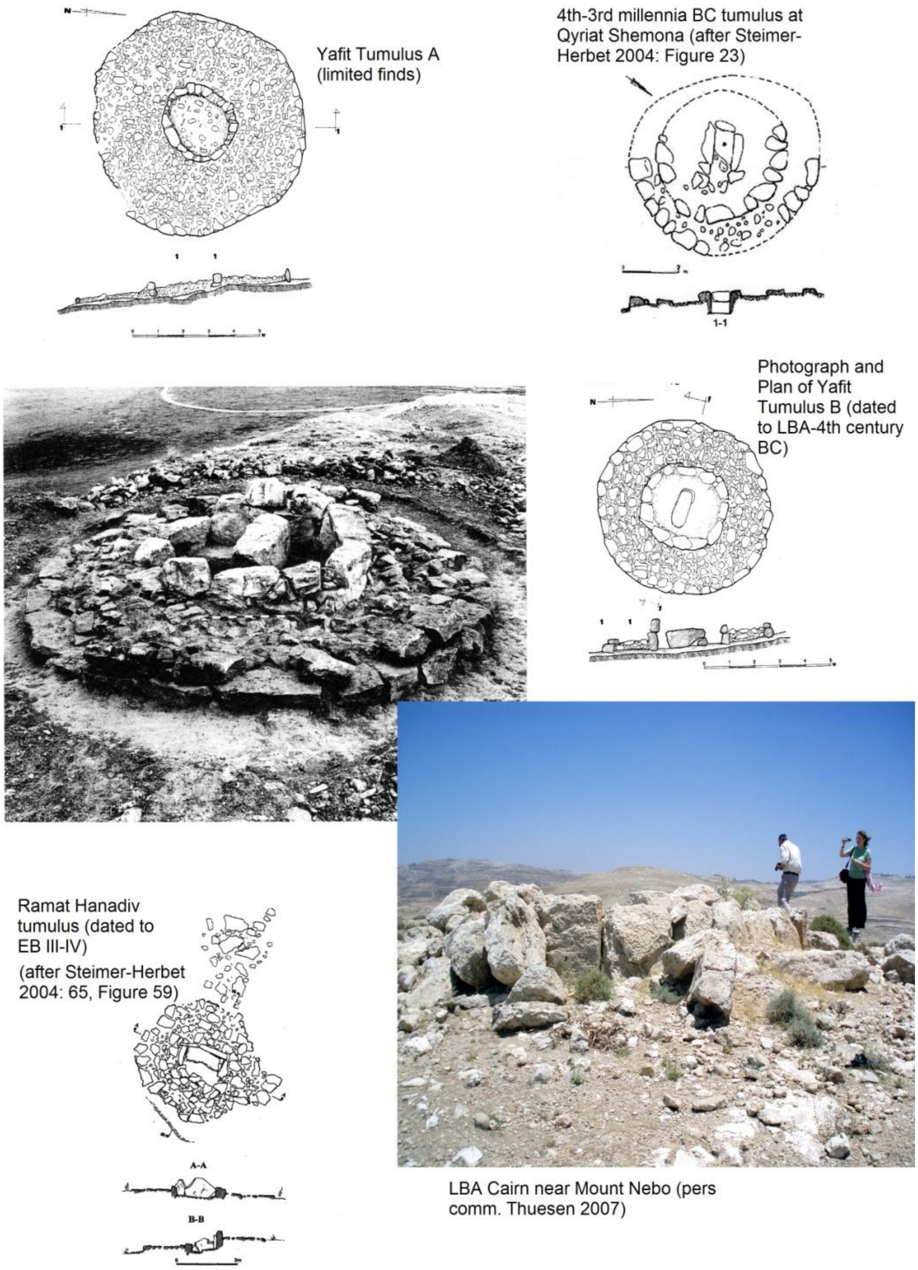


Figure 3.7. Comparing tumuli from Yafit (Magen, 2004) with examples from Steimer-Herbet (2004) and LBA cairn from region of Conder's circle

Chronological associations based on spatial proximity are equally difficult as tombs and monuments of contrasting dates are often found alongside one another (e.g. Haiman, 1986: 127, site 381). At Khirbet Charaya the use of the necropolis area prior to the construction of dolmens as a domestic dwelling area suggests a terminus post quem of EB I [(Steimer-Herbet, 2006: 55) although see chapter 8.2.1.1. for further discussion of this]. In the northern sector of Umbashi a range of additional megalithic tomb structures (Figure 3.8.) have been identified and suggested, via associations between ceramics and lithics, to date to the Chalcolithic-EB I and EB IV. In this case the dating of the central Tomb 1 has been based on its spatial relationship with the structures around it, rather than any artefactual material (ibid: 217). Braemer *et al.* (ibid: 218) have suggested that the tombs within the Umbashi area can be dated to c.3rd millennium BC into the first quarter of the 2nd millennium BC. Material evidence does appear to partly corroborate these interpretations. EB IV metal daggers were found inside Tomb 13 (ibid: Figure 415-6), whilst excavations also revealed evidence for EB IV and MB II pottery assemblages [Tombs 47 and 49 respectively (ibid: Figure 424, Figure 429)].

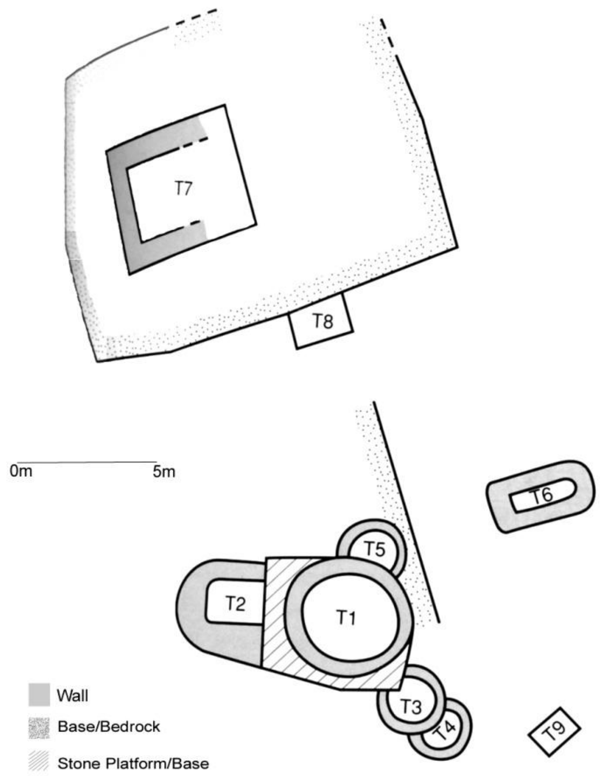


Figure 3.8. Example of tomb structures seen in the Northern sector of Khirbet al-Umbashi (Braemer et al., 2004: 217)

Similar dates have also been suggested for the Jaulan. Due to the presence of dolmens built into and over the top of Chalcolithic settlements, such as Rasm Harbush (Figure 3.9) and ‘Ein el-Hariri, Epstein (1984: 33-5, 1985a: 21) emphasized their post-Chalcolithic date. Her excavations revealed material dating to the IB and MB I period [i.e. EB IV: see Table 8.1, Chapter 8.3 and (Epstein, 1984: 35, 1985a: 21, 40, Stepansky, 1995: 14, 1996: 15, 2005: 47) for further discussion]. However, these interpretations were based on a limited amount of poorly preserved material. In addition, whilst the *terminus post quem* of dolmens at sites, such as Rasm Harbush is clear, the exact chronology is more complex. Indeed, there is little evidence to suggest whether dolmens and tumuli at such sites post-dated the structures which they are built into, or on top of, by a decade, several hundred years or even a thousand. Dauphin and Gibson (1992: 26) have hypothesised that dolmens in the Jaulan may have been first used in the EB I and continued into use during the EB IV. This argument highlights that a single period of use for dolmens, cairns and associated monuments should not be assumed. In addition, given the ubiquity and widespread location of these monuments in the Jaulan and our current lack of knowledge concerning Chalcolithic burial practices in this region, the possible use of these monuments within earlier periods should not be ignored.

Figure 3.9. Rasm Harbush Dolmen (Epstein, 1998: 55, figure 74)

The dates discussed above broadly correlate with current interpretations of a 4th-3rd millennia BC Levantine stone burial monument phenomenon [(e.g. Steimer-Herbet, 2006: 55) however see Chapters 4 and 6 for evidence to the contrary]. The MB II vessel from Tomb 49 at Umbashi (Braemer *et al.,* 2004: Figure 424, Figure 429) and Jaulan material (see chapter 8.3.2.3) may indicate a lengthier use for these monuments than generally discussed. These possibilities are now being highlighted by a number of researchers (e.g. de Maigret, 1996: 328, Thuesen, 2004: 111, Toombs, 1985: 34-5). Examples of cairns and shrines, pre-dating the Chalcolithic-EBI period are found across the Levant (e.g. Avner, 1984: 117). In addition, their longevity into the 18-19th centuries AD is also possible [(e.g. Conder 1889a: 134) and see chapter 4]. At present it is sufficient to conclude that whilst debate exists concerning the chronological attribution of these monuments, their first appearance across the entire Levant does seem to broadly date to the 4th-3rd millennia BC. This is not to suggest that the patterns visible in the landscape today are in anyway indicative of past distributions. Indeed, as shall be outlined in the following discussion any reconstructions are fraught with inaccuracies. Rather than discussing the stone 'burial' monuments of the Levant as solely a 4th-3rd millennia BC phenomenon, this chapter aims to build upon work by Epstein (1985a) and Steimer-Herbet (2004) among others and place it within a wider context considering features occasionally found in association with stone 'burial' monuments, such as stone circles and standing stones (menhirs/monoliths). It assumes neither a solely burial/non-burial function for these monuments. Rather it directs the reader to a number of potential avenues for further research and consideration. Along with Chapters 4-6 it will highlight the difficulties of making assessments of monument distribution on the basis of typology, especially given the wide range of different terms and descriptions used for these monuments by researchers working within the Levant.

3.3. Morphology, researchers and stone monuments

In addition, to the multiple difficulties of typological approaches outlined above, a further factor that has to be taken into account is human subjectivity. Researchers disagree over the terminology used to describe monuments, as can be seen by the example of Har Oded. This site, located in the Negev, has been classified by Steimer-Herbet (2004: 68) as a cist tomb, however; the original investigator of the site identified it as a cairn (Rosen, 1994: 248). This is just one example of how the use of terms, such as cist tomb and cairn can be misleading. I have, in most cases used the terminology employed by the original investigators for the analysis below.

3.3.1. Patterns of research vs. patterns of distribution

A variety of different terms have been employed during this analysis to describe and classify the monuments under discussion (see Appendix 3.2). A consideration of the number of each form of monument has then taken place (Figures 3.10 and 3.11 and see Appendix 3.1.). The first graph shows the forms of monuments recorded throughout the Levant. As can be seen cairns clearly predominate, followed by dolmens. When the cairns identified from satellite imagery and aerial photographs by the author from the Homs study and Shawbak regions are removed a different picture appears, with dolmens as the dominant form.

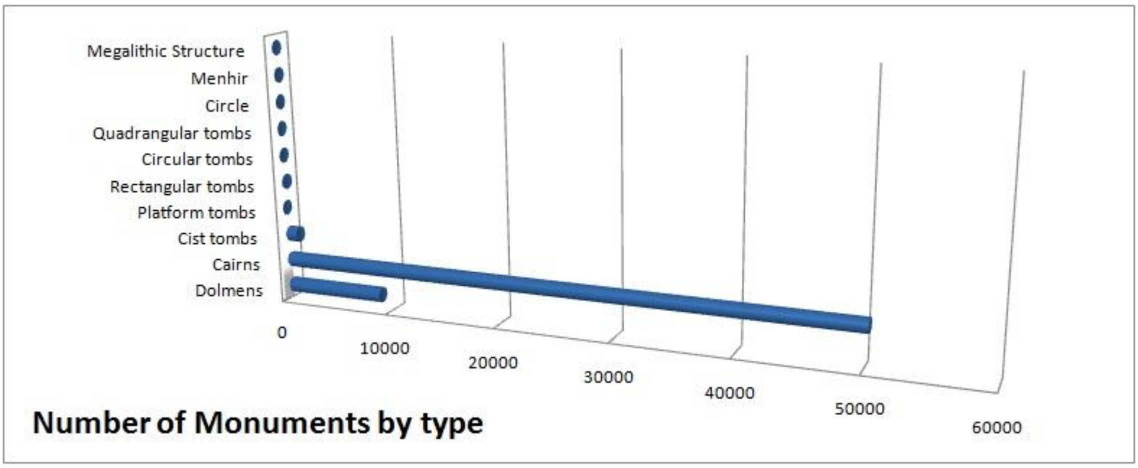


Figure 3.10. Monument types across the Levantine region. This graph includes monuments identified from published/un-published research,as well as as those identified by the author in the Homs (Central Syria) and Shawbak (Southern Jordan) regions (see Appendix 3.1. for further details). It should only be considered indicative of monument numbers as many researchers do not record exact numbers.

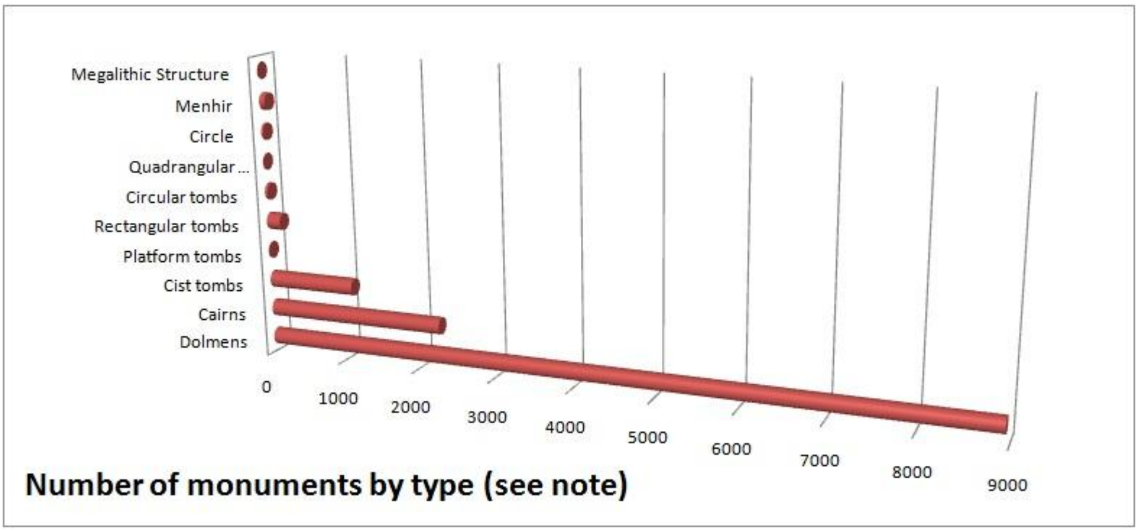


Figure 3.11. Frequency of monument types across the Levantine region, collated from published/un-published research,excluding those from the Homs and Shawbak regions.

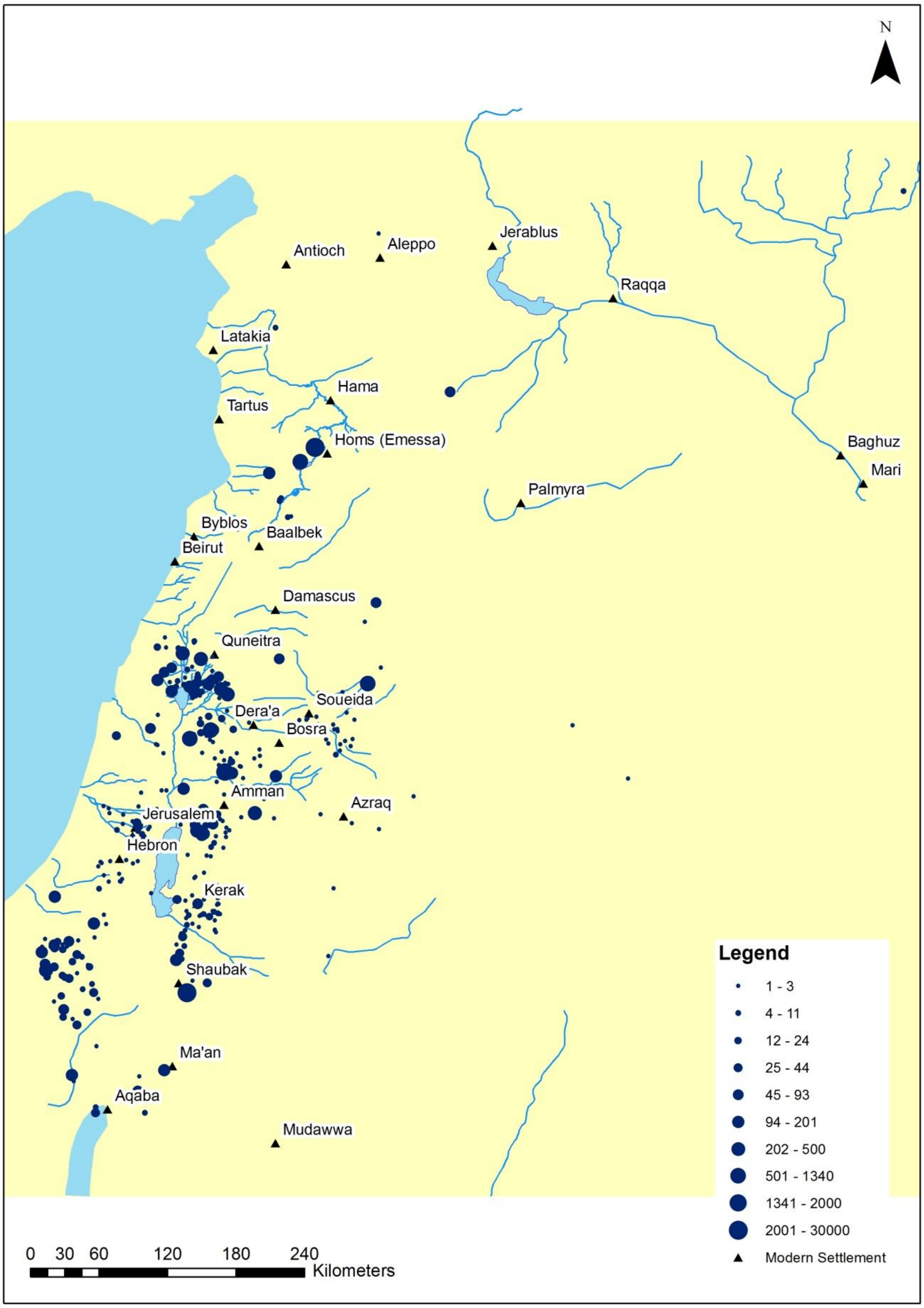


Figure 3.12. Distribution of stone burial monuments across the Levant, a full list of monuments can be found in Appendix 3.1. The numbers in the legend correspond to the number of monuments in each recorded cluster.

The overall distribution of stone monuments throughout the Levant shows a clear concentration within regions to the east and west of the Jordan Valley, with minimal numbers of monuments being found north of Damascus and east of the Jordanian Plateau (Figure 3.12). Monument clusters, which have been found in these latter areas, have been studied in the past 50 years and their distribution partly reflects the push that archaeologists have recently made to examine landscapes away from those of the traditionally studied 'tells' [see Chapter 9.1. for further discussion (e.g. Betts, 1993, Betts *et al.*, 1990, 1991, Braemer *et al.*, 2004, Castel *et al.*, 2005, Castel *et al.*, 2004, Castel and Peltenburg, 2007, Geyer *et al.*, 2007, Philip *et al.*, 2005, Philip *et al.*, 2002b)].

To consider these patterns a basic analysis of the relationships between the location of monuments and the number of investigators who have analysed or surveyed these clusters has been carried out. The region has been divided into six geographical units; *Coastal Southern Levant; Eastern Transjordan; Jaulan/Hauran; Negev/Sinai desert region; Northern Levant; Western Transjordan*. These divisions have been formulated on the basis of geographical and geomorphological features, rather than modern political boundaries. Totals have been collated for the number of reports examining each cluster of monuments. Whilst, not representing primary data collection, Steimer-Herbet's (2004) analysis has been included in these totals (as if a primary report), as much of her work involved a re-analysis or re-classification of monuments. The inclusion of this report partly explains the large percentage of monument clusters with two reports associated with them i.e. original investigation and Steimer-Herbet's re-analysis (see Appendix 3.1 for references).

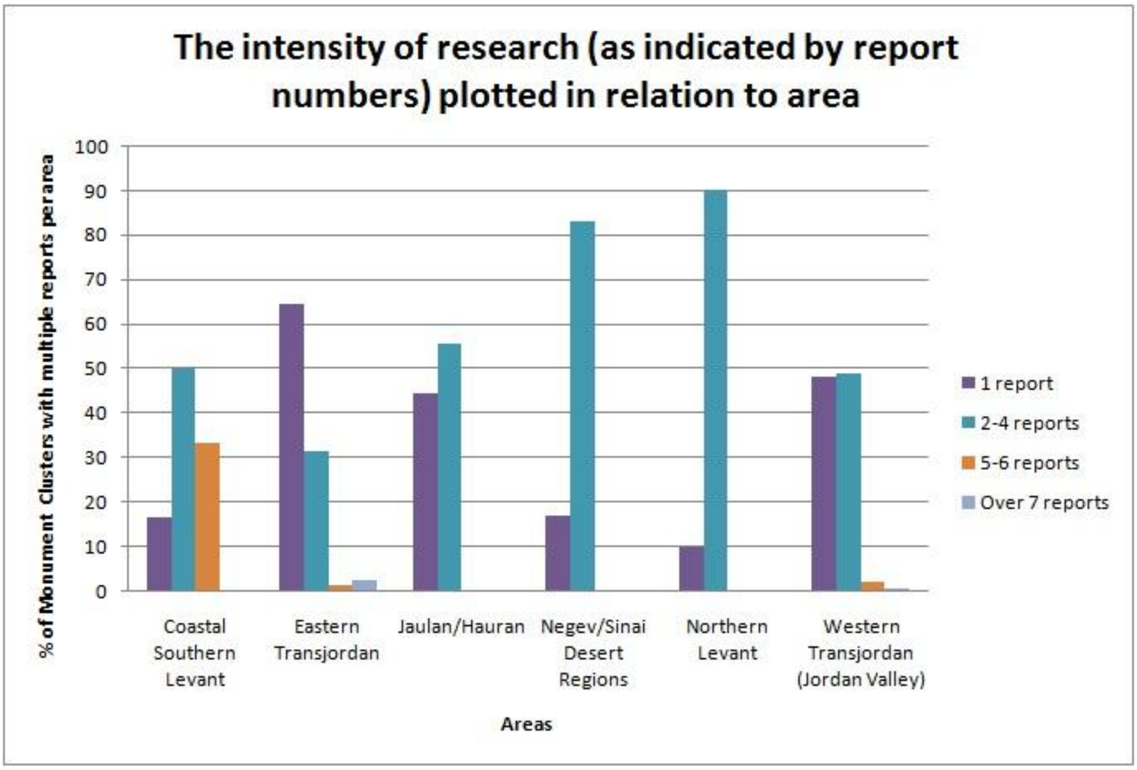


Figure 3.13. The correlation between levels of investigation. The graph shows the % of clusters by area which have 1-7 reports pertaining to them.

As Figure 3.13 demonstrates, a strong correlation can be seen between the levels of investigation (1-7 reports) and the areas of monument concentration. For example, the coastal southern Levant is the only region where a considerable number of monument clusters (over 30%) have benefited from primary study by more than 5-6 reports. The areas of minimal monuments mentioned above (i.e. the Eastern Transjordan and Northern Levant) are predominantly characterised by 2-4 reports. However, Eastern Transjordan is the only region, apart from Western Transjordan which has monument clusters with over 7 reports pertaining to them. This analysis suggests that, at least in part, the intensity of research throughout the region has influenced patterns of monument distribution. What is particularly apparent is the Northern (Jaulan/Hauran and Northern Levant) vs. Southern Levant (Southern coastal Levant; Western and eastern Transjordan; Negev/Sinai desert region) divide, although the Negev/Sinai desert region appears to be more in line with the patterns from the Northern Levant. Such discrepancy in investigation between regions is something which has been long recognised (e.g. Philip, 2007: 234) and emphasises the fact that the distribution of archaeological remains across the Levant is closely tied to research foci.

These patterns are also emphasised by an analysis of where ‘early’ antiquarian research took place. Research in the 18th-19th centuries AD was largely focused in the Southern Levant and so called ‘Holy Land’, with early travellers visiting historical sites east and west of the River Jordan (e.g. Irby and Mangles, 1868, Schick, 1879, Tristram, 1874). Prior to the use of aerial photography in the early 20th century and satellite imagery in more recent years, many areas remained poorly understood and under-investigated. The Homs basalt is a good example of this. Early travellers make reference to visiting this area; however, research undertaken in the region in the early 20th century was largely focused upon Roman and classical settlement, centred on the Roman city of Emessa (e.g. Van Liere, 1959). Sites mentioned in texts, such as Tell Nebi Mend (ancient Qedesh) were excavated (e.g. Matthias and Parr, 1989, Parr, 1983, Pézard, 1931); however, the surrounding landscape was largely ignored. It was only with the development of the SHR project in the late 1990s-2000s (e.g. Philip *et al.*, 2005, Philip *et al.*, 2002b) that this area began to be fully explored, with much of this work being facilitated by the use of aerial photographs and satellite imagery.

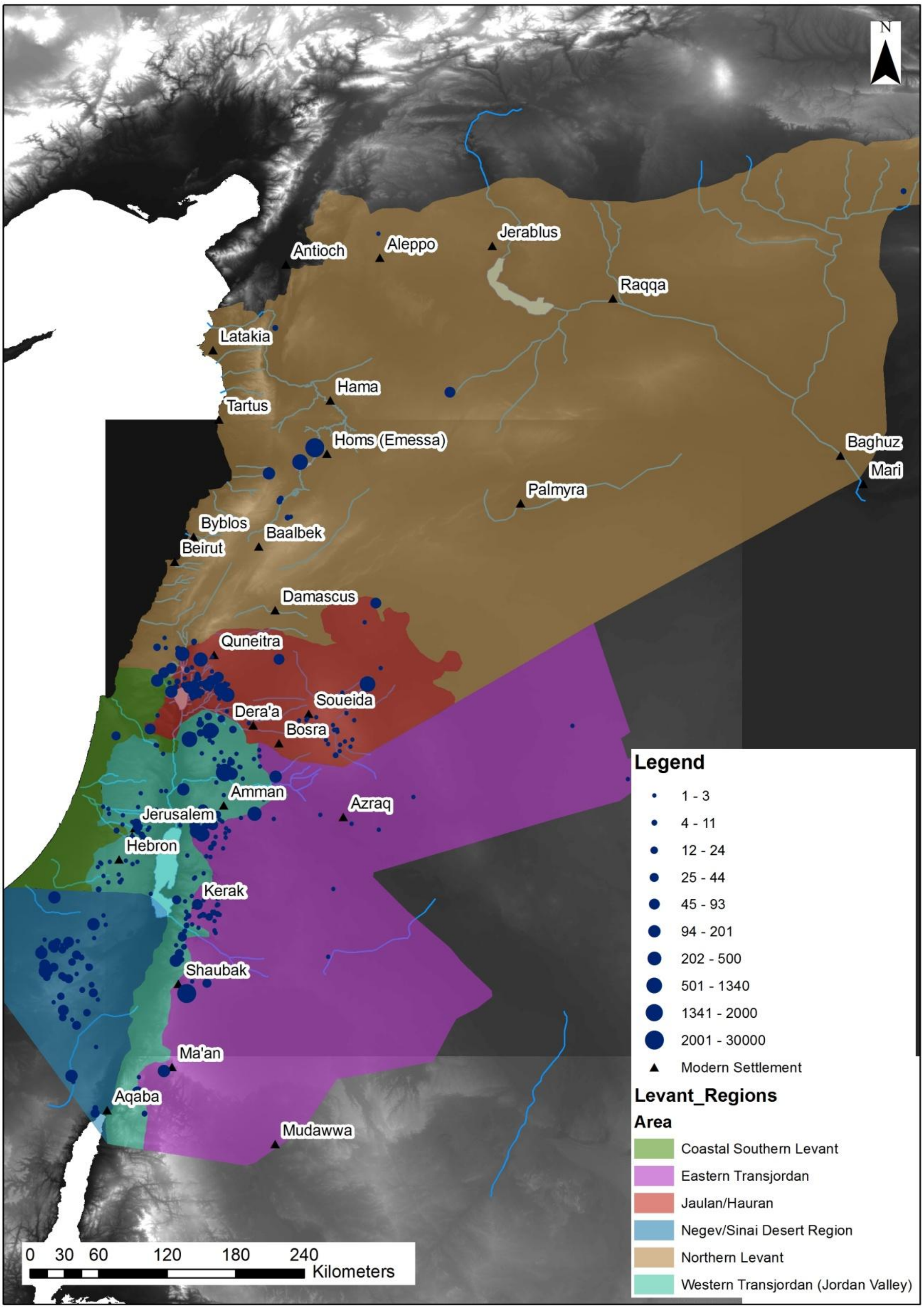


Figure 3.14. Distribution of monuments based on the number of reports/primary research pertaining to them. Calculations in Figure 3.13 are based on the areas depicted above.

3.3.2. Interpreting Morphology: An exercise in caution?

The morphology of monuments has been based on the original investigators' interpretations although, where clear plans and photographs were avaliable, asesement by this author took place. The terms used were derived from Steimer-Herbet's (2004) synthesis of monuments across the Levant/Arabia (see Appendix 3.2.), although in some cases the classification used by Steimer-Herbet (2004) was not the same as that used by the original investigator. Interpreting monumental form is particularly difficult. How we can differentiate between a dolmen covered by a tumulus and a cairn monument is debateable. Furthermore, whether we should even attempt to do this, when such structures may have been inter-related or even developed from one form into another is questionable (see section 3.1 for further discussion).

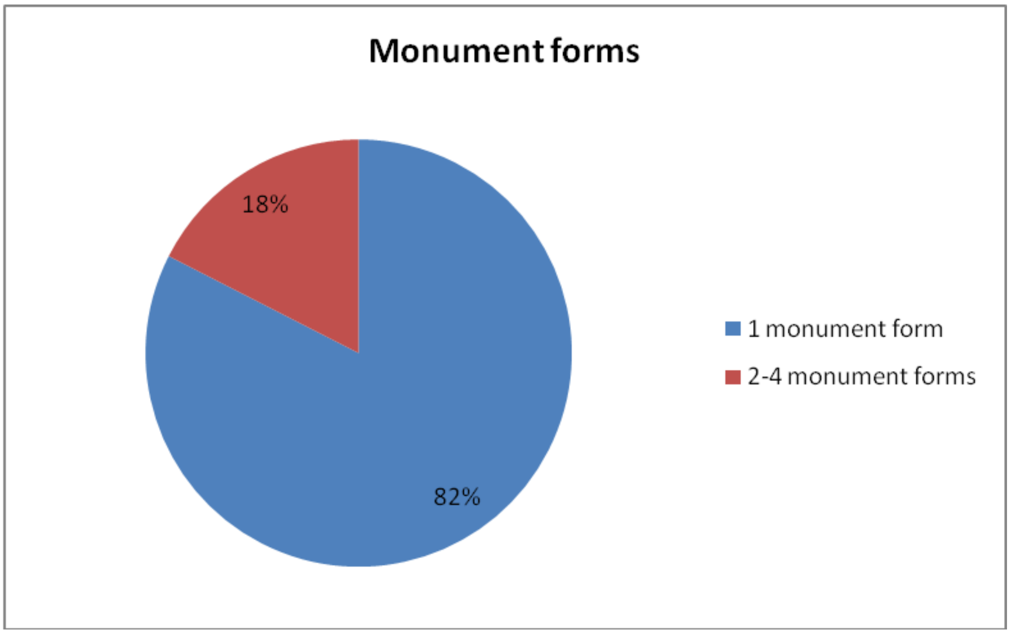


Figure 3.15. Monument clusters displaying a single monument forms versus those which show more than one type of monument form within the cluster. Clusters used are those defined by original investigators, however, no assumptions are made concerning the chronological or cultural associations.

As suggested by Steimer-Herbet (2004: 92) the majority of monument clusters or necropoli, contain a single monumental form. However, as will be discussed in chapter 65 variations within a single form of monument, such as cairns, can be substantial. Figure 3.15 demonstrates the high percentage of monument clusters within the study which contain only a single monument form (82%). It must be taken into account that in many cases some of these monument areas represent isolated structures [e.g. Djifneh (Abel, 1932: 599-600, Steimer-Herbet, 2004: 57)] and in others the precise numbers of monuments and their form could be debated [e.g. Deir-Sa'ideh (Abel, 1928: 590, Macalister, 1900: 222-234, Steimer-Herbet, 2004: 57, Stékélis, 1935: 24)]. In addition, as Steimer-Herbet (2004: 93) argues there are areas where multiple forms of burial exist, such as around Zarqa. 18% of the monument groups show more than one monumental form and some, such as Damiya (Ala-Safat), show up to four (Appendix 3.1.). Given the differential concentrations of monuments throughout this region, the association between density of monuments per cluster and presence of multiple monument forms has to be considered (Figure 3.16.). Some correlation can be seen between these two variables, with the percentage of monument clusters containing three monument forms increasing as the cluster size increases. However, clusters with three and four monumental forms all fall between 101-200 monuments per cluster, with no monument clusters with more than three monument forms being numbering more than 500. It appears that while to some degree the size of the cluster is linked to the number of monumental forms (i.e. the smaller clusters tend to have a smaller number of monumental forms) this is not seen across the whole sample.

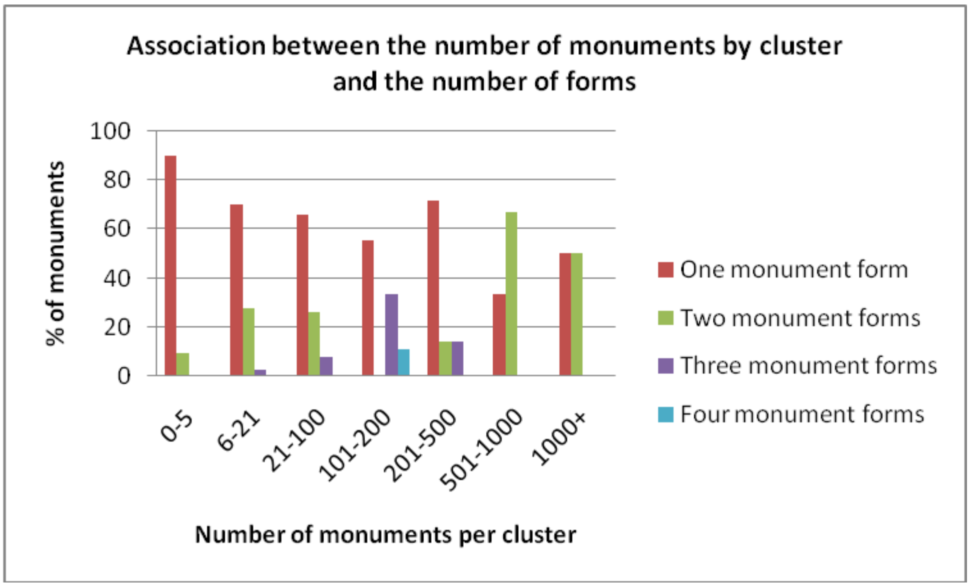


Figure 3.16.The association between monument cluster size and monumental form

Possible explanations for differential monument form have been outlined in section 3.2. Further analysis shall be presented in Chapter 9. However, it should be noted that the analyses carried out for this chapter show a number of similar patterns to those identified by Steimer-Herbet [(2004) and see section 3.2]. Firstly dolmens, which fall within Steimer-Herbet's Family A, do appear in concentrations in the areas of the Jordan plateau, Golan and Galiee. Outliers also exist as far north as Aleppo in Syria, as well as into the Negev (Figure 3.17.). In contrast, cairns appear to have a more even distribution across the study area, although clear areas of concentration do exist in the Negev, Hauran and between the modern settlements of Kerak and Shawbak (Figure 3.18.). The majority of these monuments are un-excavated. Thus, in some cases we may be interpreting dolmens with associated tumuli as cairns. Cist tombs, part of Steimer-Herbet's Family B, also appear to have a fairly even distribution, although they show an area of clear concentration within the central and southern Negev [Figure 3.19 and see (Steimer-Herbet, 2004: 92)]. Platform tombs (Figure 3.20.) are found in the southern Negev and Beqa'a Valley, although whether this represents an archaeological reality or one associated with methodology and terminology could only be answered through further survey. Quadrangular tombs also show a limited distribution, with only 2 locations within the Southern Negev showing evidence of these tomb forms (Figure 3.20). This is in direct contrast with rectangular tombs, which can be seen distributed across a much wider area of the study region, ranging from north of Hama in Syria to west of the Dead Sea. The occurrence of these monuments appears to be fairly isolated with no clear regional clusters being present (e.g. the minimum distance between clusters is 40km). Circular tombs within the Levant appear to be focused around the areas east and west of the River Jordan and Dead Sea, although examples are also found in the Hauran. Similarly to rectangular tombs, they appear to be isolated, although a regional cluster could be seen in the area east of the Dead Sea between Amman and Kerak (Figure 3.21.).

Features, such as circles, standing stones (menhirs) and megalithic buildings (Figure 3.22) have been included in this analysis when they appear alongside (or in close proximity) to stone burial monuments [e.g. Khirbet Ader (Albright, 1934, Glueck, 1934: 45-7, Mallon, 1924: 452-455, Stékélis, 1935: 34)], or are themselves constructed from such features (e.g. SHR 362). These structures appear to be concentrated in zones south of Damascus; however, whether this represents a true pattern can be debated. The exceptions to this are SHR 362 and the monoliths known from the Homs basalts to the south-east of the NSA [although in the majority of cases these are found in association with tumuli (e.g. Ibáñez *et al.*, 2007: 63)]. SHR 362 was identified within the Homs Basalt study region via satellite imagery analysis, whilst the standing stones from the neighbouring region were identified via field survey (ibid.). As such, it may be that given a regional analysis involving both intensive fieldwork and satellite imagery analysis greater numbers of these features will be revealed (see Chapters 5-6 for further discussion). Megalithic structures have been identified in proximity of 'burial' monuments in three areas; north of Amman, north-east of Hebron and to the west of Aqaba. Menhirs (Figure 3.22) also have a fairly limited distribution being found in areas to the west and east of the Dead Sea, although examples have also been found north of the *Wadi Zarqa* and within the Homs region (e.g. Ibáñez *et al.*, 2007: 63). It should be noted that the menhirs discussed here do not include the massebot structures which are distributed widely throughout the Negev and Sinai (Avner, 1984). These warrant a detailed analysis, something which is not in the remit of this thesis.

Stone circles, in contrast, appear to have a slightly wider distribution being found in areas ranging from east of Damascus, to along the *Wadi al-Araba* in the Southern Negev (and note the location of SHR 362). Despite this slightly wider spread, these monuments do appear to be largely clustered in areas to the east and west of the River Jordan and Dead Sea. Having said this, as new programmes of aerial photography are beginning to illustrate (http://www.flickr.com/search/?q=circle&w=36925516%40N05, 2010), such features are perhaps much more ubiquitous than previously thought.

Figure 3.17. Distribution of dolmens across the Levant

Figure 3.18. Distribution of cairns across the Levant

Figure 3.19. Distributions of cist tombs across the Levant

Figure 3.20. Distribution of quadrangular tombs, rectangular tombs and platform tombs across the Levant

Figure 3.21. Distribution of circular tombs across the Levant

Figure 3.22. Distribution of menhirs, stone circles and megalithic structures across the Levant

With these patterns in mind, it is worth considering the association between the location of different forms of stone monuments, such as dolmens and cairns, and the areas studied by early antiquarian explorers. Firstly, there is a strong correlation between the distribution of dolmens in the Levant and the areas studied by early researchers (Figure 3.23.). This is in direct contrast with monuments, such as cairns and cist tombs, which are largely located outside the regions examined by these early investigators. Many structures, such as cairns, are only now beginning to be recorded in detail. Such features were often interpreted as representing ancient clearance activity or the graves of 19th century pastoral nomads (e.g. Gentelle, 1985: 34-5, Philip *et al.*, 2002a: 115, Prag, 1995: 80-1). The strong association between areas explored by early researchers and dolmen distributions could also partly result from the fact that large numbers of these monuments may have still been extant within the 18th-19th centuries. Moreover, given the presence of visually similar monuments in Western Europe, from where the majority of early explorers originated, their recognition of these structures is not necessarily surprising.

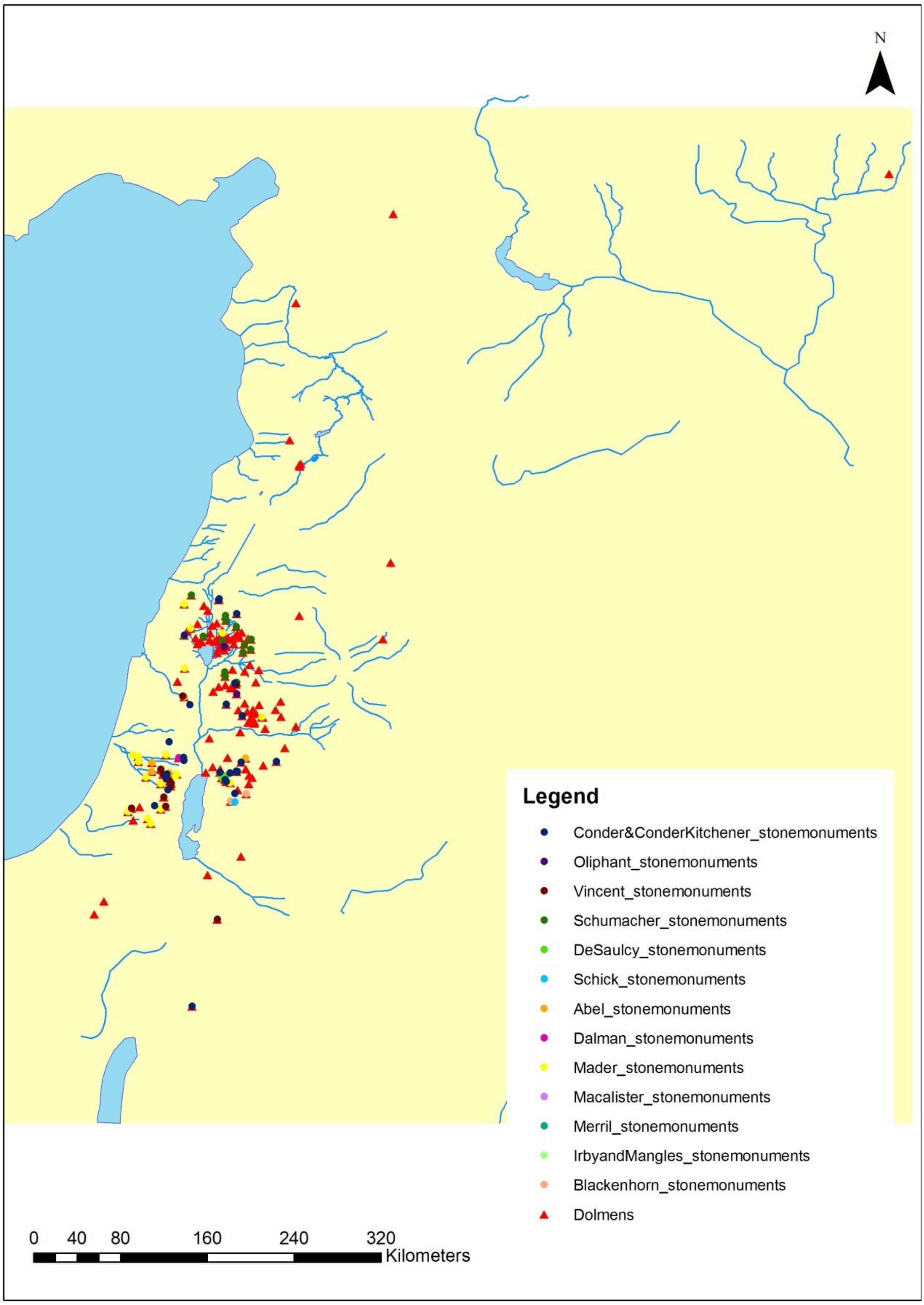


Figure 3.23. Distribution of dolmens and monument clusters investigated by early researchers in the Levant

3.4. The Broader Context of Stone Monuments

Only a very basic assessment of the relationship between lithology and stone monument location has been possible during this study. Given the inaccuracy of locating monument clusters it was felt that any detailed analysis of the relationships between rock type and monument location could only take place on a localised scale. In order to consider the broader pan-Levantine patterns such detailed analyses were not applicable (although see below). Secondly, whilst geological maps of varying accuracies are extant for the region the majority are not fully cross comparable or appropriate for archaeological utilisation, focusing on the age of the geological strata (i.e. Neogene) rather than the properties/lithology of the strata (e.g. hard basalts). Thus, on the basis of geological map data it has only been possible to identify extremely broad categories of rock types such as, sedimentary rocks (combining rock types such as limestones and marls which have very different properties), basalts, granites and diorites and soft fluvial/alluvial deposits. This means that that the analysis presented here is extremely broad brush (see figures 3.24-5. and appendix 3.3. for details). Figure 3.25 plots out the relationships between the location of stone monuments across the Levant and lithology. The majority of monument clusters are located on *Sedimentary (Limestones, marls, conglomerate and sandstones)* (72%) and *Basalts* (24%). The remaining examples are found in association with *Soft Alluvial/Fluvial deposits* (2%) and *Granites, quartz, schist, gneiss, mica schist, gabbros, diorites and dike rocks* (2%).

Given the concentrations of monuments in the Basalt regions of the Jaulan and Hauran and limestone areas of the Jordan Valley the predominance of monuments found in association with such lithological types is not unexpected. However, it is clear that these very broad categories are obscuring local variations and subtleties (see below). Furthermore, at this broad scale, especially when we are dealing with monuments which potentially span thousands of years of use, the relevance of patterns of reconstruction can be questioned. The map data used here does not currently exist in digital format, thus geological maps [see Appendix 1.3 for further details (Bender, 1975, Picard, 1959, Wolfart, 1967)] have been scanned and then geo-corrected. The associated lithology has then been noted. Where the local lithology was recorded in field reports this data has been used in place of the data extracted from the maps. Given the substantial amount of work which has been carried out in regard to stone monuments across the Levant (e.g. Abel, 1922, Bahat, 1992, Baker, 1996, 1998, Bradbury, 2010, Bradbury and Philip, in press, Epstein, 1972, 1973, 1985a, Gilead, 1968, Haiman, 1992a, Nasrallah, 1950, 1963, Polcaro and Polcaro, 2006, Steimer-Herbet, 2000, 2004, 2004-5, 2006, Steimer-Herbet and Braemer, 1999, Stékélis, 1935, Turville-Petre, 1931, Yassine, 1985, Zohar, 1989) an interesting point to highlight is the lack of research that has been carried out considering the relationship between monument type and lithology. Steimer-Herbet's (2004) work which identified differing distributions of monument families does not fully discuss this (although see section 3.2. for a preliminary interpretation of her family classes). Key to this lack of discussion is perhaps our inability, at present, to discuss lithological patterning at a regional scale.

	Basalts	Granites, quartz, schist, gneiss, mica schist, gabbros, diorites and dike rocks	Sedimentary (Limestones, marls, conglomerate and sandstones)	Sedimentary (Limestones, marls, conglomerate and sandstones) AND Basalts	Sedimentary (Limestones, marls, conglomerate and sandstones) OR Soft Alluvial/Fluvial Deposits	Soft Alluvial/Fluvial Deposits	Soft Alluvial/Fluvial Deposits OR Basalts	Soft Alluvial/Fluvial Deposits OR Sedimentary (Limestones, marls, conglomerate and sandstones)	TOTAL
Total No of Monument Clusters	84	6	257	2	1	8	1	1	360
% of Monuments	23.3	1.7	71.4	0.6	0.3	2.2	0.3	0.3	**100**

Figure 3.24. Showing the geological associations of monument clusters across the Levant

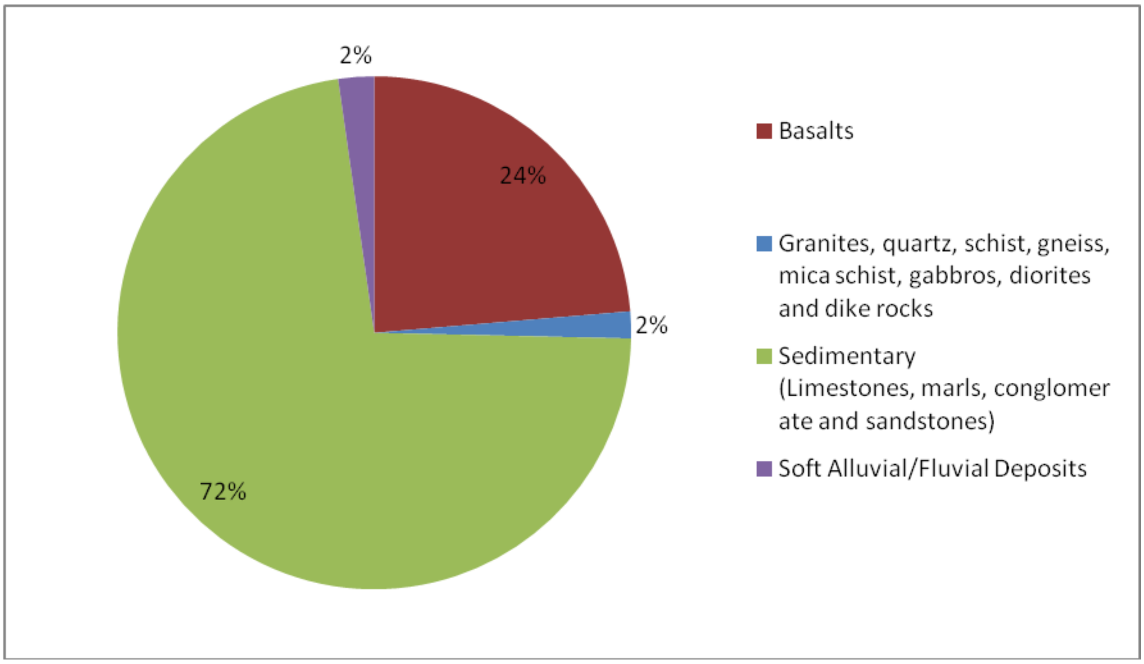


Figure 3.25. Pie chart showing the geological associations of monument clusters across the Levant (monument clusters where the lithological association is uncertain and may relate to more than one category have been excluded from this analysis).

3.4.1. ETM+ Landsat: A Methodology for Future Research

Our inability to reconstruct regionally comparable rock types represents a clear gap in our knowledge. It poses a considerable challenge for any investigations which aim to consider site and monument location at the broader Levantine scale. How then might such research be developed in the future? ETM + Landsat Imagery has been widely used for geological assessments within the disciplines of earth science, geography and geology (e.g. Lillesand *et al.*, 2008: 410-411, Table 6.3., Sabins, 1997: 85-101), although there has been little uptake of such research within archaeology. The Landsat imagery (ETM+) used for such analysis is composed of 7 bands of varying wavelengths (Figure 3.26). Band 7, in particular, can be used to distinguish or indicate the presence of different rock types. However, the classification of such data is both time consuming and involves considerable raster processing and field control. Such work was not within the remit of this thesis. However, the development (using Landsat ETM+ Imagery) of a lithological map appropriate for archaeological use is clearly an area for further research.

Band	Spectral Name	Principal Applications
1	Blue	Designed for water body penetration thus useful for coastal mapping. Can also be used for soil/vegetation discrimination and forest type mapping
2	Green	Can be used to measure green reflectance peaks, vegetation discrimination and vigor assessment
3	Red	Aids in plant species differentiation
4	Near infrared	Useful for determining vegetation types, vigor and biomass context. Can also be used for delineating water bodies and soil moisture discrimination
5	Mid-infrared	Indicative of vegetation and soil moisture content
6	Thermal Infrared	Useful for vegetation stress analysis and soil moisture discrimination and thermal mapping applications
7	***Mid-infrared***	***Useful for discrimination of mineral and rock types. Can also be sensitive to vegetation moisture content***

Figure 3.26. Principal applications of Landsat ETM + data (after Lillesand et al., 2008: Table 6.3.)

In order to illustrate the potential utilisation of Landsat ETM+ Images (prior to the use of such imagery for classification of rock-types) the association between the location of stone monuments, rock types and the raster values of band 7 were considered. The methodology for the extraction and processing of this data can be found in appendix 1.2. As already noted this analysis is not intended to be treated as a full interpretation of the lithological properties of the rocks in this region. Indeed, different rock types can have similar raster values. Having said this, what can we untangle from a purely visual interpretation of the Landsat 7 imagery and cross comparison with existing geological maps? Perhaps an area where such imagery can play a role at present is in highlighting areas where appropriate geological strata for the construction of stone burial monuments exists but no such structures have been recorded.

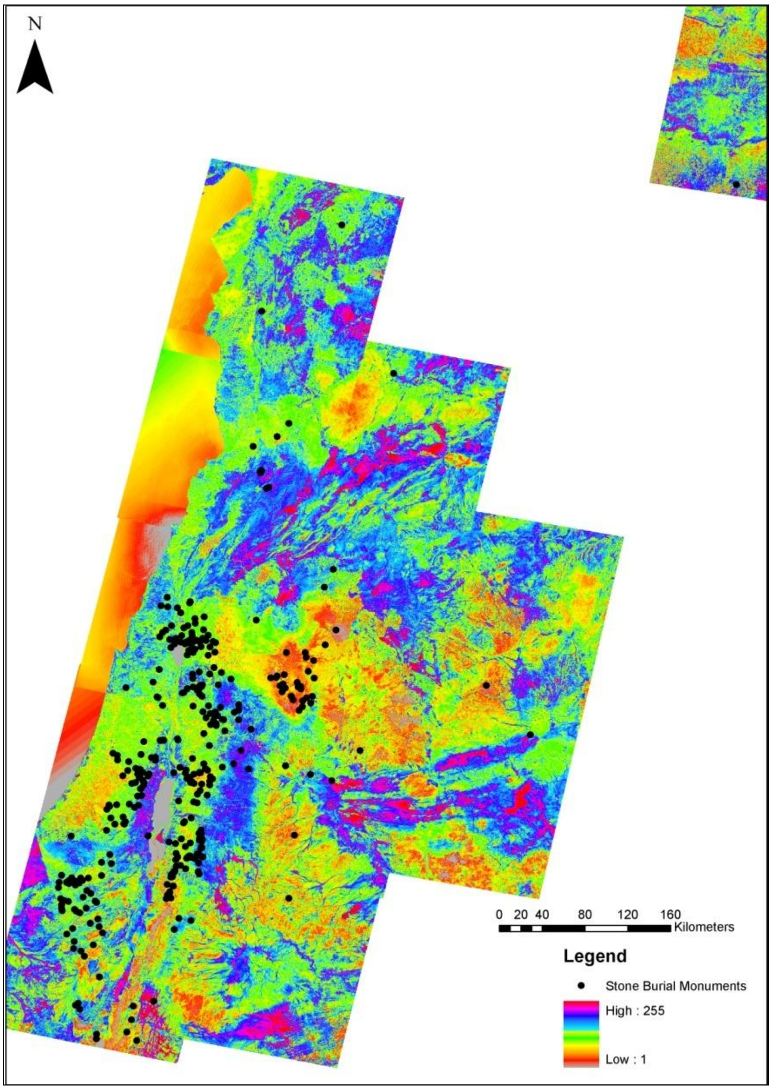


Figure 3.27. The distribution of stone monuments across the Levant plotted against a stretched Landsat ETM + (Band 7) Image.

A visual analysis of the distribution of monuments again the Landsat band 7 image highlights a number of interesting points. The concentration of monuments in the areas of the basaltic Jaulan and Hauran and also the uplands of the Jordan plateau can be noted (see figure 3.27.). However, these rock types appear to show similar raster values, emphasising the difficulties of using such analyses to distinguish between different lithologies. A basic plot of the relationship between monument location and raster value shows that monuments are predominantly associated with mid-range values i.e. those represented on the image by the colours green and yellow (see figure 3.27-8.). Fewer monuments appear to be associated with raster values over 100 in this case represented by the blues and pinks (see figure 3.27-8.).

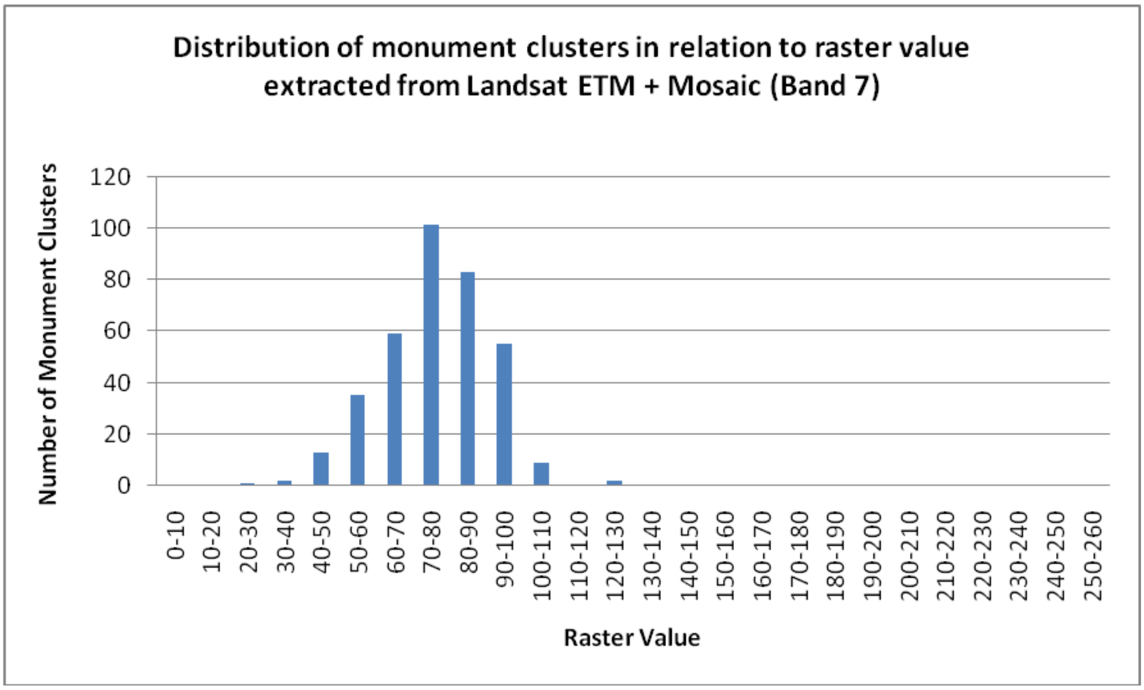


Figure 3.28. The Distribution of monument clusters in relation to raster values

Examining one example of a region with higher raster values [i.e. displayed as blue on the stretched raster (band 7) image] in combination with the geological map reveals a potential reason for this distribution. There appears to be a possible relationship, at least in this area, between higher raster values and softer lithology, classified on the geological maps as sand and clay (Figure 3.29). This may suggest that monuments were not being constructed in this area due to the un-suitability of the local rock types. Such a hypothesis also corroborates the analysis which was carried out utilising the geological maps for the area (Figure 3.25.).

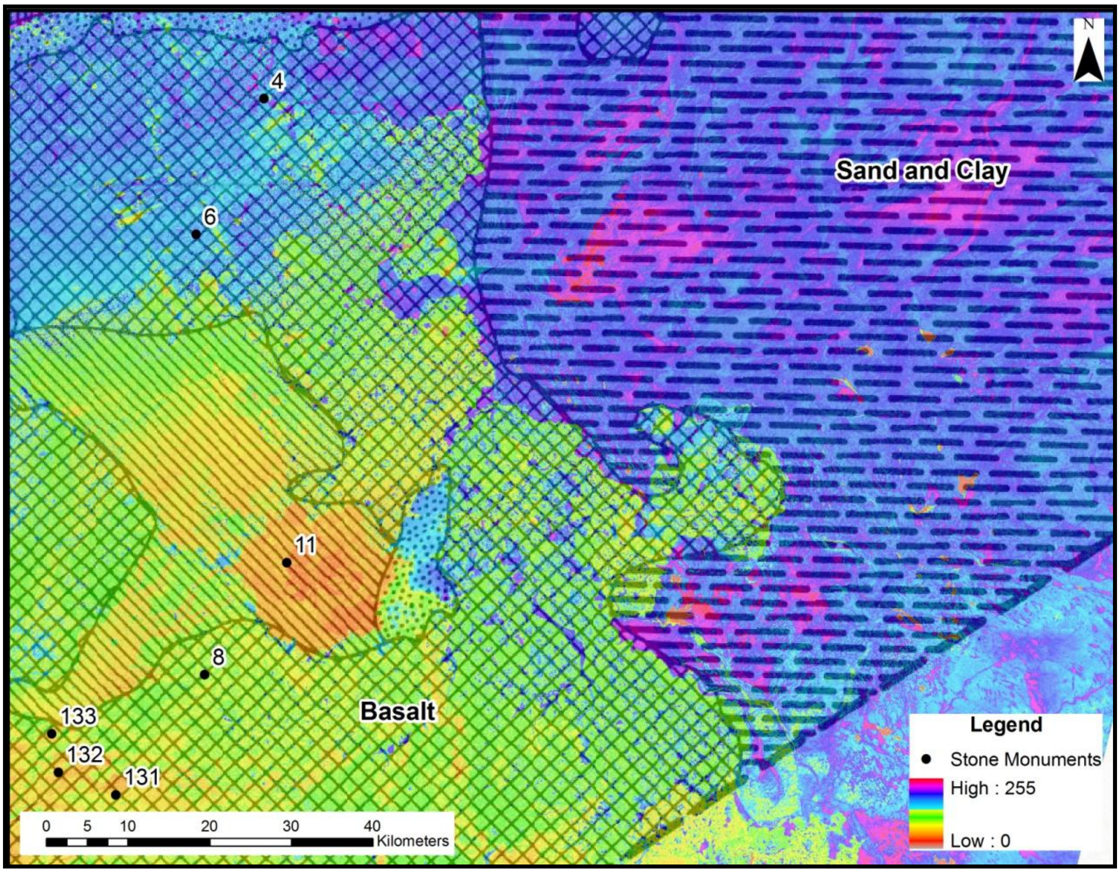


Figure 3.29. The relationship between high raster values (blues and pinks) and softer lithologies (clay and sand)

The area depicted in Figure 3.29 also falls beyond the 100mm rainfall isohyets. Limited survey has taken place within such regions. Research that has been carried out in these regions has revealed evidence for activity dating to a range of periods, albeit of a potentially different nature and intensity to that in areas with over 100mm of rainfall (e.g. Betts, 1982, 1983, 1993, Betts *et al.*, 1990, Betts *et al.*, 1991, Geyer *et al.*, 2007). The recent discovery of cairns in the region surrounding Palmyra (Al-Maqdissi *et al.*, 2008: 15) emphasises the fragmentary nature of our current understanding of the distribution of these monuments beyond the 100mm rainfall isohyet. If we examine the potential relationships between monument location and annual rainfall reliability it is clear that monuments can be found both in areas of higher rainfall, as well as arid regions, beyond the limit of rain-fed farming [see figure 3.30 (i.e. less than 200mm rainfall per annum)]. Given the traditional associations between stone monuments, such as cairns and dolmens and 'nomadic pastoral' populations (e.g. Prag, 1995: 82) this is an interesting observation. However, if we consider that around 76% of the Levant receives less than 200mm rainfall per annum (modern values) a higher percentage of monuments might have been expected to have been clustered in such regions (Figure 3.31).

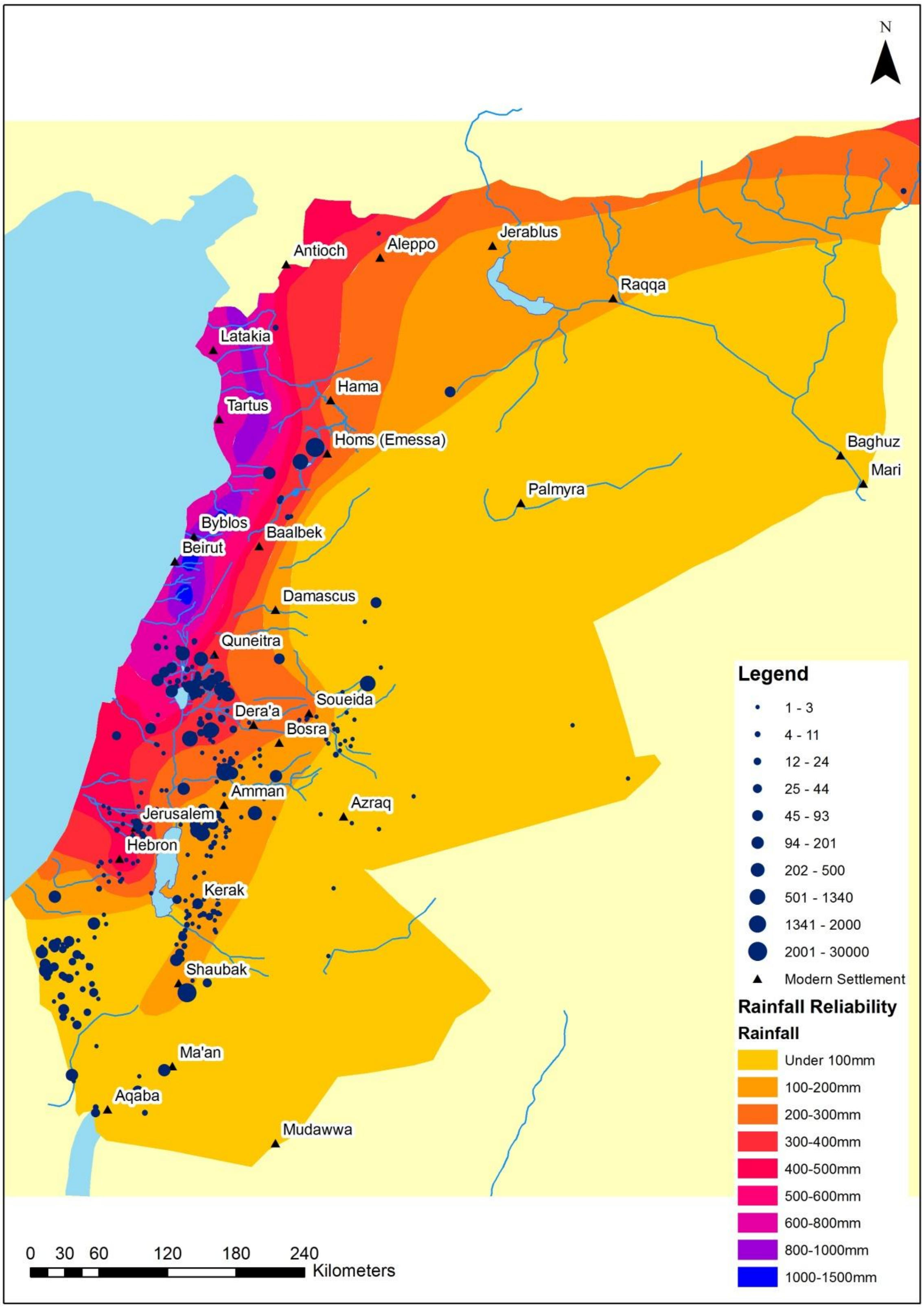


Figure 3.30. The relationship between monument location and rainfall isohyets

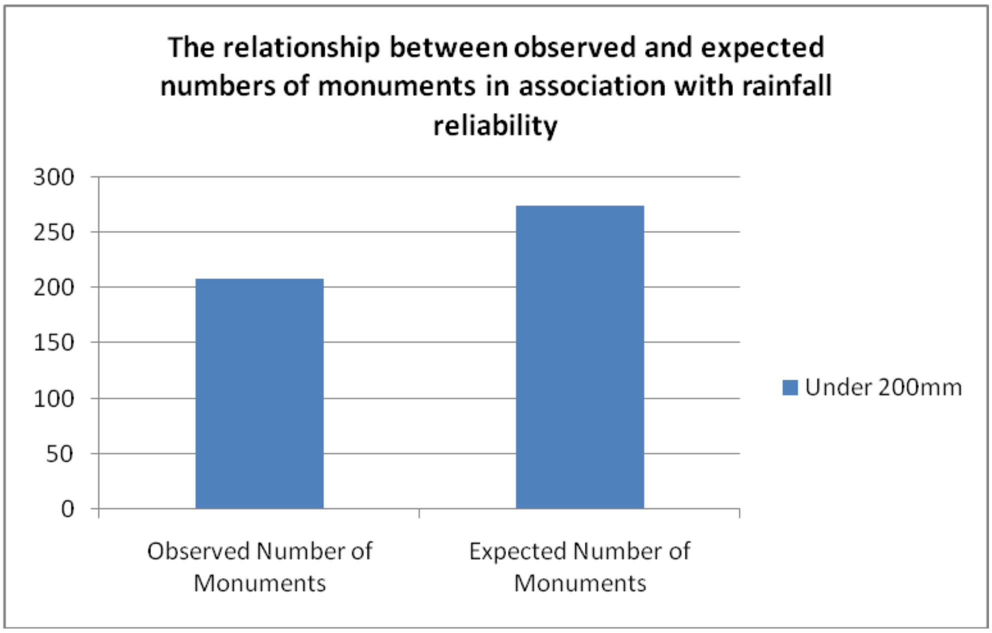


Figure 3.31. The Observed vs. Expected Frequency of monuments. These values are based on percentage area of the modern Levant which has under 200mm of rainfall per annum (see Appendix 3.3 for workings)

3.5. Beyond the landscape context: Absence/Presence of monuments as a product of human choice, destruction and research

The examples discussed above suggest a rather simplistic relationship between monument presence/absence and lithological strata, climate and elevation. However, this is not always the case. The site of Bab edh-Dhra is located within an area of lacustine marls to the east of the Dead Sea. This site has been studied in detail over the past few decades and has revealed evidence for shaft tombs, built mud-brick structures, as well as cairn tombs within the local vicinity (e.g. Clark, 1978/9, Schaub and Rast, 1989). The cairn monuments are located on limestone outcrops, whilst the shaft tombs and mud-brick charnel houses are located on lacustrine marls (Figure 3.32). On this basis there again may appear to be a fairly straightforward relationship between geology and monument location. However, this scenario is complicated by the development that can be seen at the site from shaft tomb burials to built charnel houses. This alteration shows no direct relationship to the local geology (Schaub and Rast 1989: 23). It has been suggested by Rast (1995: 127) that the change was necessitated by the limited space for underground burials. If this was the case the increased use of the nearby limestone outcrops for cairn burials might be expected. This does not appear to have occurred. Given the lack of dating material relating to cairns in this region, their chronological association with the shaft tombs and charnel houses cannot be determined. However, from the current evidence it appears that complex decisions, beyond those merely associated with the local availability of raw material for the construction of tombs, were involved in burial practice at the site of Bab edh-Dhra. As such, investigations need to consider the association between monuments and geological formations at a distinctly local basis in order to elucidate the subtle and localised patterns.

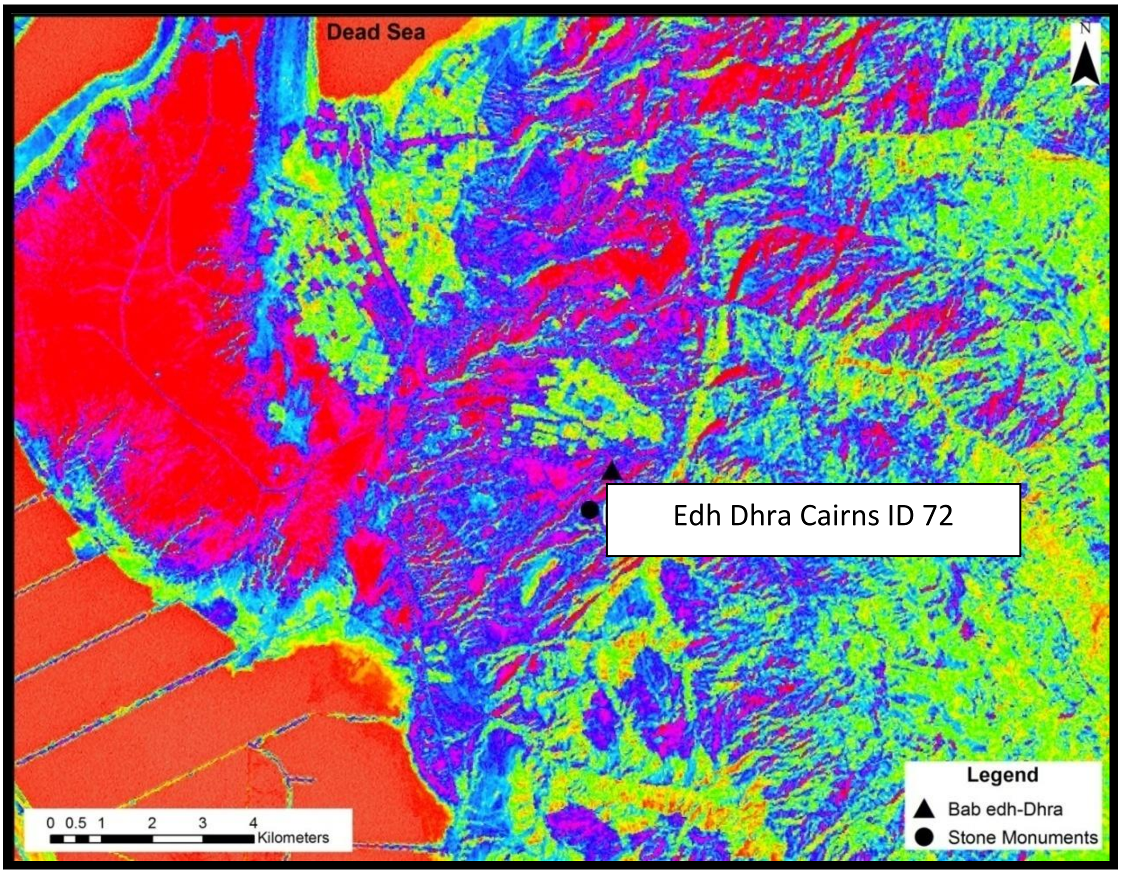


Figure 3.32. The location of the Bab edh Dhra cemetery and edh Dhra cairns (ID 72)

Another example, whereby the association between monument location and geology is more complex than is apparent from geological maps, is the site of Damiyah (ID 81). This region supports several different monument forms and has been studied in detail by both Stekelis (1961) and more recently by a masters thesis (de Vreeze, 2010). The lithology is composed of outcrops of travertine, from which the dolmens are constructed. This material is soft and due to its layered composition is particularly suitable for exploitation and monument construction (de Vreeze, 2010: 21). The geological map produced by Bender (1975) records this region as broadly composed of Marl, sandstone, conglomerate and travertine [Figure 3.33 (QS1)]. Without a local knowledge of this area it would have been impossible to determine the exact lithological properties of the rock types and thus, determine whether the monuments themselves were constructed using local materials, or those derived from elsewhere. Moreover, given the appearance of both sandstone and travertine in this region, the possibility that the dolmen field was specifically located to take advantage of outcrops of the latter, has to be noted. This example also provides a cautionary tale for locating monuments via the geo-correction of map data. The location of Damiyah was originally derived from geo-correcting the maps produced by Steimer-Herbet (2004: 129). Using this data, the monument cluster would, if examined in relation to geology have appeared on outcrops of Limestone, marl, shale and sandy limestone. However, during consultation of the reports pertaining to this monument cluster (de Vreeze, 2010, Stékélis, 1961) the association between this locale and travertine lithology was noted. At the broad scale this is of limited importance, due to the fact that at present the rock types can only be grouped into very broad lithological groupings (Figures 3.24-5). However, it is clear that if we are to ever to fully understand the relationship between monument location and background context, both a localised and regional knowledge will be necessary.

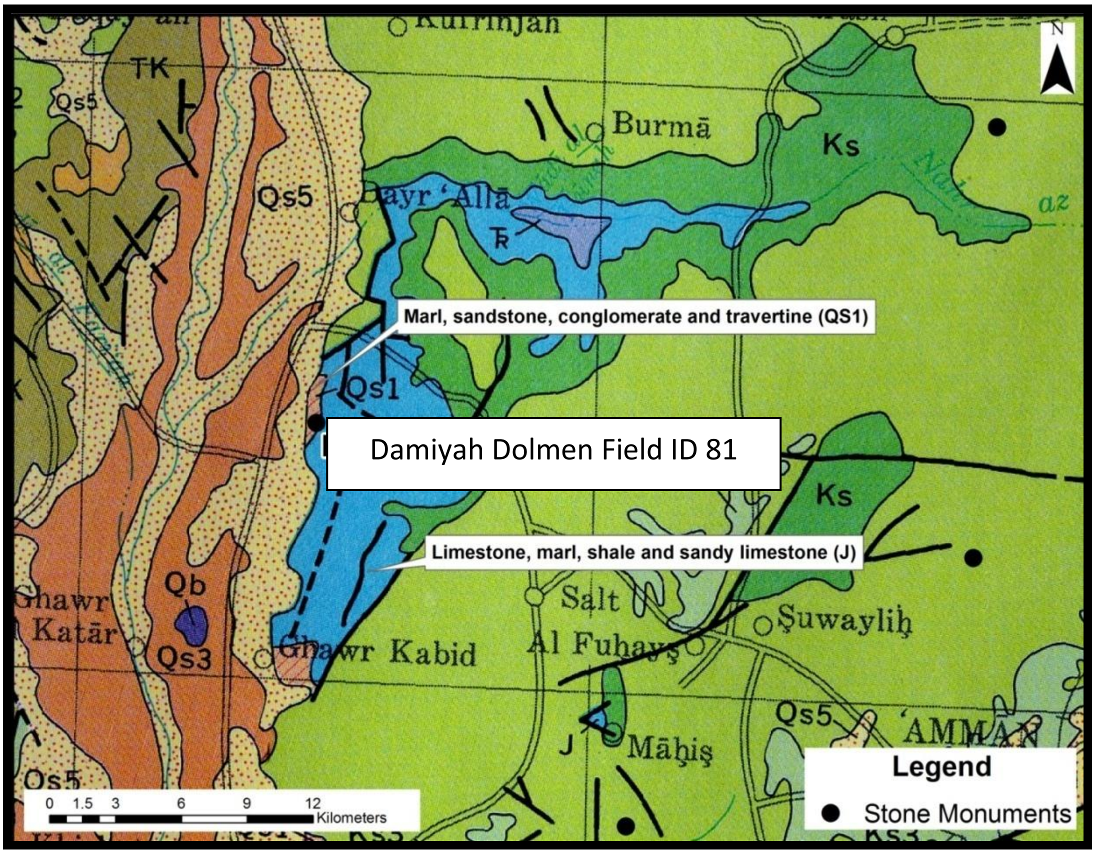


Figure 3.33. The Location of Damiyah dolmen field in relation to local rock types

3.5.1. Missing Monuments?

The Landsat Plot highlights very preliminary relationships between rock types and monument location. However, perhaps more importantly it allows us to determine areas where suitable rock types are present, yet no monuments exist. These regions are numerous and probably relate to a wide variety of factors such as lack of investigation, modern clearance and social choice. Based on findings in the Homs region it may also be that the absence of monuments is due to the difficulties of distinguishing such structures without the aid of aerial and satellite images (see Chapter 6). With this in mind I wish to briefly examine two case studies and consider why, despite appropriate rock types, monuments might not appear in these regions.

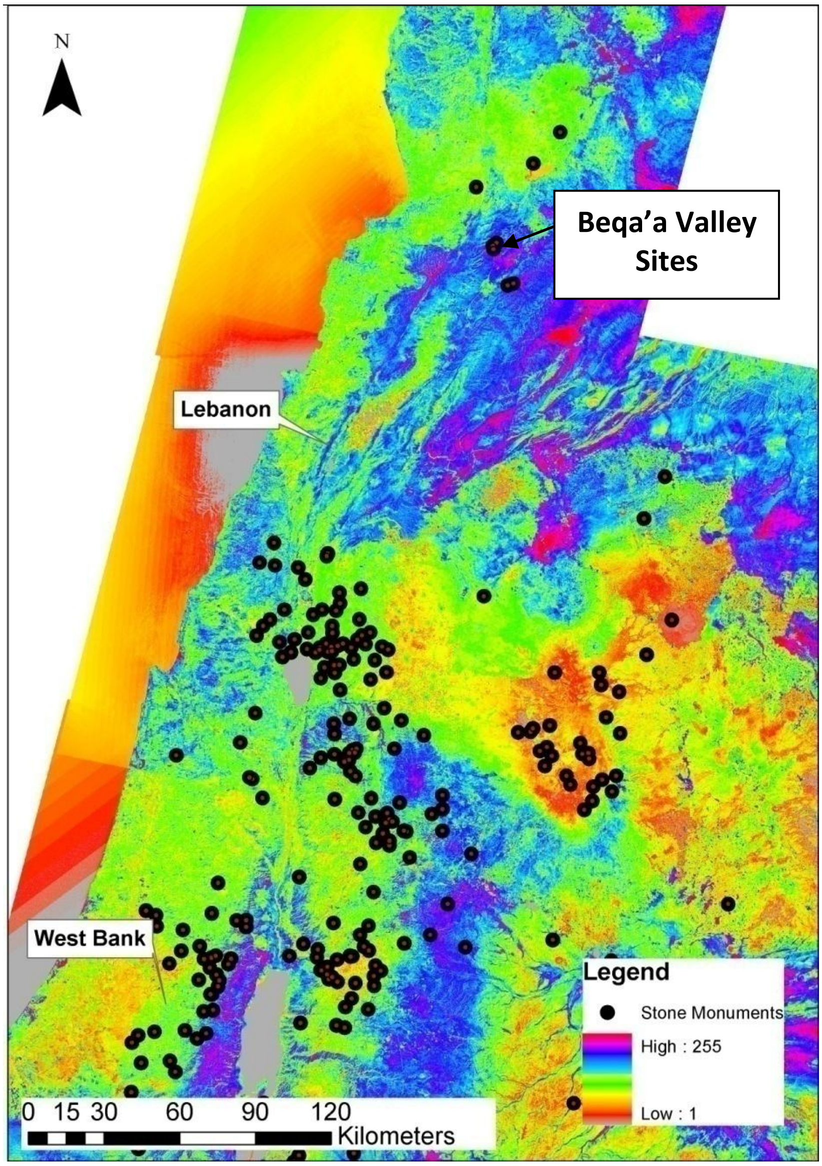


Figure 3.34. The distribution of stone monument across the Levant plotted against a stretched Landsat ETM + (Band 7) Image with the low density/absence of monuments in the West Bank and Lebanon highlighted.

3.5.1.1. The West Bank

Stone monuments are found in considerable numbers in the region surrounding Jerusalem. However, the northern West Bank has very few recorded monuments (Figure 3.35). Despite the difficult political situation in this region, the absence of recorded monuments cannot be associated with lack of archaeological investigation. Since 1968 a substantial number of excavations and surveys have been carried out in this area [although it should be noted that this material has only recently become accessible via the west bank and east Jerusalem archaeological database project [Figure 3.38 and (Greenberg and Keinan, 2009)].

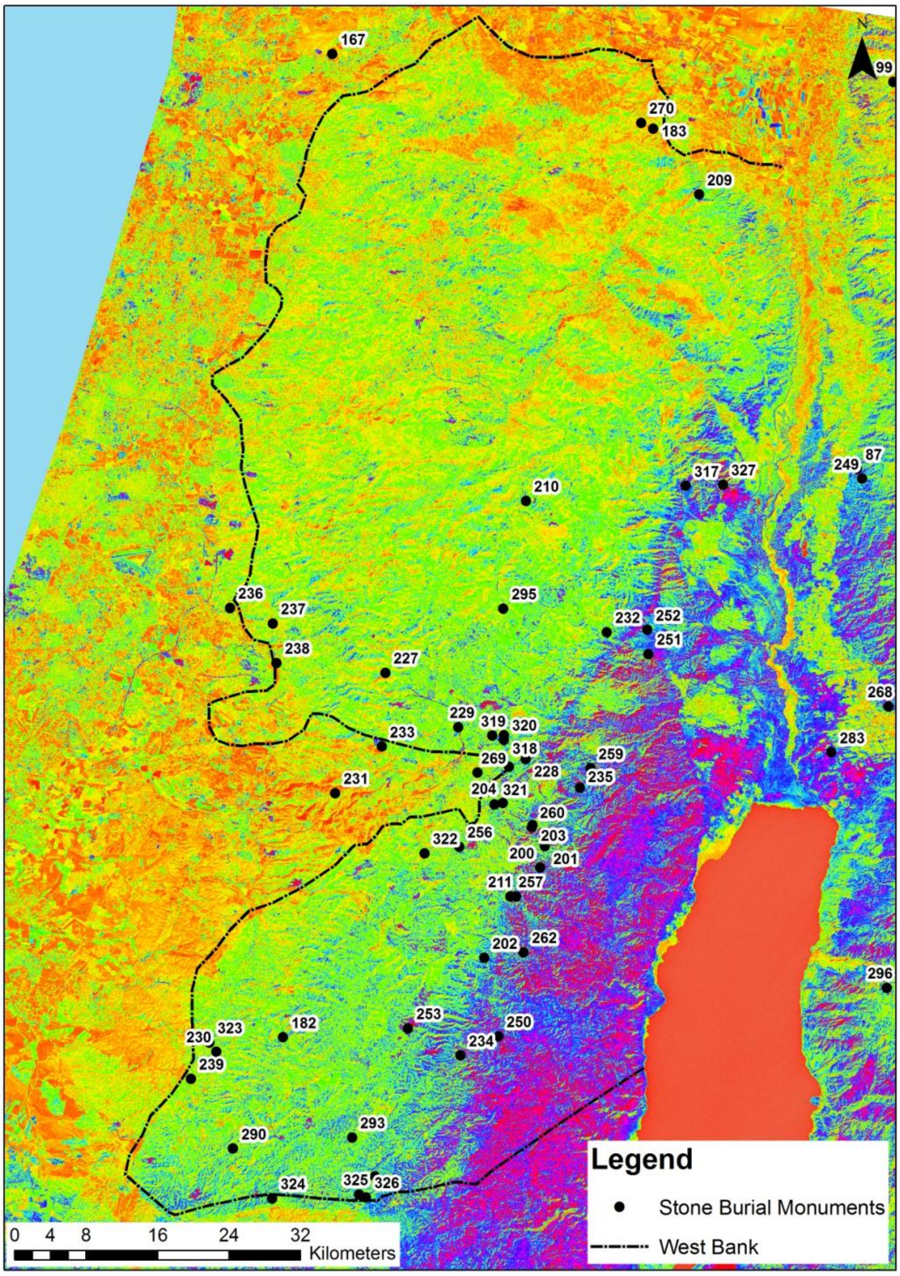


Figure 3.35. Stone Monuments in the West Bank region

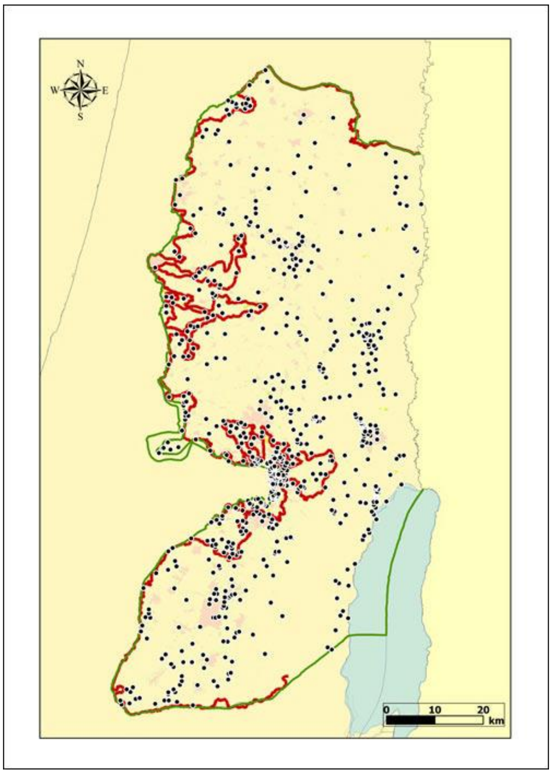


Figure 3.36. Location of surveyed and excavated in the west bank (www.tau.ac.il/humanities/abraham/archaeological-database.html, 2010)

Given the large number of early investigations in this region (e.g. Conder and Kitchener, 1883, Wilson *et al.*, 1881) it would be expected that, even if monuments had been more recently destroyed, at least some structures would have been noted and recorded within this region by these early investigators. The region is composed of limestone, sandy limestone, dolomite, nodular limestone, shale and gypsums (Bender 1974) an extension of the strata which can also be in the Jerusalem area where monuments have been recorded. Given these facts there would appear to be no simplistic explanation for the lack of monuments within this area. However, one possibility is that destruction of monuments took place at a much earlier date. This early clearance may then have been compounded by modern destruction and also the lack of accessibility to archaeological reports from this region. It is interesting to note that this possibility was highlighted in the early 20th century (Broome, 1940: 209) and linked to the throwing down of the pagan altars mentioned in the Bible. Such direct parallels are perhaps misleading, or at least tenuous. However, this example raises the possibility of monuments being destroyed in antiquity. Moreover, it represents a particular type of *'landscape of destruction'* (Wilkinson, 2003: 41-3), whereby specific types of site/structure have been destroyed.

3.5.1.2. Lebanon

A limited number of stone monuments have been recorded in Lebanon. Several clusters in the north and south have been noted (Figure 3.34. and appendix 3.1.). However, no monuments have been found in central Lebanon. Marfoe (1995: 82), in his survey of the Beqa'a Valley makes reference to the presence of dolmens and tumuli scattered across the foothills in this region. However, whilst he mentions several examples he fails to give any further details concerning their nature or the wider distribution of these monuments across the region. Research in Lebanon, to this day, has tended to focus along the coastal region. Indeed, as the publication of recent research projects in Lebanon in Near Eastern Archaeology [Volume 73/2-3 (2010)] demonstrated there has been an almost total lack of investigation in the mountainous areas and foothills of the Lebanon and Anti-Lebanon mountains.

The lithology of these regions, as shown by Figure 3.34 and geological maps (Wolfart 1967), is clearly suitable for the construction of monuments. Moreover, the reference by Marfoe (1995: 82) to scatters of tumuli across foothills raises the possibility that monuments are still to be found in these areas. The nearby survey of Ibanez *et al.* (2005: 25) have suggested that the necropolis and tumuli discovered in the basalt region to the west of modern Homs can be divided into two groups on the basis of topographical elevation. They argue that larger necropoli are located on plains, whilst smaller necropoli and single monuments are found on ridges and upland locations. The implications of this dichotomy are yet to be ascertained. Further research is required before the extent of such patterns can be discussed (Al-Maqdissi *et al.*, 2005: 25). However, areas such as the Lebanon and Anti-Lebanon foothills represent areas for future research, via both fieldwork and satellite imagery analysis. Their location at the edge of the region studied by Ibáñez *(2004-2008)* would allow the broader implications of the differing distribution of large necropli and single monuments to be tested in a different, yet geographically proximal region.

3.6. Meaningful Patterns or Limitations of Survey?

Given the data discussed above, to what extent can we view the currently known distributions of stone monuments throughout the Levant as coherent archaeological patterns? The antiquarian reports of the 19th century were remarkably detailed. However, recent expansion of archaeological investigation into areas which could be seen as 'sub-optimal' or even 'marginal' and the growing focus upon multi-disciplinary research and landscape approaches (e.g. Braemer *et al.*, 2004, Castel, 2007, Geyer *et al.*, 2007, Gondet and Castel, 2004, Haidar-Boustani *et al.*, 2004, Philip *et al.*, 2005) has demonstrated that we have a wealth of information still to acquire, as well as a wide range of new techniques and evidence sources to utilise. As such, we need to develop a method to deal with this body of material. The flaws associated with the use of typological terminologies can lead to misleading interpretations being made. However can we find a more appropriate way of studying these monuments, synthesizing current and past research? As this thesis hopes to suggest the key may be to examine levels of variability. Thus, rather than employing strict typological terminologies, variability in form and associated features, landscape, environmental context and historical context are considered alongside one another.

Bearing in mind the relatively recent discovery/cohesive examination of archaeological features in areas, such as the Jaulan, Hauran and Homs Basalt (e.g. Braemer, 1984, 1988, 1993, Epstein, 1985a, 1998, Ibáñez *et al.*, 2007, Philip *et al.*, 2005) the representative nature of our evidence also comes into question. As discussed in section 3.5 it is clear that there are large areas, suitable for the construction of stone monuments, which may be expected to yield future discoveries. This possibility is emphasised by recent discoveries made east of the 100mm rainfall isohyet at ar-Rawda [Record 50 (Castel, 2007, Castel *et al.*, 2005, Castel *et al.*, 2004, Castel and Peltenburg, 2007, Gondet and Castel, 2004) and Palmyra (Al-Maqdissi *et al.*, 2008: 15). Key to addressing these gaps in distribution may be the wider use of satellite imagery and aerial photographs to target areas where these monuments occur. Having said this we have to question the relevance of embarking upon a study mapping stone monuments. As will be further emphasised in chapters 5-9, these monuments cannot be considered as a single homogeneous phenomenon. In order to understand their utilisation, construction and conceptualisation throughout history we need to consider them in relation to their chronological context. As such, the very consideration of cairns and stone monument as a distinct subject of study is flawed. What instead the remaining chapters of this thesis will consider is the role of these monuments within their local and chronologically specific contexts.

3.7. Summary and Conclusions

This chapter has presented a review of the known stone monuments in the Levant alongside a consideration of geology, environment, climate, as well as associated archaeological features. It has suggested that the distributions of stone monuments across the Levant may be associated with a range of complex factors ranging from background lithology to the history of research in different regions. Some preliminary distributions in 'typological groupings' have been suggested, however, the validity of such groupings has also been questioned. It appears that whilst some relationships between monuments and natural features such as *wadis* are visible at a local scale, these factors do not playing an overriding role in the distribution of stone monuments. Rather than an exhaustive study, this chapter has aimed to point towards avenues for future research, as well as highlight the problematic nature of synthesising material ranging in date from the 19^{th}-21^{st} centuries. Ultimately, it has pointed towards the lack of patterns visible across the region, suggesting that many of those that are present may relate to patterns of research, rather than archaeological distributions.

CHAPTER 4: BEYOND THE BRONZE AGE: A HISTORIOGRAPHY OF STONE MONUMENTS

Introduction

Research concerning stone monuments across the Levant has focused on their construction, use and social/ritual role in the 4^{th}-3^{rd} millennia BC (see chapter 3; however, such features have been in use for thousands of years (e.g. Avner, 1984, Conder, 1889a: 134, Doe, 1971: 77, 1983: 124-5, Palgrave, 1865: 131). Conder (1889a: 134) during his travels across this region mentions 'Arabic circles', whilst earlier accounts record a variety of myths and stories associated with the use of such structures (Palgrave, 1865: 251-2, Tristram, 1874: 302, Tyrwhitt-Drake, 1874: 46). No coherent attempt has yet been made to collate this information and consider how the presence and understanding of monuments, built during prehistory, may have influenced later traditions. Whilst some myths exist, very little is known concerning the stories, traditions and interpretations of these features by local populations. This chapter aims to consider just a few of the customs surrounding these monuments, posing, rather than answering the majority of questions. Whilst not an exhaustive overview of the material, which has been published or remains un-published, it represents an attempt to demonstrate the importance of considering the use, re-use and re-socialisation of these structures within later spheres of activity.

4.1. Re-use, re-construction and re-integration: Cairn burials and associated monuments in the Classical and Islamic Near East

Excavations and surveys examining cairn and dolmen monuments throughout the Near East have often yielded post-Chalcolithic-EBA material. On occasion, this material has been found in association with earlier remains (Dubis *et al.*, 2004: 17), whilst in other examples it represents the only evidence found (e.g. MacDonald, 1992: 269). Burial tumuli and associated monuments can also be seen to have relatively modern associations (Conder, 1889a: 134). Early travellers record traditions of re-use and re-integration of ancient remains within modern tombs or buildings [(e.g. Hogarth, 1896: 10, Stark, 1942: 234) and see Figure 4.1], a feature which has also been observed within the Homs region [see Figure 4.2 and (Newson *et al.*, 2008-9: 30)].

Figure 4.1. Image of Roman milestones in the cemetery of Kanlu Kavak, Turkey (Hogarth, 1896: facing page 10).

Figure 4.2. Image of re-use of earlier building lintels as grave revetments in an Islamic grave, Dmeini al Gharbiya, Homs Region (image courtesy of Dr Stephen McPhilips)

4.1.1. The Appearance of post-Chalcolithic-EBA cairns, megalithic structures and circles

Structures, such as megalithic circles, nawamis, cairns and tumuli can be dated to a variety of periods across the Levantine/Arabian region. Indeed, it appears that within some regions a degree of continuity, not only in terms of construction, but also in terms of use can be seen. During survey within the regions of Southern Arabia, Doe (1971) identified a range of stone circles, interpreted as *hauta*', '*ḥīma*' and '*ḥaram*', 'sacred enclaves' or tribal gathering areas. These features, were dated to the 6-8th centuries BC, although they were believed to show evidence of earlier traditions (Doe, 1971: 76-7, 1983: 124-5, Gawlikowski, 1982: 301). Similarly, 19th century explorers make reference to local groups constructing tombs and circles bearing a striking resemblance to monuments, such as dolmens and nawamis. The authors refer to such structures being representative of the survival of paganism in these areas (Conder, 1892c: 265, Wilson *et al.*, 1881: 7, 325). Wilson *et al.* , (1881: 325) also suggest that '*fellah*' sanctuaries, which could be interpreted as pagan in nature, were given credence through their association with Islamic elders, prophets or saints. In many cases, structures traditionally associated with either Islamic or pagan practices can be found in association. Haiman (1995: 44) records the presence of cairn burials, massebot and mosques alongside one another. Similarly, Oliphant (1885: 182) made reference to the presence of an 'Arab stone circle' in the vicinity of the alignments of stones and dolmens in the El-Mugeheir region, a complex which is now seen to be Chalcolithic/EBA in date [(Savage, 2010) and see Figure 4.3]. Other researchers examining this monumental complex also mention the association between the Chalcolithic/EBA remains and recent features. For example Conder (1889a: 184-7) records the presence of recent tribal markings on menhirs in the region. Within Syria and Transjordan, examples of apparently prehistoric cairns showing evidence of safaitic and modern Arabic inscriptions and graffiti on their exteriors exist (e.g. Nasrallah, 1963: 17-18, Rees, 1929: 391, Figures 2, 3). The presence of Roman mausolea alongside cairn burials in the NSA (e.g. Newson *et al.*, 2008-9: 29) suggests variability in burial techniques, but also some degree of spatial continuity.

Figure 4.3. The complex of El-Mugheir, Jordan (photographs courtesy of Gajus Scheltema)

Many of the early travellers in the Near East refer to cairns which have been used as 'Arab burial places'. Conder (1892c: 264-5) refers to bodies being placed on the ground and covered with piles of stone in the regions of Samik and Meseiyik. Doughty (1908: 267) also makes reference to the presence of recent cemeteries of nomadic pastoralists in the region of Hâyil, containing graves of heaped stones, possibly marked by basalt headstones, with very little differentiation between individuals. Burckhardt (1822: 428-9, 452) suggests cairn burials were used for both Bedouin tribes in areas of winter encampment and pilgrims undertaking the Haj who died en-route. He also mentions the presence of saints' burials consisting of heaps of earth and stones, only being marked out as different via the placement of herbs on the graves (ibid: 482). This lack of differentiation and that mentioned earlier in the Hâyil region raise an interesting point. Archaeologically how would it be possible to recognise the tombs of holy men or important individuals within society if no differentiation is visible? It is often the activities and events which take place at such tombs which mark them out as different (e.g. Burckhardt, 1822: 354, Meeker, 1979: 209, Pitts, 1731: 18). In other cases, stories and myths survive concerning these locales or natural features associated with them, marking them out as special (e.g. Schumacher, 1890: 97, 106). Ancient roadside tombs, were, and still are referred to as locations of importance or the resting place of holy men without any supporting evidence necessarily being present (Lissovsky, 2008: 106).

The presence of small, often ovoid or boat shaped cairns, can be observed in the Homs region (Figure 4.4). These differ in many respects from other cairns identified within the NSA; they demonstrate levels of variety, in terms of shape, size and building material. However, they also indicate a general continuity in terms of burial technique. In part, this could be related to the fact that there is a limited number of ways, especially within stony landscapes, to bury human remains. Thus, the re-use of architectural fragments, tombs and archaeological remains in later burials (e.g. Browne, 1799: 356, Hogarth, 1896: 10, Stark, 1942: 234) is perhaps pragmatic re-use. However, the importance of referencing the past should not be overlooked. Stark (1942: 234) in her travels in Arabia recorded an area of ruins, where an ancient cairn burial contained an inscribed slab in Hadhrami dialect commemorating its renovation. The fact that the inscription made special reference to ***renovation*** highlights that this act may have been an important step within the burial process, indicating a reclamation or demonstration of an association, or at least an imagined association, with the tomb or its previous owner. In the Homs NSA Newson *et al.* (Newson *et al.*, 2008-9: 30) have emphasised the possible re-modelling of pre-Roman burial structures into Graeco-Roman style masolea. The presence of later constructions, alongside earlier tombs or features (ibid: 29-30), suggests that deliberate choices were being made concerning the location of burials and shrines, potentially negating a simply pragmatic approach to the re-use of material in these structures.

Figure 4.4. Image of cairns and Islamic burials from Tell Nebi Mend, Homs (bottom left); Qalat Bahrin,nr.Massiaf (top and bottom right) and Dmeini al Gharbiya, Homs Region (top left).

Stories and the use of cairns and associated structures extend beyond that of burial. Burckhardt (1822: 420) during his travels records the use of cairns to mark locations along the road to *Wadi Mousa*, with groups sacrificing an animal to Haron and constructing cairns where the blood flowed to the ground. In addition, Meeker (1979: 209) suggests that the tombs of holy men were locales where Bedouin groups, engaged in hostilities, would meet and try to resolve their difficulties. This recalls the interpretation of many of the circular enclosures seen in areas, such as Southern Arabia, (e.g. Doe, 1971: 76-7). Cairns are also associated with memorialisation, associated with a great victory (Wilson *et al.*, 1881: 45), or possibly marking a successful journey (Hole, 2009: 264). In his discussion of menhirs, cairns and dolmens in the Levant, Conder (1892c: 241-3) draws parallels with practices in India. He mentions menhirs which stones are thrown at. Over time the stone pile surrounding these features increases with these structures eventually becoming the nucleus of a memorial cairn.

Such monuments can also be seen to have a more mundane purpose, marking important and possibly ancient routes across mountains or deserts (Conder, 1889a: 202, Palgrave, 1865: 131). Palgrave (1865: 131), in his discussion of cairns constructed across “the great Dahnā” or “Red Desert”, highlights that these piles were pivotal as landmarks in the pathless desert being constructed by a number of important local individuals. These piles also retained a social role, memorialising the good deeds of the individuals who were responsible for their erection. As Hole (2009: 264) has suggested in relation to modern cairns within the Zagros region, piles of stone often mark the successful crossing of a particular route, with travellers and pastoralists adding a stone to the pile as they pass by. The cairn becomes both a marker for the trail, as well as fulfilling a social and possibly even sacred function. A similar significance is suggested in relation to the stone alignments recorded by Conder (1892c: 213) in Palestine, with pilgrims erecting stone cairns along main routes at the points where important shrines became visible. Furthermore, despite arguments against interpreting such structures solely as markers of tribal territory (see Chapter 9 for further discussion), in some cases the utilisation of cairns for this purpose can be documented (Conder, 1889a: 191). Elsewhere such features came to fulfil various agricultural functions, with stone walls and circular structures being re-used by local Bedouin as cattle enclosures (Turville-Petre, 1931: 163-4). Conder and Kitchener (1883: 157) also make reference to the formation of cairns as a result of land cultivation, whilst the use of stone piles as ‘grape mounds’ (Wilson *et al.*, 1881: 25) will be discussed in more detail in Chapter 9. Research in the Homs NSA has demonstrated that many cairns have been re-used as wind shelters or hunting hides (Figure 4.5). Turville-Petre (Turville-Petre, 1931: 163) suggested that the presence of Islamic pipes and material of a Roman-Byzantine date could be associated with the re use of dolmens by shepherds or outcasts. Bearing this potential re-use in mind it is worth turning to the range of myths and stories which exist concerning such monuments and their use, re-use and desecration throughout the Levantine region.

Figure 4.5. Re-use of Homs cairns as wind shelters/hides (Cairn 97, SHR 666)

4.2. The Myths of Cairns: Interpreting stories of stone monuments in the Levant and Arabia.

Dolmens, cairns, menhirs and stone circles have been seen as enigmatic structures for hundreds of years, with explanations for their construction ranging from erection by giants (Broome 1940: 215), the petrifaction of wedding groups, or the representation of victorious armies (Conder, 1892c: 109, 204). Such myths and indeed the structures themselves were seen to bear striking resemblances across the world (e.g. Conder, 1892c: 204, Horsfield, 1933: 472, Vincent, 1901: 297-8) often leading early antiquarians to highlight their single origin, deriving from an Indo-European migration (Conder, 1892c: 202). Other investigators suggested that monuments, such as cairns, dolmens and stone circles could be related to erection by distinct tribes, marking their territories (Tristram, 1874: 302). Investigators today still highlight the use of such features as markers of tribal boundaries or pastoral migration routes [see chapter 3.2.2. for further discussion (e.g. Prag, 1995, Ur and Hammer, 2009: 43)].

Dolmens, cairns and menhirs possess various names throughout both the Levant and Arabia, often being referred to as "*rujm*" (e.g. Conder, 1889a: 205) or "*arjem*" in Morocco (Trecolle, 1954: 146). Early travellers make reference to local Bedouin and Arab groups referring to them as "*Qbour Bene Israil*" ["graves of the children of Israel" (e.g. Vincent, 1901: 278-9)]. Elsewhere menhirs are known as "*Meshahed*" or "*witnesses*" (Conder, 1892c: 214) indicating the memorial nature of at least some of these constructions. Conder (1889a: 10-11), makes reference to a group of specific cairns and dolmens within the region of 'Ain el-Minyeh being known by the locals as "*Minatir*" or ancient watchtowers. More specific toponyms are also often present such as "*Rujm Aby en Naml*" (Cairn of the Father of the Ant), which refers to the location where a robber was shot and buried and "*Rujm el-Banat*" (Cairn of the girls), which is said to make reference to a burial ground for women along the Haj route (ibid: 205-6). Several investigators also refer to a specific dolmen in the Adwan region which is named "*the Ghoul's house*" (Conder, 1889a: 160-1, Finn, 1882: 135). There appears to be a repeated association, between such structures and the homes of jinn/ghouls, who often require propitiary offerings to be made to them (Conder, 1892c: 305, Conder, 1889a: 236, Tristram, 1874: 302). This tradition appears to have a long history with references in the New Testament suggesting that the possessed often dwelt amongst tombs (e.g. Broome, 1940: 228-230, The Bible Lands Series, 1880: 127-8).

Throughout Syria and the Levant, Conder (1892c: 277) mentions the presence of shrines associated with early patriarchs, such as Abraham and Noah, whilst Broome (1940: 209) suggests that traditions held within these regions were adapted to suit different mythological backgrounds over time. Broome's (1940) doctoral thesis emphasized connections with "giants" and dolmens. He argued that the Old Testament makes reference to structures interpreted by the Hebrew nations as "altars" the construction of which was attributed to a gigantic aboriginal race known as "Rephaim" (ibid: 208-210, 215; Genesis 14:5). Later investigators, such as Glueck (1951: 473-4), attempted to draw parallels between dolmens and associated dwellings in the region of Tell Damieh, arguing that the size of the latter precluded against the dolmen constructors being gigantic in nature. It is interesting to note that similar mythological traditions were recorded by Palgrave amongst nomadic groups in the Nejd. In this case the presence of three monumental stone circles were assigned to the mythic tales of the giant magician "Dārim", a medieval hero of the 11th century AD (1865: 248-252).

The erection of cairns above a deceased enemy is mentioned on a number of occasions in the Old Testament (Joshua vii: 26; Joshua viii: 29; 2 Sam xviii: 17), a custom also noted in relation to 19th century practices in this region (e.g. The Bible Lands Series, 1880: 130). Broome (1940: 224) suggests that the use of cairns occurred specifically when a potentially malevolent spirit was involved, a tradition and association which appears to have great longevity and has even been used within modern literature [e.g. (Tolkein, 1966: 193) within the French translation of Fellowship of the Rings '*galgal*', a term also used by Nasrallah (1950: 316-322) in his description of tumuli in the Hauran, is employed (Bradbury, 2010: 206-7)]. Conversely, biblical references testify to the erection of cairns and menhirs in association with the memorialisation of treaties (e.g. Genesis, xxxi: 44-48; Broome, 1940: 223); sacred events (Joshua iv: 9; Broome, 1940: 220) and tombs of import (Genesis, xxxv: 20; The Bible Lands Series 1880: 129). Reference is also made to the Lord being appeased by the construction of such memorials (Joshua vii: 26; Broome, 1940: 223). The majority of early researchers viewed these monuments as indicative of 'pagan' practice (e.g. Conder, 1892c: 237-8, Finn, 1882: 134). They recount biblical references recording the sacrifices and libations involved with the erection of cairns, altars and menhirs [e.g. Genesis xxxv: 14 (Conder, 1892c: 215, Broome, 1940: 223]. Herodotus and early Arab poets also refer to sacrifices being made to menhirs and sacred stones (Conder, 1892c: 218-9). It is interesting to note later biblical references to "pagan altars" being overturned and destroyed by individuals such as Josiah and Hezekiah (Broome, 1940: 209, Conder, 1892c: 272-3, Finn, 1882: 135). Broome (1940: 209) went as far as to suggest that the lack of dolmens in western Palestine could be seen as a result of this religious reformation (see Chapter 3.5.1.1.).

4.3. Modern burial practice and the use of Stone Monuments

Relatively little can be said concerning the modern associations of cairns throughout the Levant, in part due to reluctance of groups to talk about their views and current practices surrounding burial and the use of cairns, an observation also made by Conder (1892c: 277). In some areas the use of simple cairn burials has continued (Figure 4.6). Beck (1991: 247) records the death of a young son of one of the Qashqai tribes, mentioning that his father set up an inscribed gravestone, with the Mother of the boy visiting the grave every spring and autumn during the pastoralist movement cycle. Many of the travellers in this area during the 19th century make reference to simple stone or earthen graves (e.g. Conder, 1892c: 264-5, Doughty, 1908: 267), with Doughty (1956: 214) referring to such graveyards as filling him with horror. Elsewhere, simple stone circles are used by travellers and nomads as shrines and mosques (Baaijens, 2008: 114). In the Homs region whilst some tombs and cairns of holy men are in a degree of disrepair (Figure 4.7), others are well maintained (Figure 4.8). In the majority of cases, whether in disrepair or not, the origins of these tombs are known even amongst the younger generations (authors own observations during fieldwork). The construction of these monuments in regions outside the Levant and their use as memorials of 19th century explorers or notable individuals, as well as for war graves can also be noted (Figures 4.9-10). These ongoing practices emphasize the importance of such structures within relatively modern social practice.

Figure 4.6. Modern cairn burials alongside ‘traditional’ Islamic graves at Dmeini al Gharbiya, Homs Region

Figure 4.7. The grave of a local 'holy man' at Dmeini al Gharbiya, Homs Region. Whilst the villagers were aware of the individuals' importance, the grave was in disrepair and no longer maintained.

Figure 4.8. Saints' tomb at SHR 885. Despite this tomb being several kilometres from any modern settlement the structure is still maintained by local shepherds and farmers.

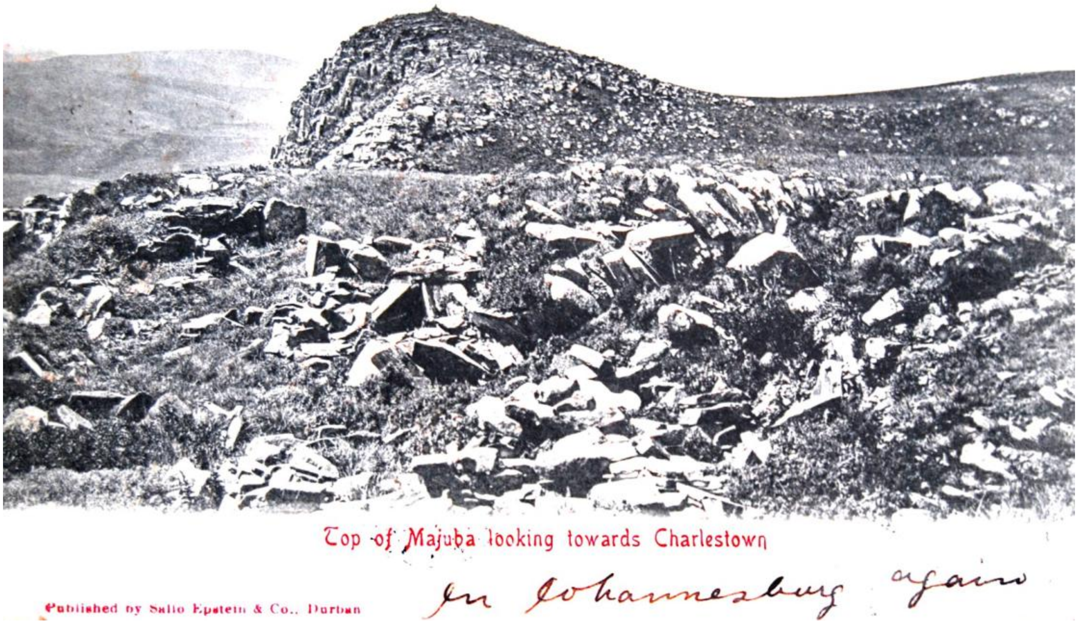


Figure 4.9. Majuba,Drakensberg Mountains, Natal Colony, South Africa. Site of battle that took place from the night of the 26th February in the First Boer War of Independence 1881. Cairns mark some of the 75 British soldiers buried on the battlefield (pers comm. Bradbury 2010).

Figure 4.10. Memorial cairn to Major General Sir George Colley. Colley's body was removed after the battle to a nearby cemetery (pers comm. Bradbury 2010)

Figure 4.11. 'Trig' survey cairn Stapeley Hill, Shropshire, UK. This trig point is found only 100m away from a Bronze Age cairn and around 1km away from Mitchell's Fold stone circle.

The use of cairns as cadastral survey points within the Levant (and elsewhere) should also be mentioned. These structures are often erected alongside ancient or natural remains in prominent locations [(e.g. Glueck, 1935: 95-6, 108) and see Figures 4.11-12]. Elsewhere monuments appear to have become shepherds' stations (see Figure 4.5). Equally, new cairns are being constructed as the result, in particular in the Homs region, of large scale clearance (Figure 4.13). It is interesting to debate whether some of these structures will become the archaeological cairns of the future, about which, debates concerning their 'ritual' significance will be written.

Figure 4.12. Triangulation known as Rujm Kerakeh (after Glueck, 1935: Figure 40)

Figure 4.13. View of 'clearance cairn' in the centre of a bulldozed field in the Homs NSA.

4.4. Summary and Conclusions

This chapter has highlighted some of the traditions, myths and modern practices surrounding cairns, dolmens, monoliths and associated structures in the Levant and Arabia over the longue dureé. Along with chapter 3, it has illustrated the difficulties in trying to determine chronological attributions on the basis of typological considerations and the longevity of burial forms, such as cairns within the Levant and elsewhere. It demonstrates the importance of collating some of these stories and traditions before the majority of them and their subject matter disappear. With this in mind it is interesting to conclude with a quote from Schumacher (1890: 133) who articulated in the 19th century what is now occurring with increasing rapidity in the Homs region "...these ancient remains disappear every year more and more".

CHAPTER 5: MORPHOLOGY AND CHRONOLOGY OF CAIRNS IN THE HOMS NSA

Introduction

This chapter will present and analyse data collected during the fieldwork component of the PhD. It will outline the main trends and patterns which can be seen from the data in relation to the morphology of cairns and site features. In addition, it will offer some thoughts as to the potential utilisation of cairns in this region. Finally, it will discuss some of the preliminary relationships which can be seen between archaeological features in the area and possible chronological patterns which have emerged during analysis.

5.1 Cairns and Structures in the Homs NSA

Four main types of structures, identified via fieldwork and satellite imagery from the NSA will be discussed here [(e.g. Philip and Bradbury, 2010, Philip *et al.*, in press) and see Figure 5.1 and Appendix 5.1 for definitions and descriptions of structures]. These features range in date from the 4th-3rd millennia BC to the Roman-Islamic period [see (Philip and Bradbury 2010; Philip, Bradbury et al. in press) for further details]. The irregular (ICS) and rectilinear clustered structures (RCS) discussed in the following chapters are composed of a series of interconnecting stone built units and whilst easy to identify via satellite imagery are difficult to discern on the ground. Within the NSA, 75 examples of ICS have been identified, of which 21 have been visited in the field, all revealing evidence of Chalcolithic-EB activity. The RCS in this area are characterised by a basic orthogonal plan and can be identified either on the ground and/or from satellite imagery, although the details are frequently obscured by rubble. These structures have been preliminarily dated to the Roman-Islamic period (for discussion see Philip *et al.* in press). A further point to clarify is the nature of tell settlement in the NSA. The ‘tell’ sites discussed in chapters 5-7 within the NSA are not mudbrick structures. They represent mounds generated through the construction of basalt architecture, in particular basalt ramparts, the majority of which cannot be dated. Whilst evidence of 4th-3rd millennia BC settlement/activity has been found at a sample of these (e.g. SHR 49 and see Figure 5.1) the exact nature of occupation and activity during the 4th-3rd millennia BC is unknown. It is likely that the tells that we recognise in the area today were very low mounds or possibly even flat during this period. It is perhaps more appropriate to describe them as ‘locales of later tell settlement’. In order to maintain conciseness this chapter will use the term tell. The reader should thus keep in mind that no assumptions are made regarding the mounded nature of these sites during the 4th-3rd millennia BC. Instead, these sites represent locales of continued settlement, many of which are still occupied today.

Five hundred and twenty five cairns, over a period of three seasons, were surveyed as part of this work. This is just a small sample (1.7%) of the 29,190 potential cairns identified via satellite imagery in the SHR study area and an even smaller sample (0.3%) of the 169,800 potential cairns identified across the Vanishing Landscape study region (see Chapter 6 for further discussion). This is partly a result of time constraints. However, the study has also been affected by the large scale clearance activity currently taking place in the NSA. On the basis of comparison between 1960s Corona satellite imagery and 2002 Ikonos imagery it has been estimated that around 60% of archaeological structures have either been damaged or destroyed. Bulldozing has increased in extent and rapidity over the period of this survey (2007-2010) and it is estimated that within the next few years the archaeological record of this region will be completely destroyed.

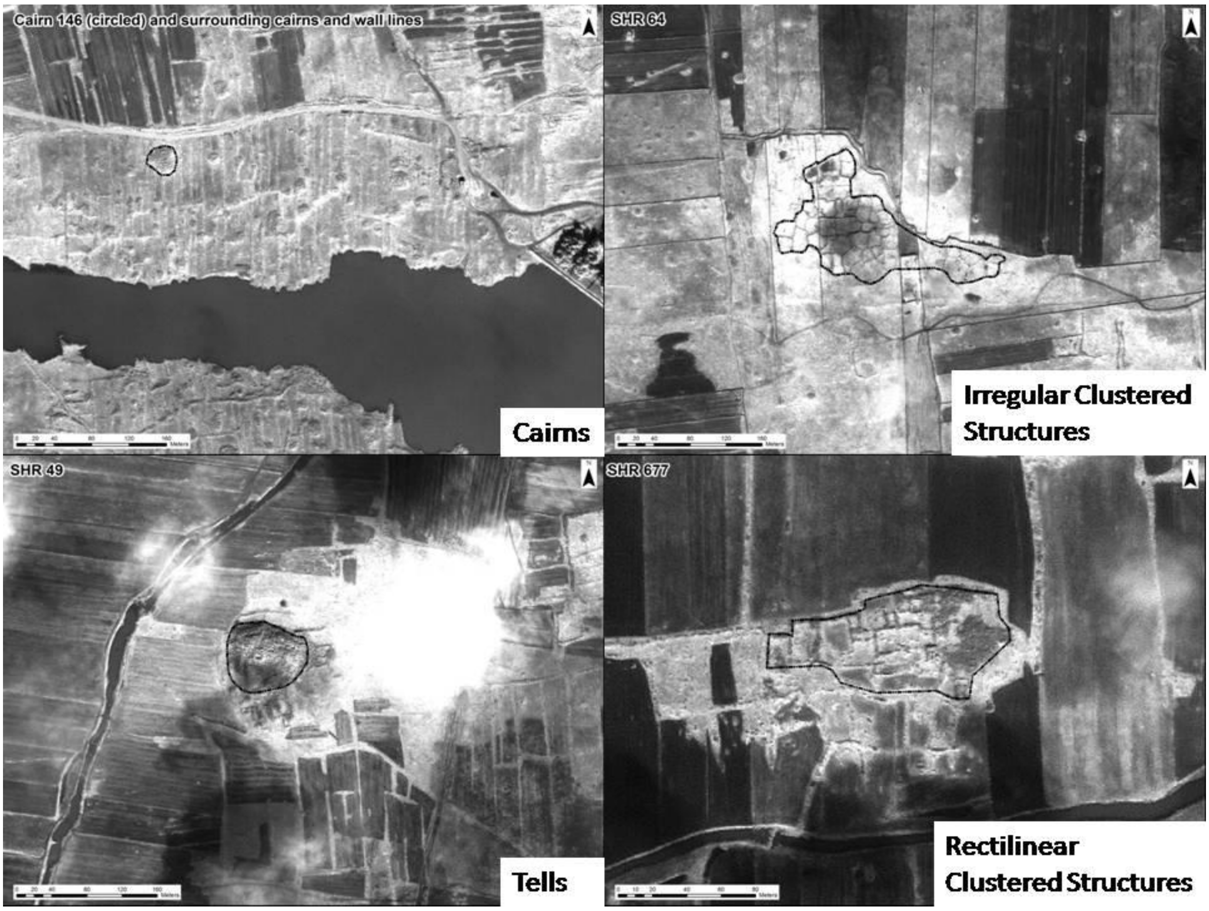


Figure 5.1. Cairns, Irregular Clustered Structures, Rectilinear Clustered Structures and Tells from the Homs NSA. Note the cairn monuments also found in the vicinity of SHR 64.

Three types of region were selected for survey:

1. Cairn clusters located near previously surveyed sites of multiple periods: It was hoped that these groups would reveal any potential relationships between cairn clusters and settlements or activity areas previously identified by the SHR project.

2. Cairns in the vicinity of a range of natural (hydrological and topographical) features: these were selected in order to consider relationships between these monuments and landscape location.

3. Clusters which showed no obvious spatial relationships between hydrological, topographical or archaeological features were chosen: these were treated as the control sample and also aimed at filling in gaps in the survey.

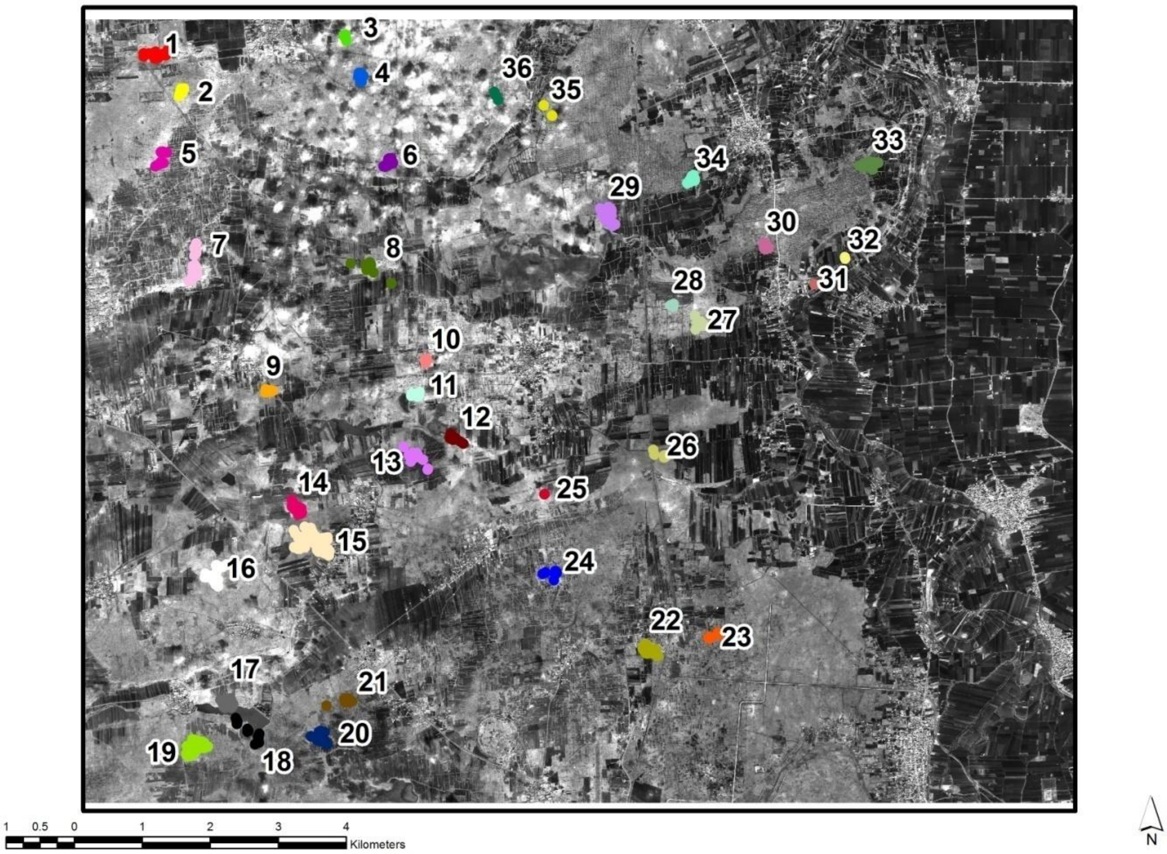


Figure 5.2. Map showing the location of cairn clusters, numbered on the basis of initial survey methodology as described above

The final results of morphological analysis are presented below. However, calculations, working tables and preliminary maps and graphs can be found in Appendix 5.2. The author refers the reader to this section for further details concerning the analysis and working hypotheses presented in their final form in this chapter.

5.1.1. Cairn Morphology and associated features

Without excavation, one of the key factors in assessing the utilisation of cairns within the Homs region is the association and presence of features, such as chambers, cists, external revetments and enclosures across the study area. Six forms of associated features were considered in relation to these monuments (see Figure 5.3.).

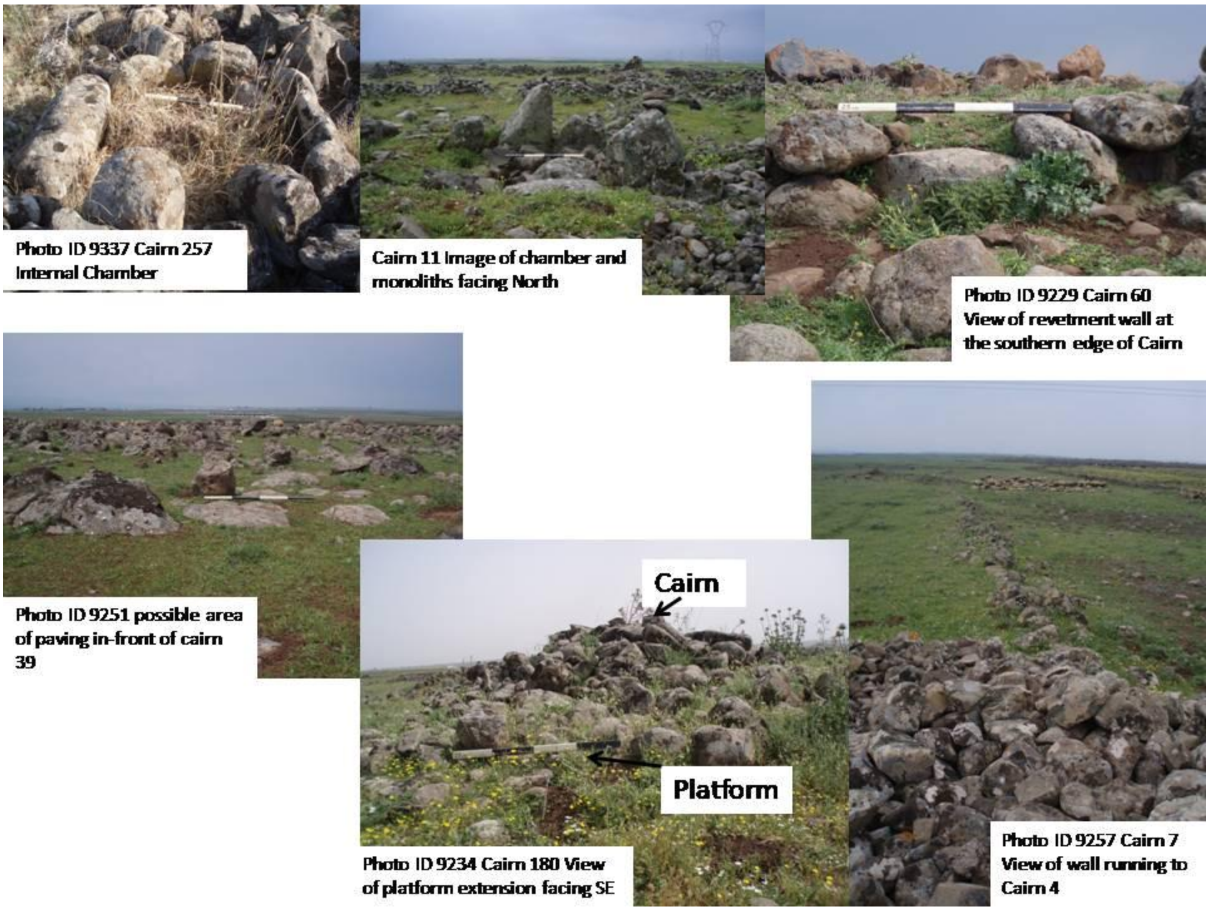


Figure 5.3. Examples of features (internal chambers, monoliths, revetments, paving, platforms and enclosures/wall lines) found in association with cairn monuments in the NSA.

These were chosen on the basis of the recognition of features associated with cairns in the NSA during previous seasons, as well as comparisons with similar structures in neighbouring regions.

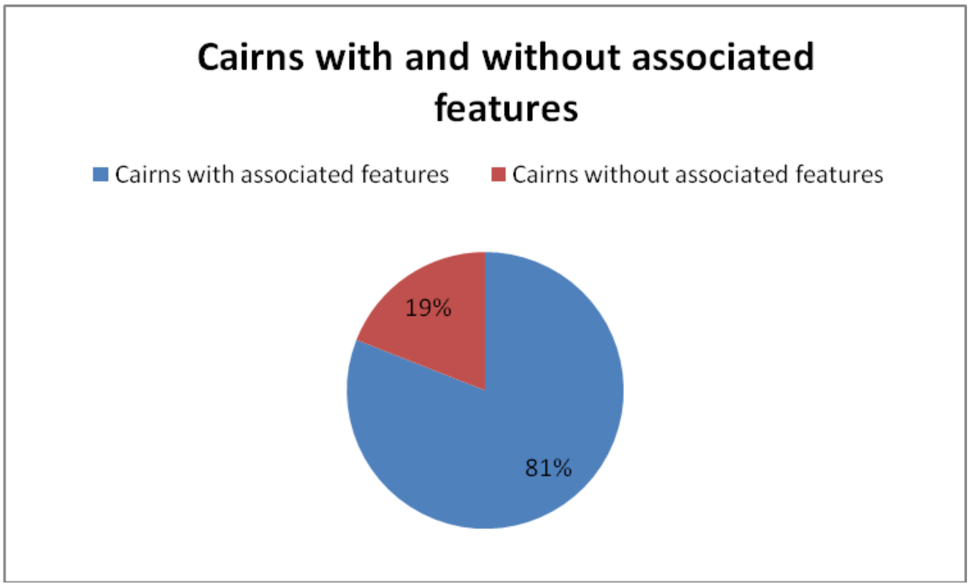


Figure 5.4. Pie chart showing the %s of cairns with and without features within the NSA.

Over 80% of the monuments studied in the Homs region show evidence of associated features (Figure 5.4). There are also a number of factors which may have led to the obscuring of features, including looting, dumping of clearance material and the construction of structures on top of cairn monuments, all of which have been documented in the Homs Study region. These figures would preclude cairns being considered solely as related to clearance. However, an assessment of the distributions of different features within the Homs region needs to take place. In order to facilitate this analysis, the cairns (525) have been divided into 36 spatial clusters. These represent the original clusters chosen by the author for survey (Figure 5.2). A full list of cairns by survey cluster can be found in Appendix 5.2. It should be highlighted that none of these clusters can be treated as statistically random. Each cluster contains a different number of cairns, with all figures being quoted in percentage form, in order to render them statistically comparable. Despite these shortcomings, Figures 5.5-6 reveal that the majority of clusters appear to show evidence for both cairns with and without associated features. This parallels evidence from elsewhere in the Levant where different forms of structure can be found alongside one another [(e.g. Miller, 1991: 26) and see Chapter 3 for further examples]. However, variations can be seen.

100% of the cairns in clusters 31 and 32 are associated with no internal/external features. In clusters 9, 28 and 29 the number of cairns with *no associated features* outnumbers the cairns *with associated features*. In contrast, 100% of the cairns in clusters 2, 4, 5, 8, 10, 23, 35 and 36 have associated features (Figures 5.5. and 5.6.).

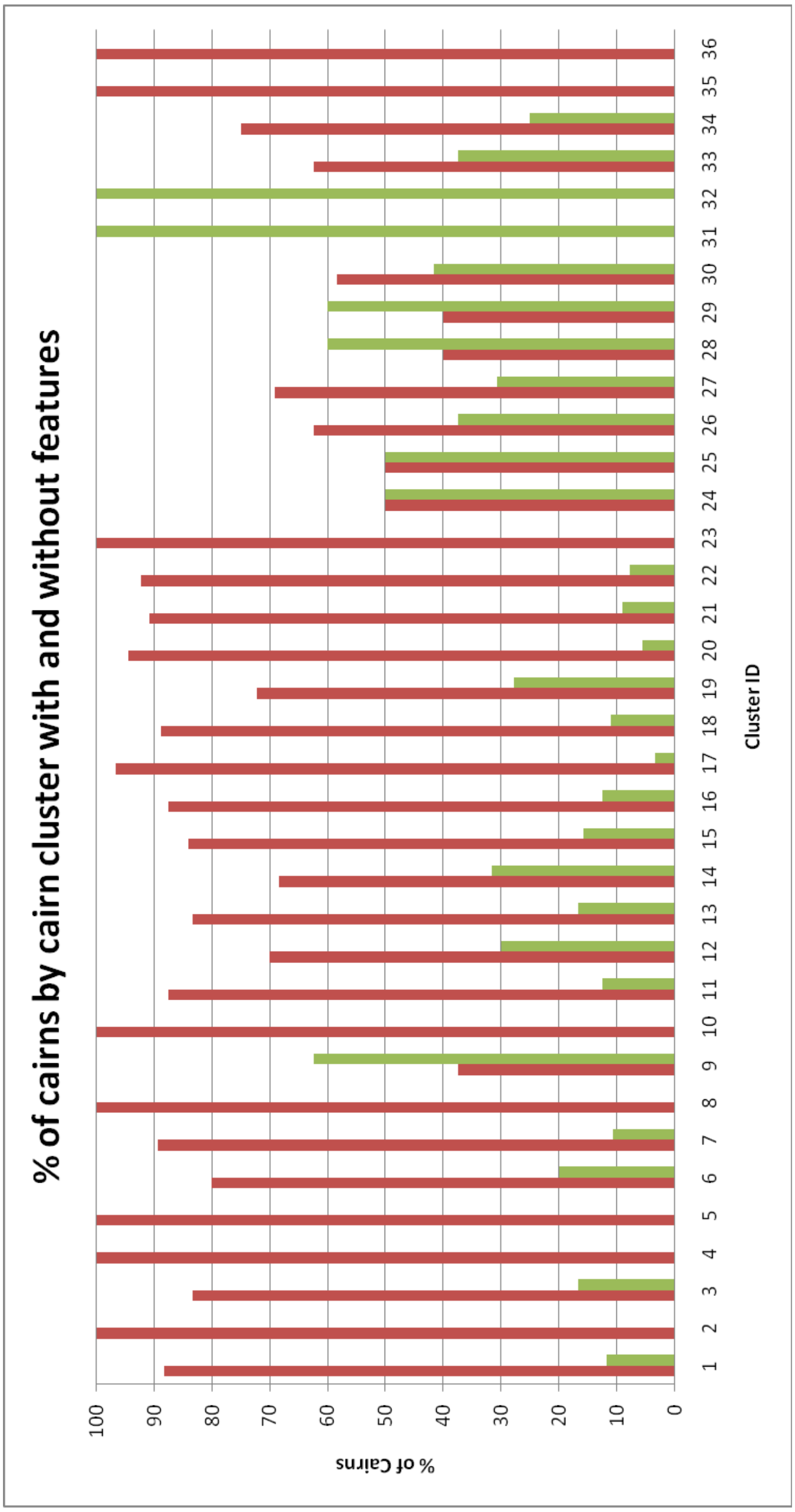


Figure 5.5. Cairns per cluster with (red) and without (green) associated features.

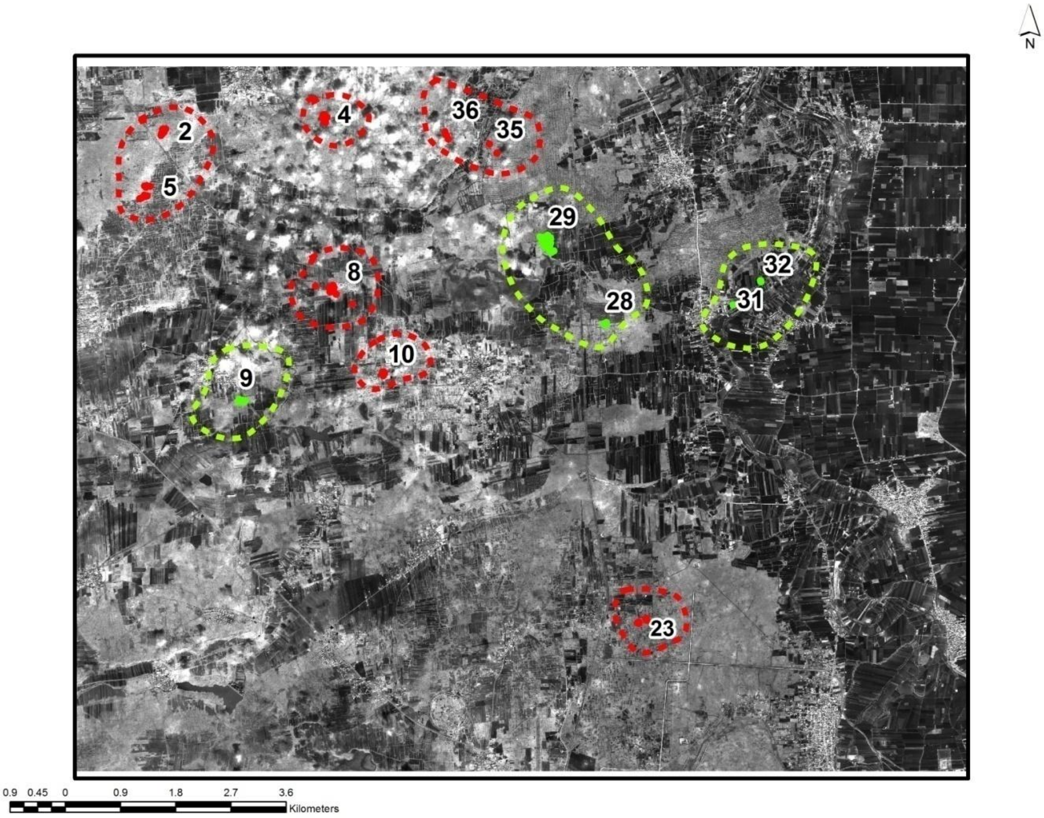


Figure 5.6. Cairn clusters with and without associated features. Those circled in green are clusters where the number of cairns without associated features outnumbers the number of cairns with associated features and those circled in red are clusters where the opposite applies.

Clusters 31 and 32, from which 100% of cairns have no associated features, are located on the banks of the River Orontes which, as can be seen from the Landuse based on 2002 Ikonos imagery, has been heavily cultivated, ploughed and in some cases bulldozed (Figure 5.7). The location of these monuments in such a landscape may suggest that either these structures are representative of clearance activity (although both clusters are visible on 1960s imagery), or more likely that they are indicative of later material being placed on top of monuments obscuring features. This possibility was noted in relation to structures in this area whilst in the field (Figure 5.8).

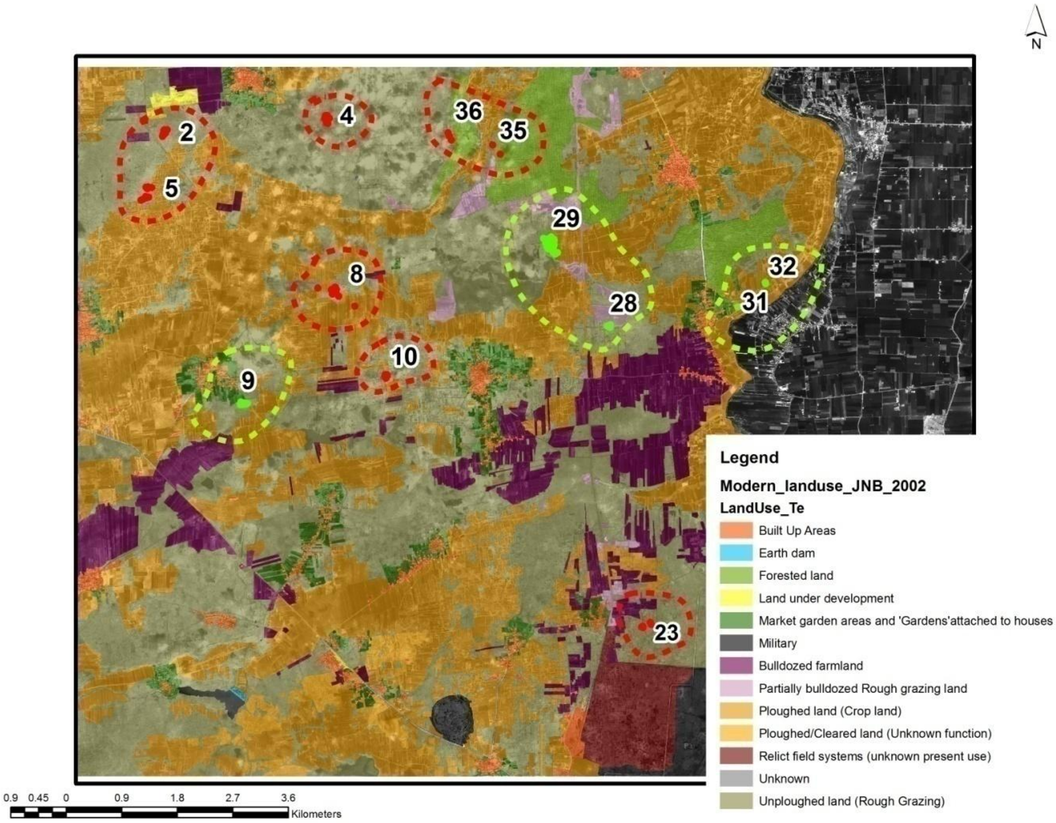


Figure 5.7. Modern Land Use [(2002) digitised on the basis of Ikonos imagery] and the location of cairn clusters with and without associated features.

Figure 5.8. Photo of cairn near Orontes, in the foreground you can see modern dumped material, with the cairn partly obscured by long grasses

Conversely, the majority of clusters where 100% of cairns can be seen to have associated features are located on unploughed (rough grazing) or forested land (Figure 5.7), perhaps suggesting that the lack of bulldozing and large-scale clearance in these areas has ensured preservation. This simple association with land use may indicate that the appearance of structures is to some extent associated with re-use and modern disturbance, and thus not representative of past conditions.

The most ubiquitous features are *external revetments* (c.53% of cairns), *internal chambers* (c.21% of cairns) and *wall lines/enclosures* (c.39% of cairns) (see Appendix 5.2 for full plots and Figure 5.9). Similar features have been found throughout the Levant and illustrate that whilst the Homs cairns represent a uniquely preserved dataset, they do not represent unique structures [see (Bradbury and Philip, in press)]. In particular it is worth noting a number of features which are paralleled at monuments in other regions of the Levant. The presence of chambers, monoliths and enclosures has obvious parallels in areas of the Hauran, Jordan Valley and Negev (e.g. Braemer *et al.*, 2004: 217, Figure 456, Collins *et al.*, 2010: 8, Steimer-Herbet, 2004: 35, Figure 4). In addition, enclosures have been noted in relation to stone built burial monuments in the Euphrates region (e.g. Peltenburg, 1999: 441, Figure 1), where they have been interpreted as locales of extra-funerary activity (Bradbury and Philip, in press, Peltenburg, 1999: 428). Wall lines connecting monuments have been noted at sites in the Jordan Valley (e.g. Thuesen, 2004: 109-110), as well as in the Negev (Haiman, 1993b: 50, Figure 2). The precise interpretations of these vary. In some cases their use as later field walls has been suggested, although Theusen (2004: 109-110) has argued that they may be indicative of familial relationships between those buried within the dolmens in the Wadi Jedideh area. Given the variety of features seen associated with cairns in the NSA, their broad chronological attribution and the lack of distinct patterning which can be seen (see below), further cross-comparisons with other regions are perhaps misleading. As such we have to conclude that whilst features, similar to those from the NSA, can be found throughout the rest of the Levant their presence is not necessarily indicative of any precise relationship with socio-cultural groupings or chronological attributions (see chapters 3 and 9 for further discussion).

If we compare the above values to percentages extracted via analysis of clusters (Figure 5.9) a similar pattern emerges [e.g. *external revetments* (c.39% of clusters), *internal chambers* (c.24% of clusters) and *wall lines/enclosures* (c. 46% of clusters)]

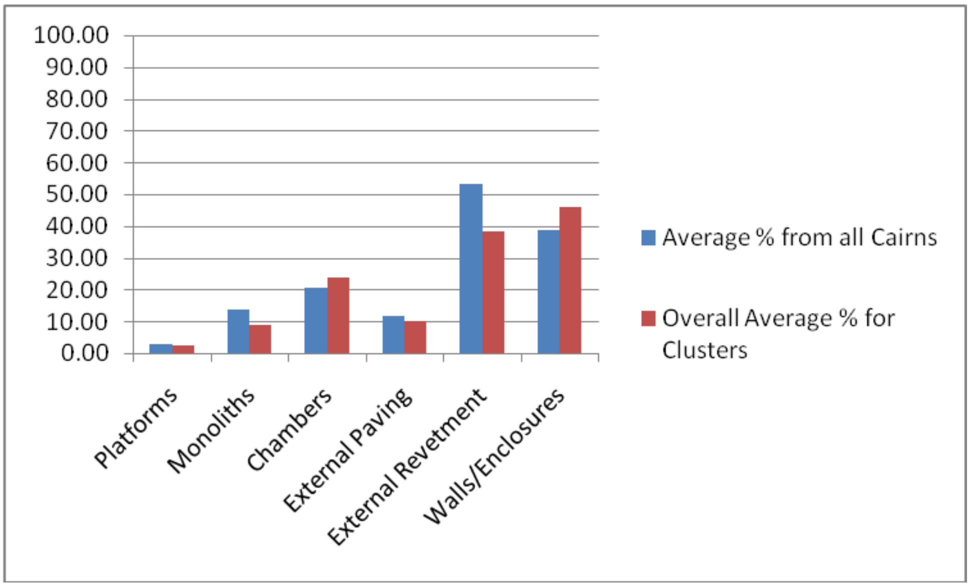
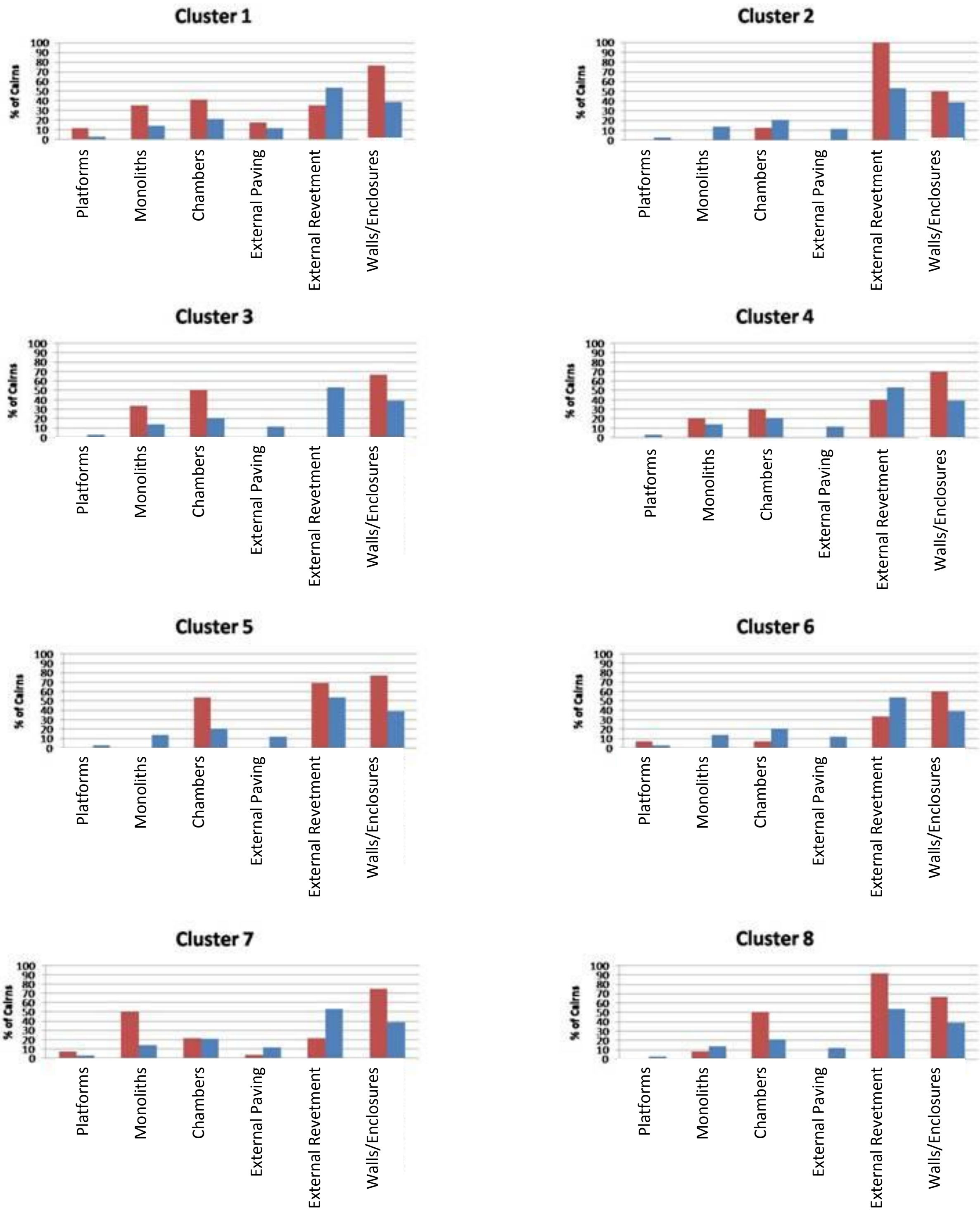


Figure 5.9. Average % occurrence of associated features from all cairns (number of cairns displaying each feature/total number of cairns x100) and within clusters (number of clusters displaying each feature/total number of clusters x100).

Two particularities stand out. Firstly, the average occurrence of *external revetments* is significantly higher when considering the percentage from all cairns. Secondly, the average percentage occurrence of *walls/enclosures* appears to be higher when considering the patterns at a cluster level (see Figures 5.10a-e for a breakdown of features by cluster). This would suggest that in a large number of clusters the presence of *external revetments* is below the average expected on the basis of the whole sample, whereas external *walls/enclosures* are over represented in some cases.



Clusters 1-8

Figure 5.10a

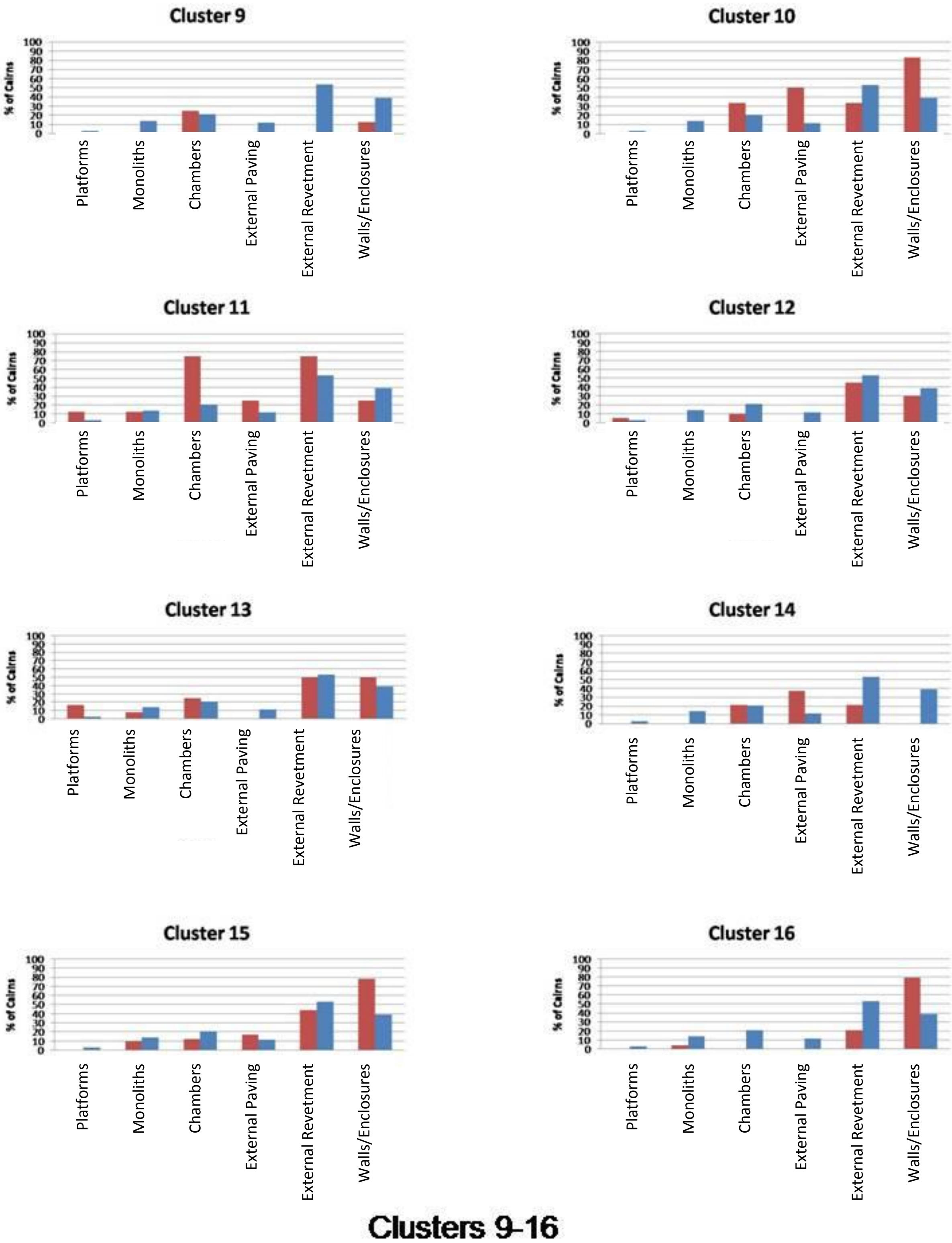
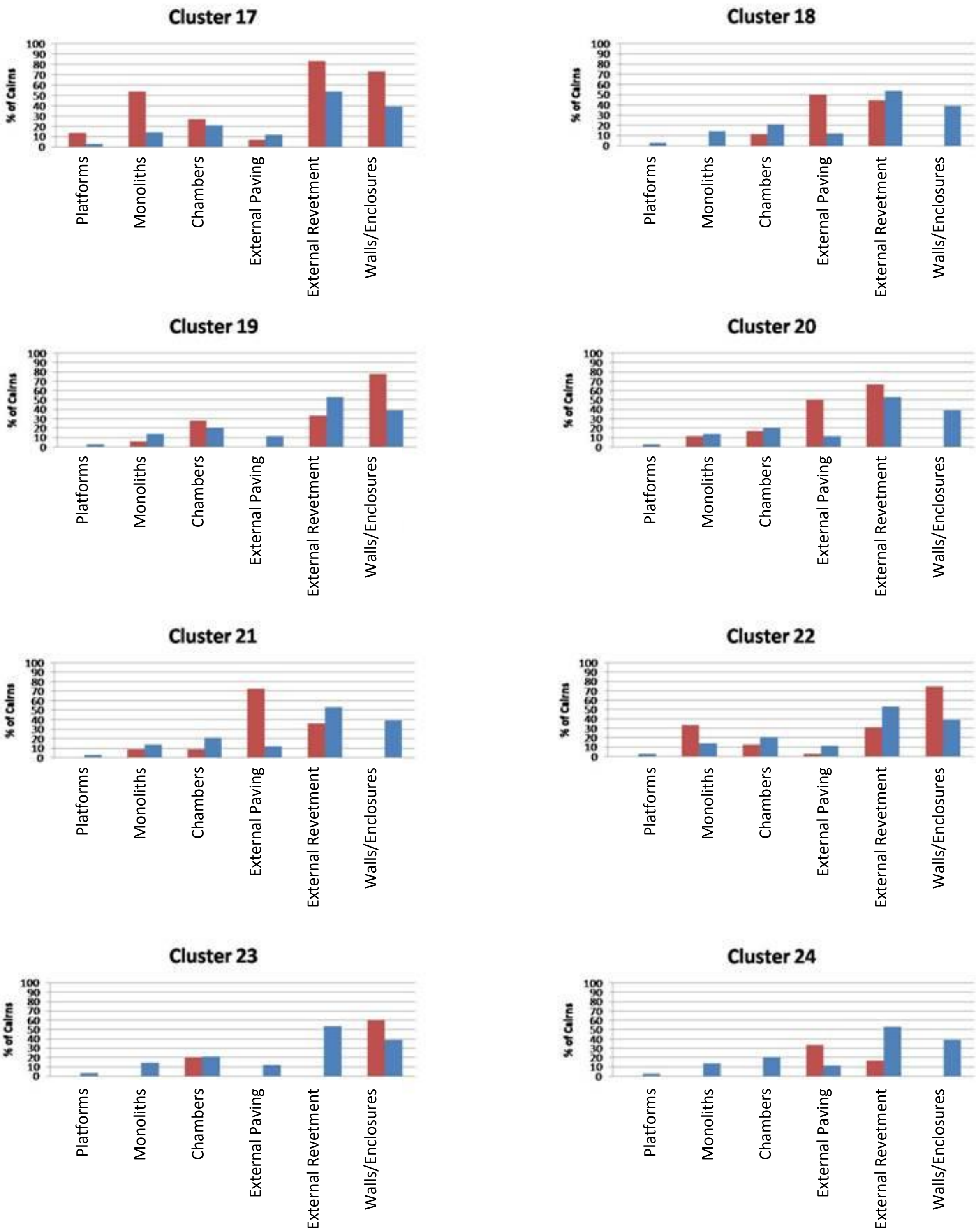

Cluster 9
Cluster 10
Cluster 11
Cluster 12
Cluster 13
Cluster 14
Cluster 15
Cluster 16
% of Cairns
100
90
80
70
60
50
40
30
20
10
0
Platforms
Monoliths
Chambers
External Paving
External Revetment
Walls/Enclosures
Clusters 9-16

Figure 5.10b.



Clusters 17-24

Figure 5.10c.

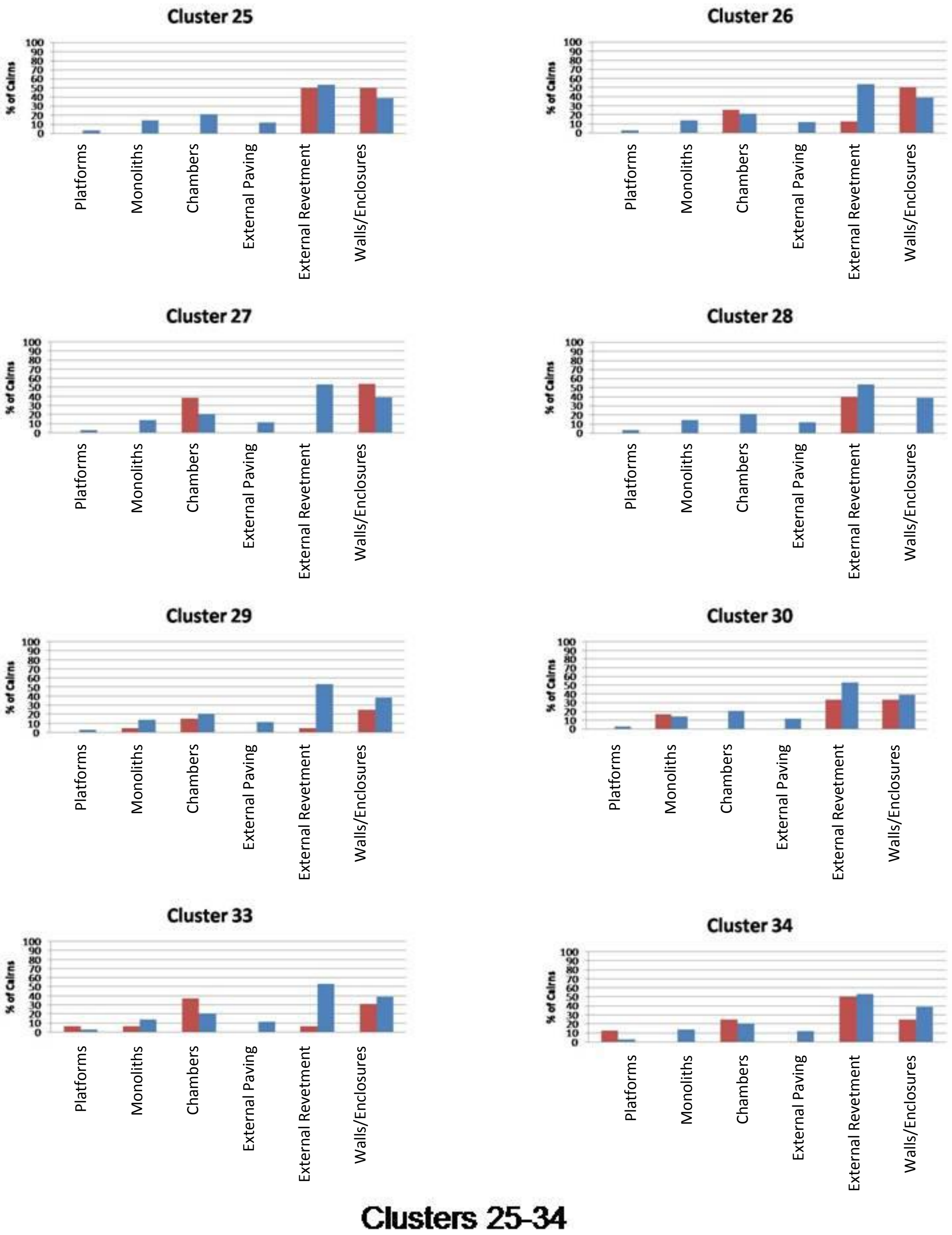

Cluster 25
Cluster 26
Cluster 27
Cluster 28
Cluster 29
Cluster 30
Cluster 33
Cluster 34
% of Cairns
0
10
20
30
40
50
60
70
80
90
100
Platforms
Monoliths
Chambers
External Paving
External Revetment
Walls/Enclosures
Clusters 25-34

Figure 5.10d.

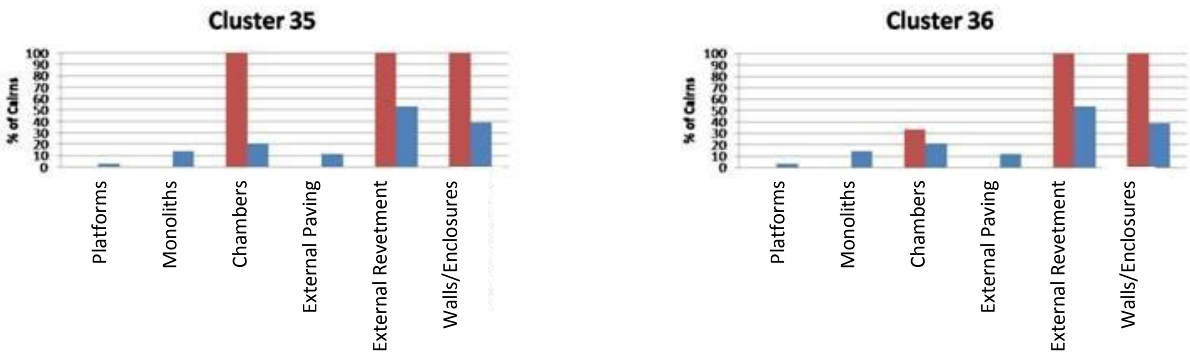


Figure 5.10e.

5.1.2. Prolific vs. Absent: Wall lines and enclosures and external revetments

This hypothesis is corroborated by an examination of features by cluster. c.53% of clusters (two clusters, 31 and 32, were taken out of calculations as neither have any features), show a higher percentage of *wall lines/enclosures* in comparison to *external revetments*. Four (c.12%) of these clusters (3, 9, 23 and 27) show no evidence for *external revetments*. In contrast, 13 out of 34 clusters (c.38%) show higher percentages of *external revetments* in comparison to *walls/enclosures*. Six (c.18%) of these clusters (14, 18, 20, 21, 24, 28) show no evidence for the presence of *wall lines/enclosures* (Figure 5.10a-e).

The distribution of clusters w*ithout wall lines/enclosures* shows a degree of spatial clustering, whereas those *without revetments* show little spatial patterning (Figure 5.11 and 5.12.). A distinct group of cairns *without wall lines/enclosures* is found in the south on the southern side of the now dammed lake (Figure 5.12.). In contrast, wall lines on the northern side of this lake are prolific and are visible both in the field and from imagery. This variation (north and south) may be associated with the function of these features, although the precise nature of this cannot be determined. Plotting out the relationships between cairn features and distance from other archaeological structures shows no distinct patterns (Figures 5.13-14). Indeed, the only cairns which do not show a trend of increasing ubiquity with increasing distance from structures are those with internal chambers. In this case over 50% of cairns with internal chambers are within 500m of ICS. Having said this, less than 10% are within 50m of these structures. These findings would suggest that no definitive spatial relationships between cairn features and other archaeological structures are present. Given that only 3.2% of the cairns recorded via satellite imagery analysis within the NSA are located within 100m distance of irregular clustered structures and an even smaller percentage (0.6%) are located within 100m of rectilinear clustered structures this is not necessarily surprising.

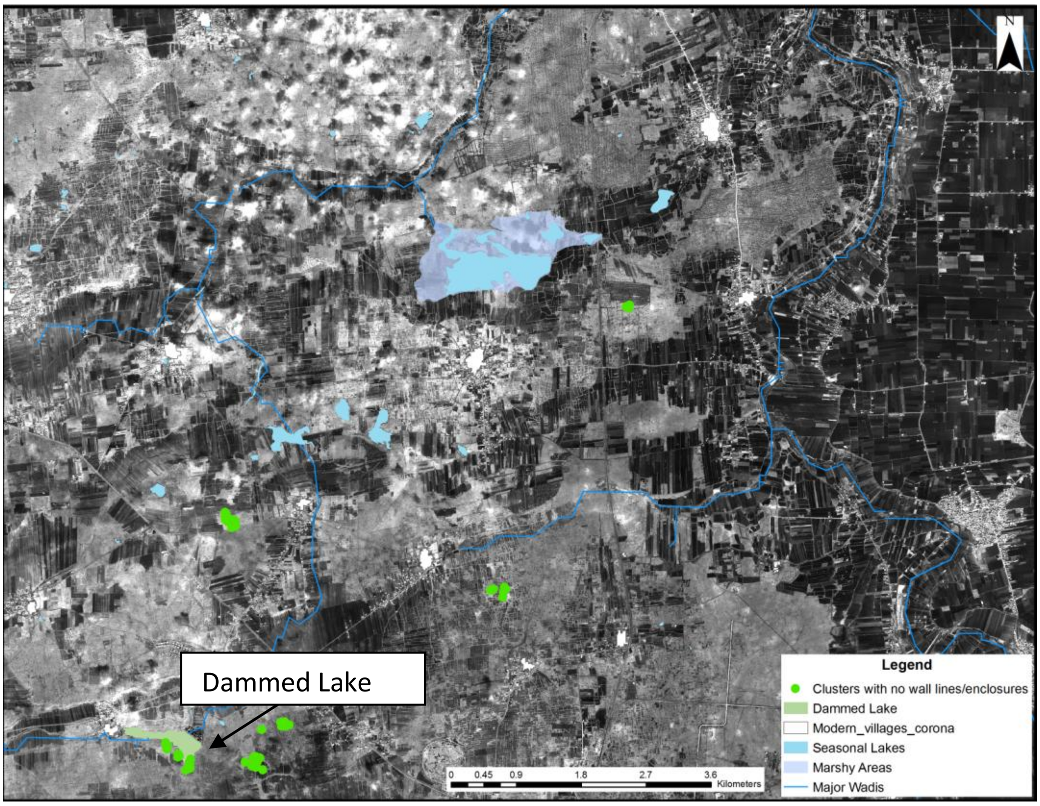


Figure 5.11. The distribution of clusters in the NSA without wall lines/enclosures. Note the concentration of clusters to the south of the dammed lake

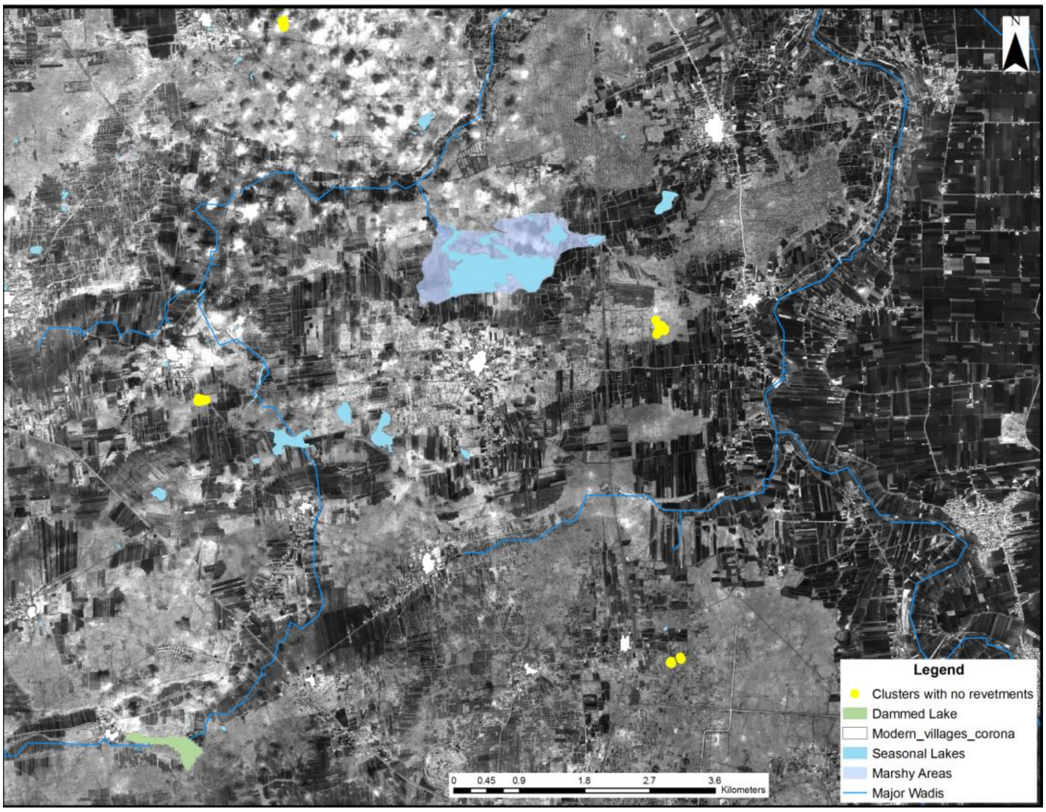
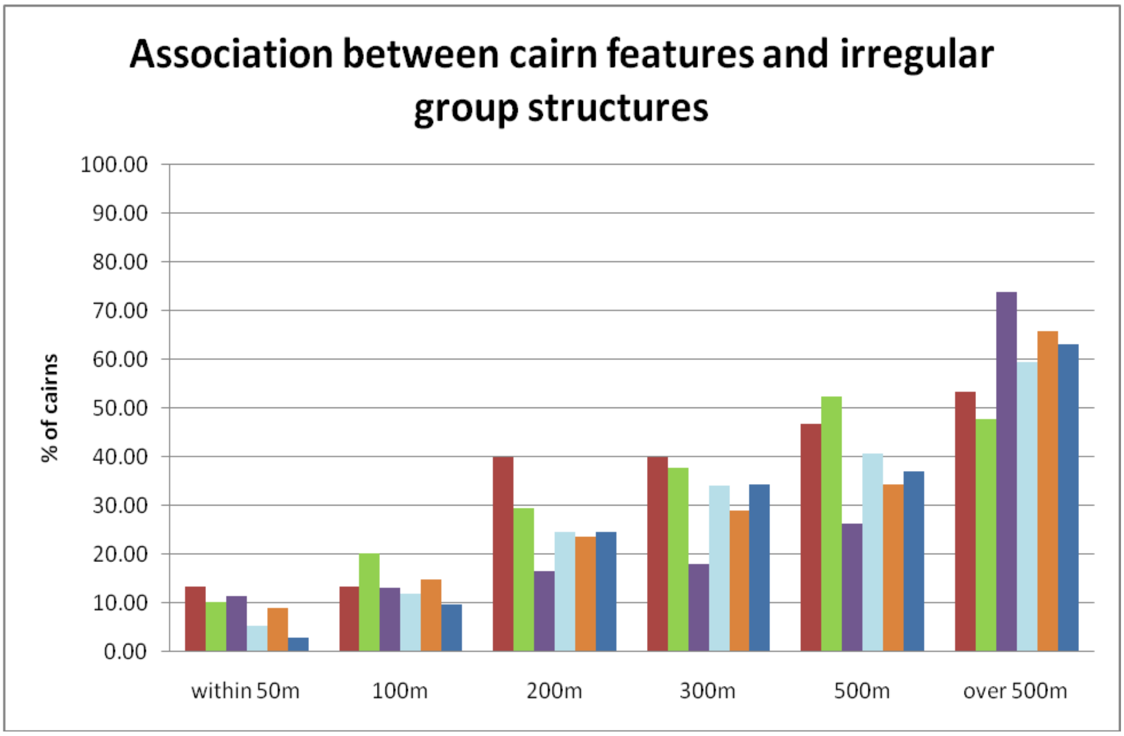
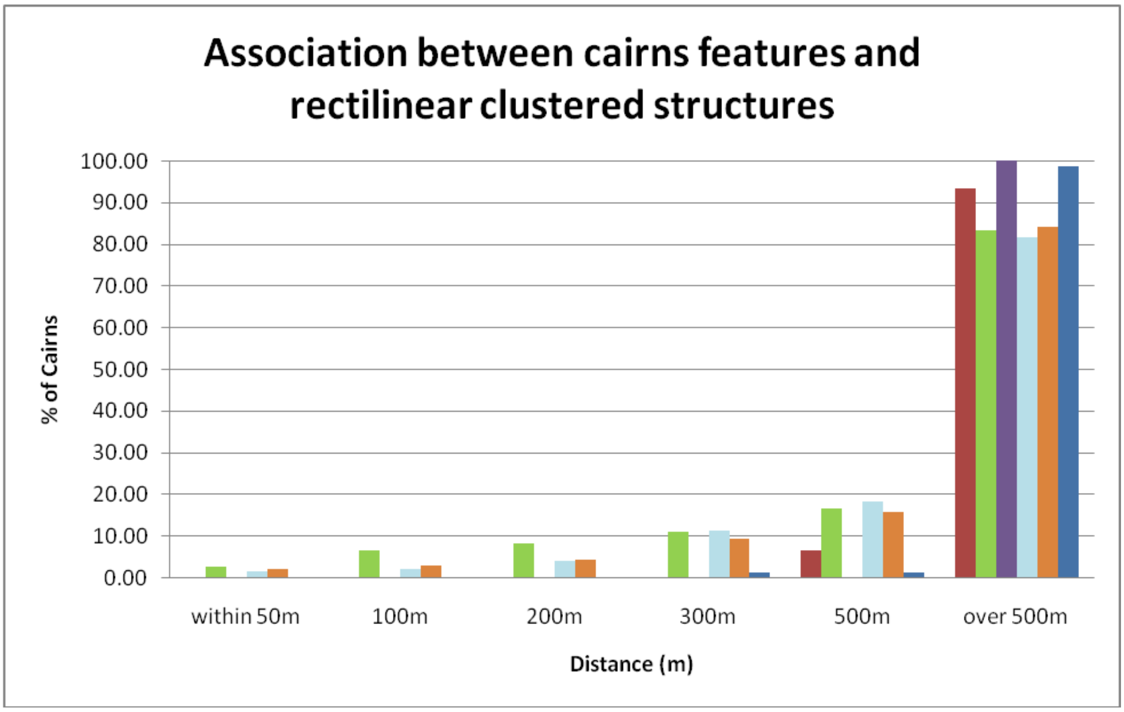


Figure 5.12. The distribution of clusters in the NSA without cairns with external revetments.





Figures 5.13 and 5.14. The Association between cairn features and the distance from irregular clustered and rectilinear clustered structures. (Platforms: red; Internal chambers: green; external paving: purple; external revetment: light blue; Walls/enclosures: orange; Monoliths: dark blue).

In contrast if we analyse the location of irregular clustered structures, it appears that nearly 40% of these structures intersect with possible cairn monuments. 100% are within a distance of 200m. This may suggest that whilst the location of irregular clustered structures cannot be seen as influencing cairn location there may be a localised relationship between specific clusters of cairns and irregular clustered structures. Similarly, c. 35% of the identified rectilinear clustered structures appear to intersect with cairn monuments, although over 10% are located at a distance further than 200m from possible cairn structures (Figures 5.15 and 16). Given the density of cairns across this region it is likely that the majority of features would be in proximity of possible cairn monuments. Thus, whilst cairns may be linked to the location of structures in a number of cases (see Chapter 6, section 6.3.2. for examples), the location of structures does not have an over-riding influence upon the location of cairns across the NSA.

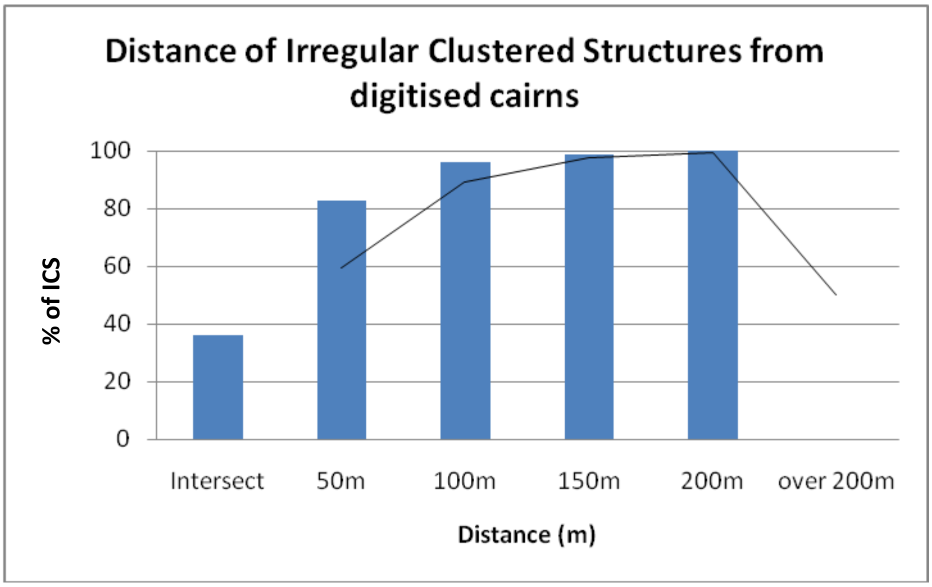


Figure 5.15. Graph showing the relationships between the location of irregular clustered structures and cairns across the NSA. The sample of cairns is based on the entire NSA digitised dataset (29,190), rather than the 525 cairns which were surveyed.

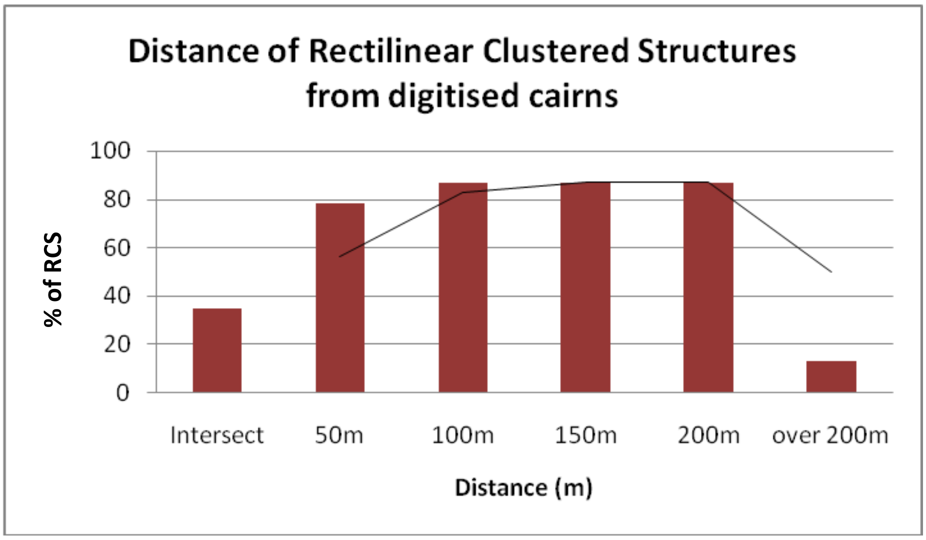


Figure 5.16. Graph showing the relationships between the location of rectilinear clustered structures and cairns across the NSA. The sample of cairns is based on the entire NSA digitised dataset (29,190), rather than the 525 cairns which were surveyed.

Despite this potential lack of patterning in terms of cairn features and associated archaeological sites, it is worth considering the relationships between the different features seen alongside cairns (i.e. whether specific features occur alongside one another). Survey recorded cairns with no associated features (19%), to those with all six in combination (0.2%) (Figure 5.17).

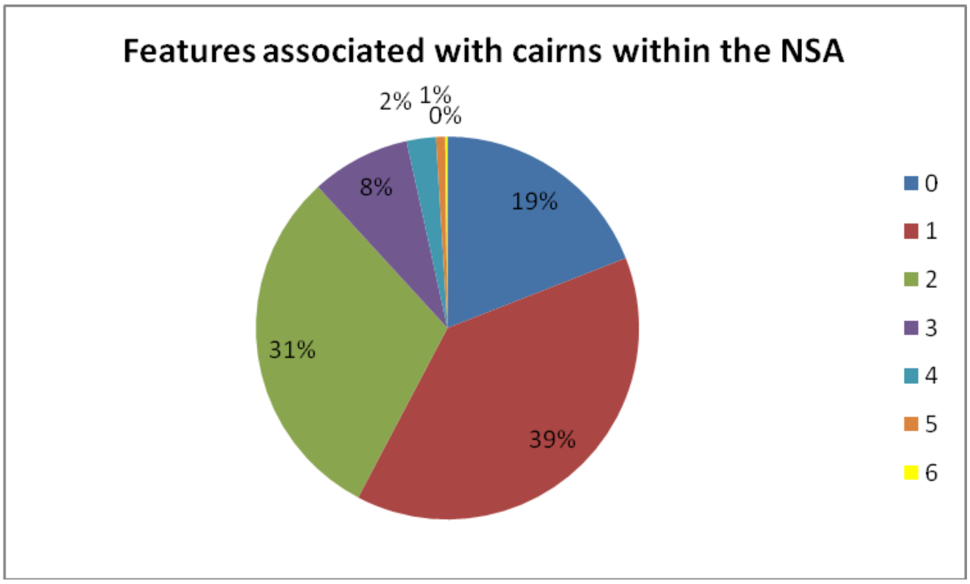


Figure 5.17. Feature combinations seen at surveyed cairns across the NSA.

The majority of cairns within the NSA show evidence of a single feature (39%) or two associated features (31%). *External revetments and walls lines/enclosures* are most commonly found together (38%). *External revetments and internal chambers* (21%) and *external revetments and monoliths* (16%) also occur at significant levels. The predominant three feature combination is *external revetments, internal chambers and wall lines/enclosures (36%).*

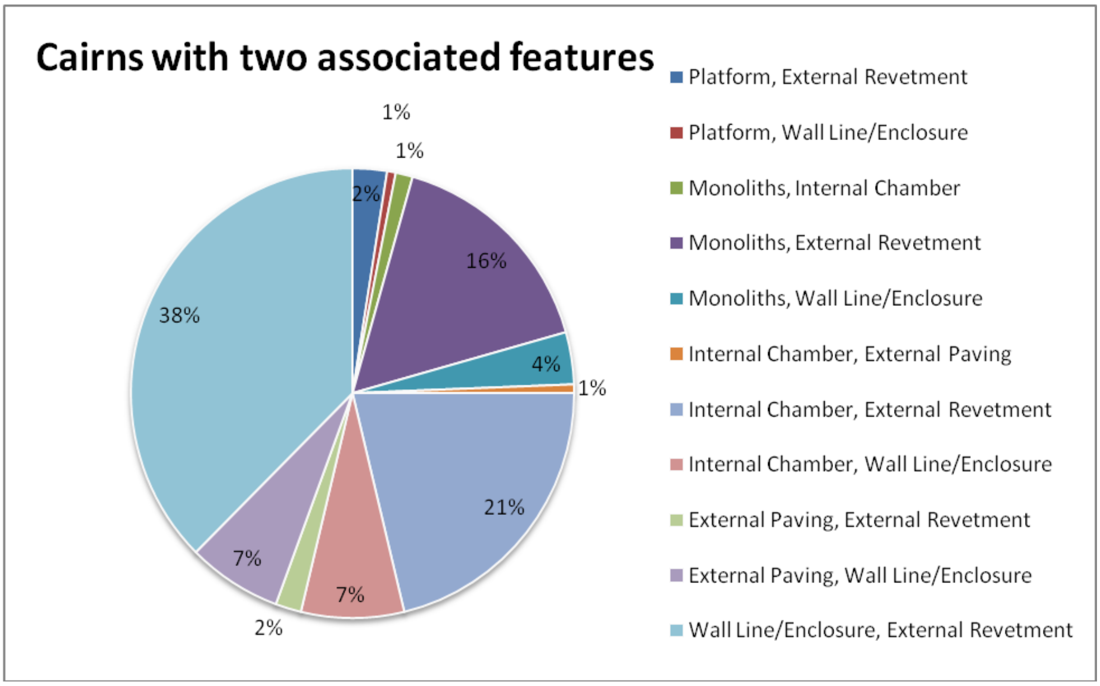


Figure 5.18. The association of features at cairns where two features (31% of cairns) have been recorded.

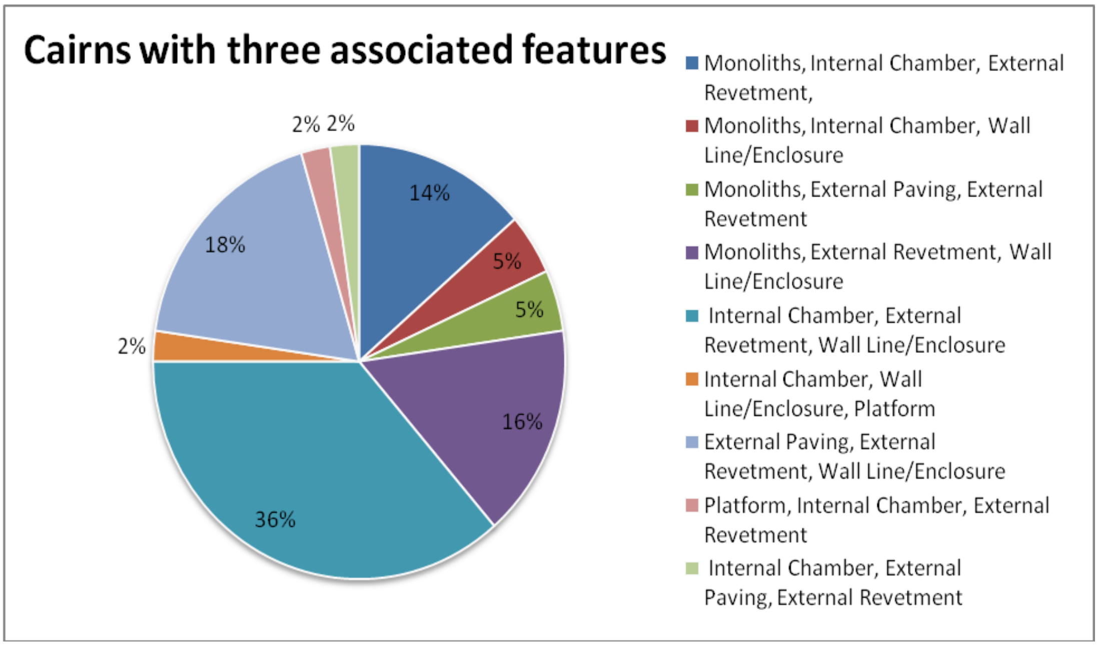


Figure 5.19. The association of features at cairns where three features (8% of cairns) have been recorded

Over 60% of the cairns with four associated features have a combination of *walls lines/enclosures; external revetments; monoliths and internal chambers* or *external revetments; external paving; monoliths and internal chambers* (Figure 5.20.). It should be emphasised that the number of cairns showing evidence of four associated features is minimal (13 in total; 2.5%). Having said this, the combinations of these features might suggest a 'burial/commemoration' function for these structures. In some way, the most striking outcome of this analysis is the lack of clear patterns across the NSA. This should not be considered as a failing of the dataset but instead highlights the overall variability in morphology and associated features within the cairns, thus underscoring our inability to consider such structures as relating to a single phase or type of activity.

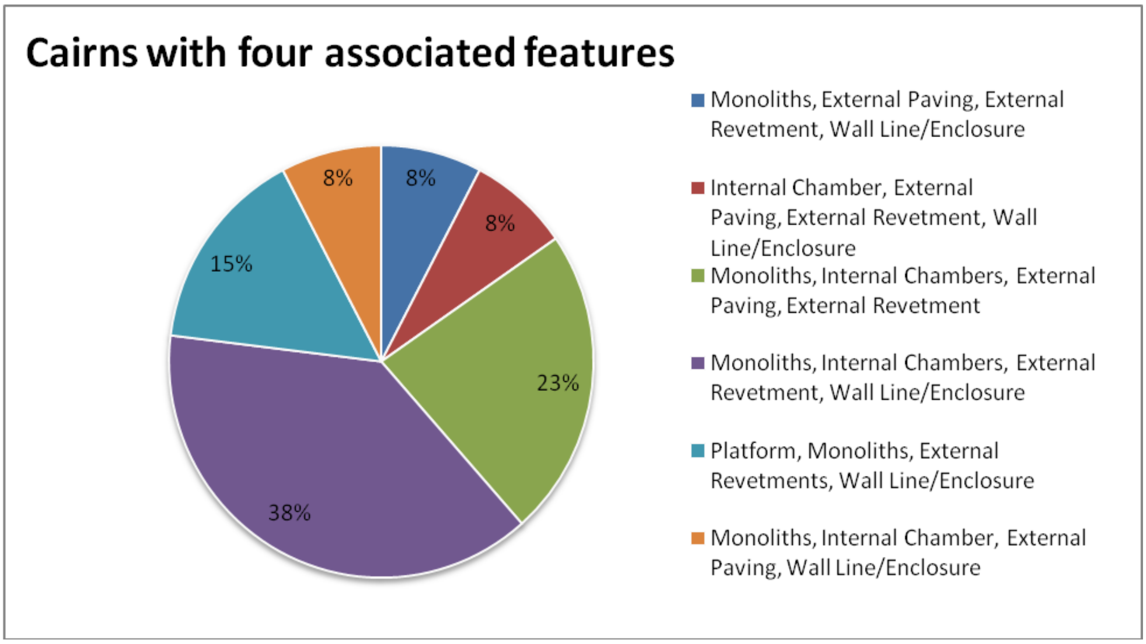


Figure 5.20. The association of features at cairns where four features (2%) have been recorded

5.1.3. Cairn Shape-variation and significance

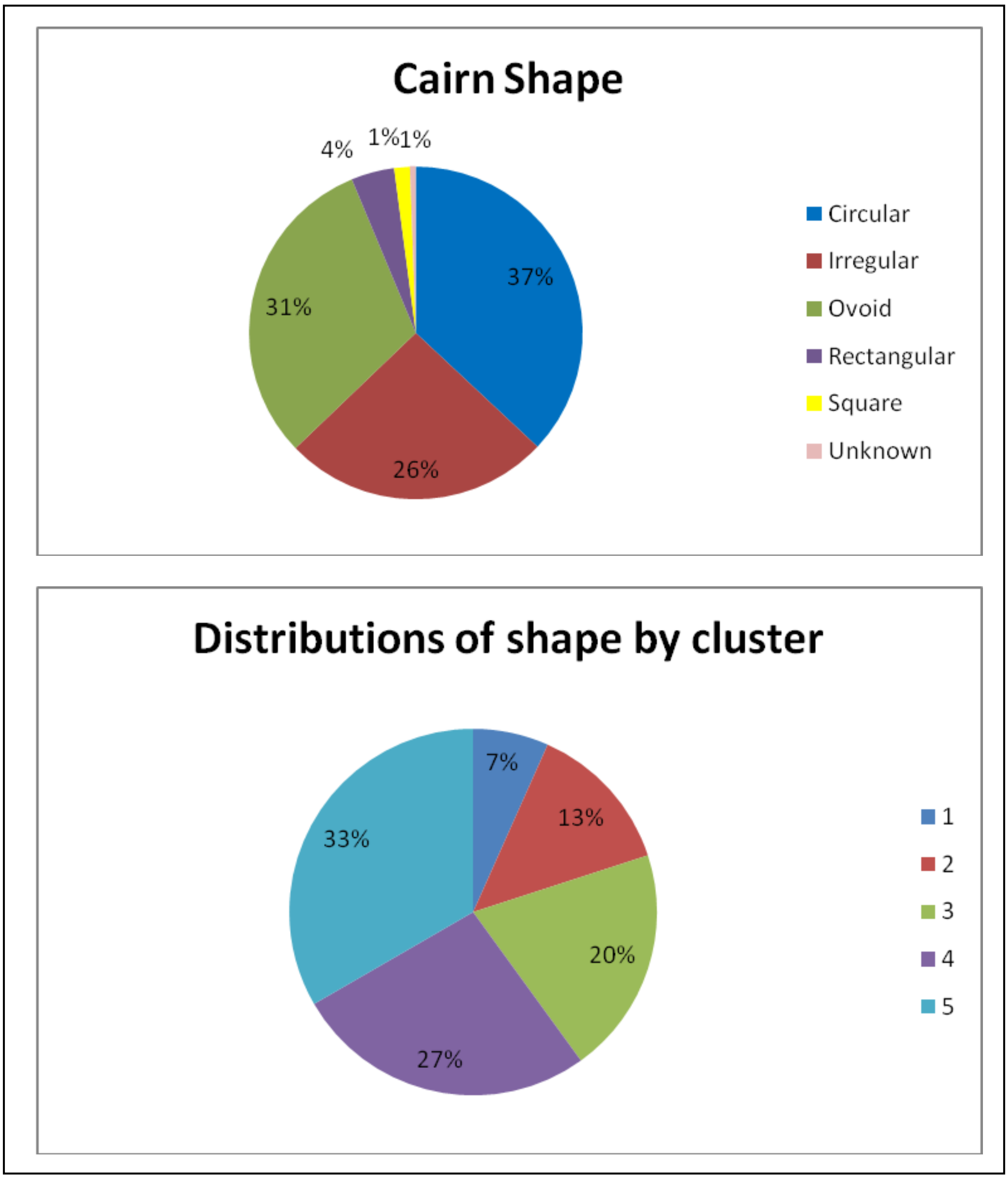


Figure 5.21. The distribution of cairn shape across the NSA. These percentages are based on all surveyed cairns (525) and the distribution of shape by cluster (for calculations see Appendix 5.2 and 8)

Cairn shape has been suggested by some to be representative of distinct forms or types of cairn burial [(e.g. Steimer-Herbet, 2004) and see chapter 3 for further discussion]. Within the NSA is it clear that there is substantial variation, although certain shapes are dominant (Figure 5.21). The majority of cairns within the region are either, circular, irregular or ovoid in form (93%). A much smaller percentage of cairns are rectangular (4%) or square (1%). There also appears to be variation in the distribution of cairn shape with over 94% of clusters demonstrating more than one form of cairn shape.

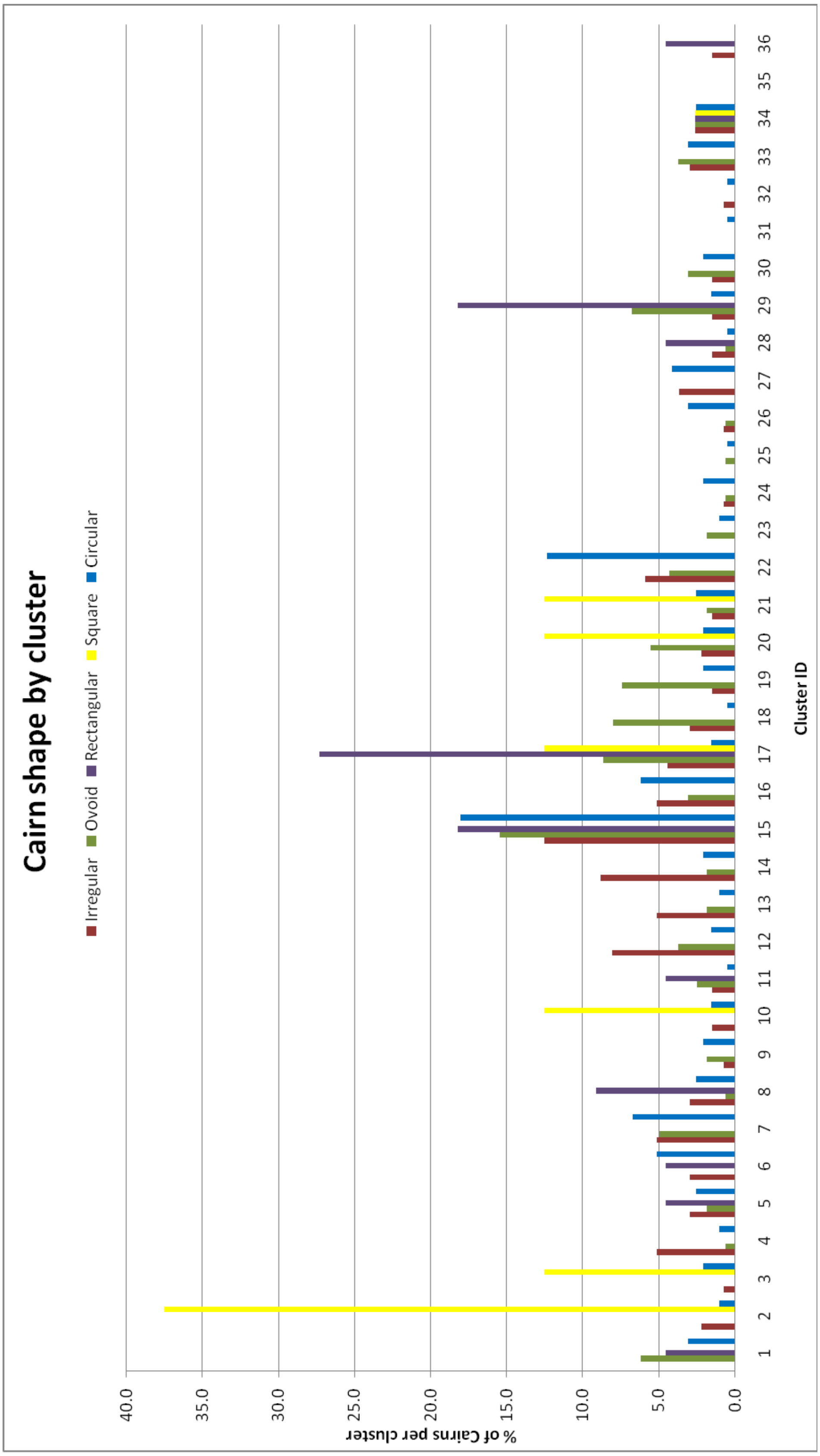


Figure 5.22. Cairn shape plotted in relation to cluster (i.e. number of rectangular cairns per cluster/ total number of rectangular cairns) for a breakdown by cluster and further calculations see Appendix 5.2 and 8)

These general patterns can also be seen to some degree at a group level (Figure 5.22). However, several clusters stand-out. Over 35% of all square cairns have been found in Cluster 2. However, as this cluster only contains 8 cairns and also shows evidence for irregular and circular examples this should not be over interpreted (see Appendix 5.8). Cluster 17 also stands out, containing over 25% of the rectangular cairns from the region. 30 cairns have been surveyed in cluster 17. However, rectangular cairns make up only 20% of the overall cluster, with all four other cairn shapes also being present. As the majority of cairn clusters show evidence for more than one cairn shape [(c.94%) and see Appendix 5.8) it appears that there is little spatial clustering/patterning in terms of cairn shape. These findings contradict evidence from monuments in other areas of the Levant (i.e. the Jaulan) where it has been argued that particular forms and shapes are found in discrete clusters [(e.g. Epstein, 1985a: 21, 57) and see chapter 3.2]. By way of explanation we can suggest that cairn shape had very little association with utilisation and conceptualisation. Alternatively, it may be that the mix of cairn shapes across the NSA is linked to the multi-period use of these structures and that originally closer clustering of cairn shape could be seen across this region. The lack of dating material from these monuments (see section 5.2) makes it difficult to make any concrete interpretations. Contemporary variations should not be under estimated and would challenge the association of these monuments solely with one social group or chronological period.

5.1.4. Cairn Building Material-variation and significance

All of the cairns surveyed as part of this thesis are constructed using local basalt. However, significant variation can be seen in terms of the size and matrix of their construction material (Appendix 5.1 for definitions). Whilst the six soundings carried out at sites 666, 63 and 362 revealed no dating material, they highlighted the variety in construction methods used within and between sites. In particular, sounding six showed evidence for the utilisation of the natural bedrock as a foundation platform, upon which Cairn 11 appears to have been built (Appendix 5.3.). This feature has been observed at cairn monuments elsewhere within the Levant (pers comm. Fraser 2008). These soundings, in combination with the analysis presented below, have led to a more detailed understanding of the way in which the natural geology was exploited as a building material in this area.

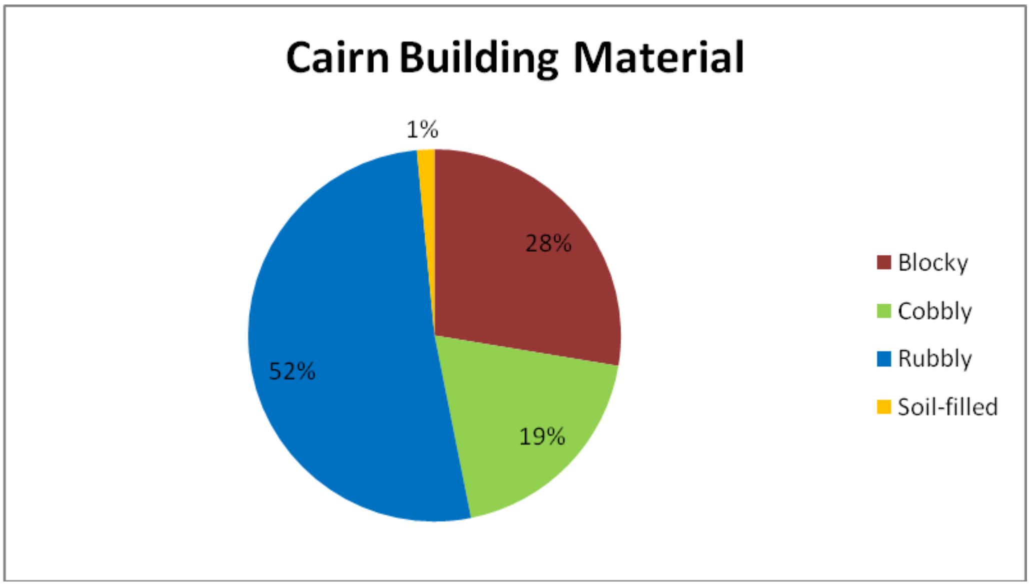


Figure 5.23. Building Material morphologies seen at cairns across the NSA

Over 50% of the cairns surveyed are constructed using a 'Rubbly' matrix (see Appendix 5.1 for definitions). A further 28% are 'Blocky', whilst fewer than 20% are 'Cobbly'. The least well represented are 'Soil-filled' cairns.

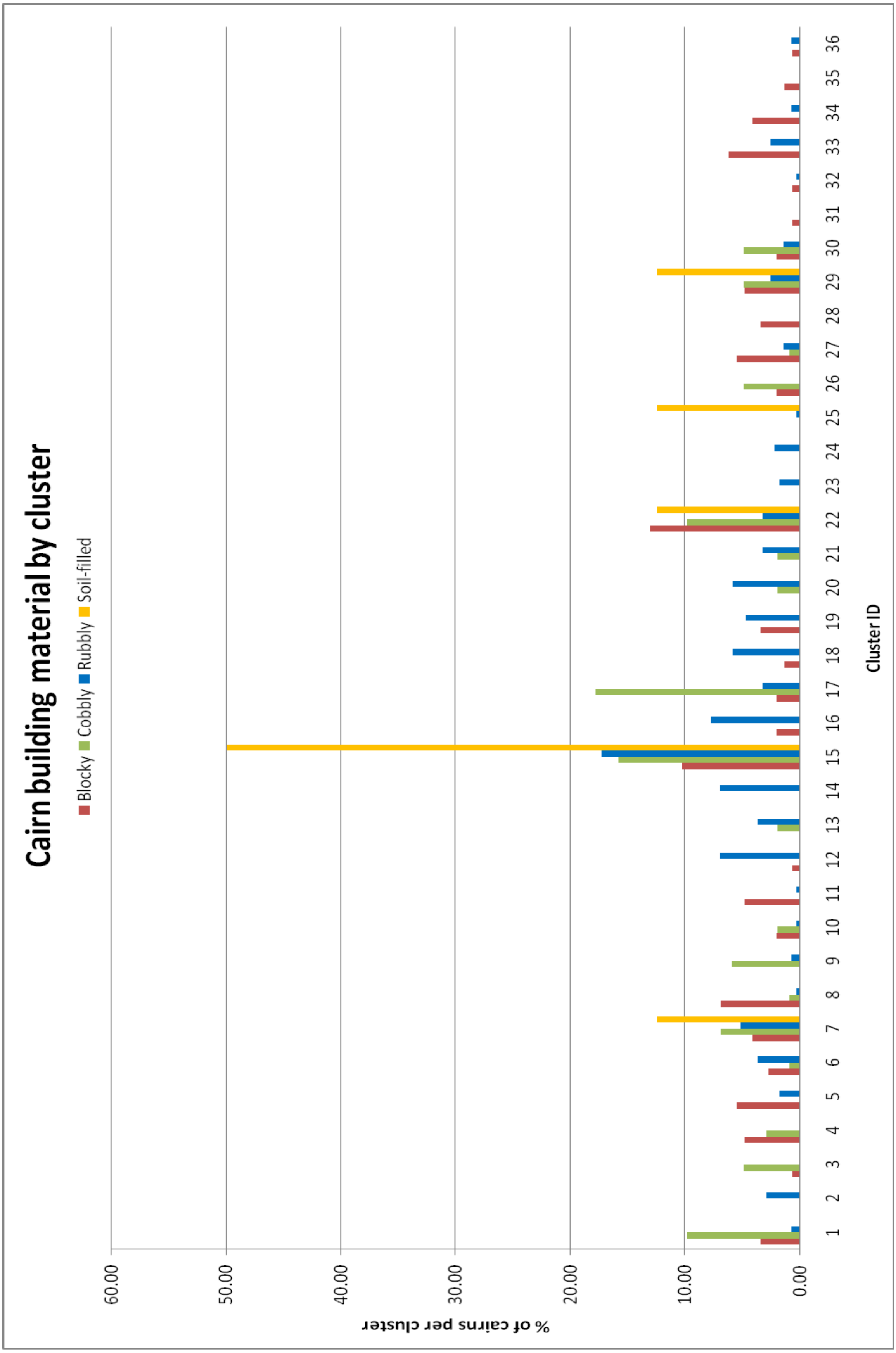


Figure 5.24. Building Material morphologies seen across cairn clusters in NSA

If we examine the distribution of cairn building material by cluster (Figure 5.24) it is clear that whilst Blocky, Cobbly and Rubbly cairns are well represented across the NSA and often found in association with one another, only five clusters contain soil-filled cairns. It should be noted that this analysis is based on a small sample, with only eight soil-filled cairns being recorded in the entire NSA. No clear patterns can be seen to explain the distribution of soil-filled cairns. There is no relationship between the locations of modern villages or any other archaeological features and these cairns [see figure 5.25. (e.g. soil-filled cairns are over 100m in distance from modern villages, ICS and RCS)]. Moreover, given that soil-filled cairns make up only 3% of cairns it would be expected that this type of building material would only be seen in clusters of over 33 cairns. This is not the case with the number of cairns in clusters with soil-filled cairns (clusters 7, 15, 22, 25 and 29) ranging between 2 and 82. Thus, there appears to be no relationship between the presence of soil-filled cairns and cluster size.

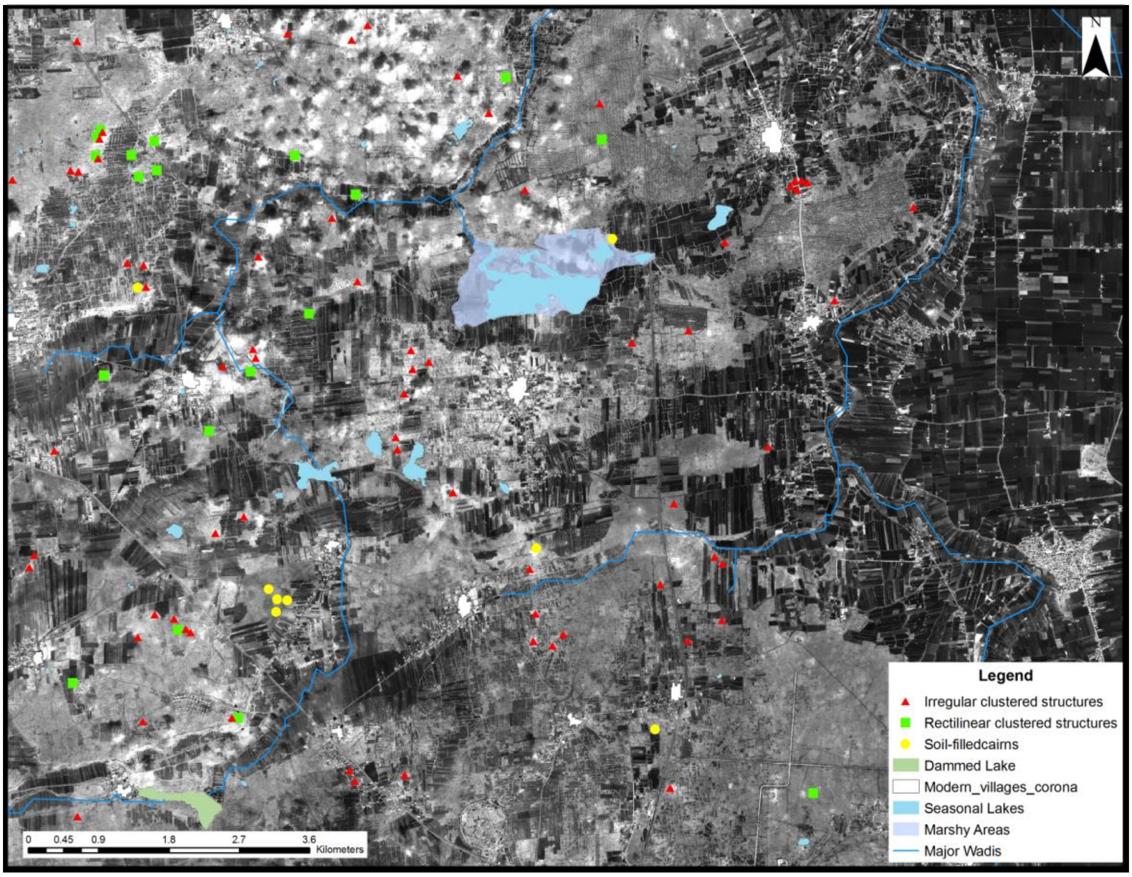


Figure 5.25. The distribution of soil-filled cairns plotted against the location of irregular clustered structures, rectilinear clustered structures and modern villages as identified from corona (1960s). All soil-filled cairns are over 100m from these features.

Four clusters show evidence for all building material forms. One of these is a cluster of cairns surveyed across SHR 362 [cluster 15 (see chapter 6.3.1.)]. Given the evidence for the multi-phased construction of this enclosure the presence of all forms of building material is particularly interesting. The presence of Cluster 14, which only has evidence for Rubbly cairns less than 200m away from this area, may suggest that the multiple building material forms at SHR 362 (Cluster 15) represent multi-period use (Figure 5.26).

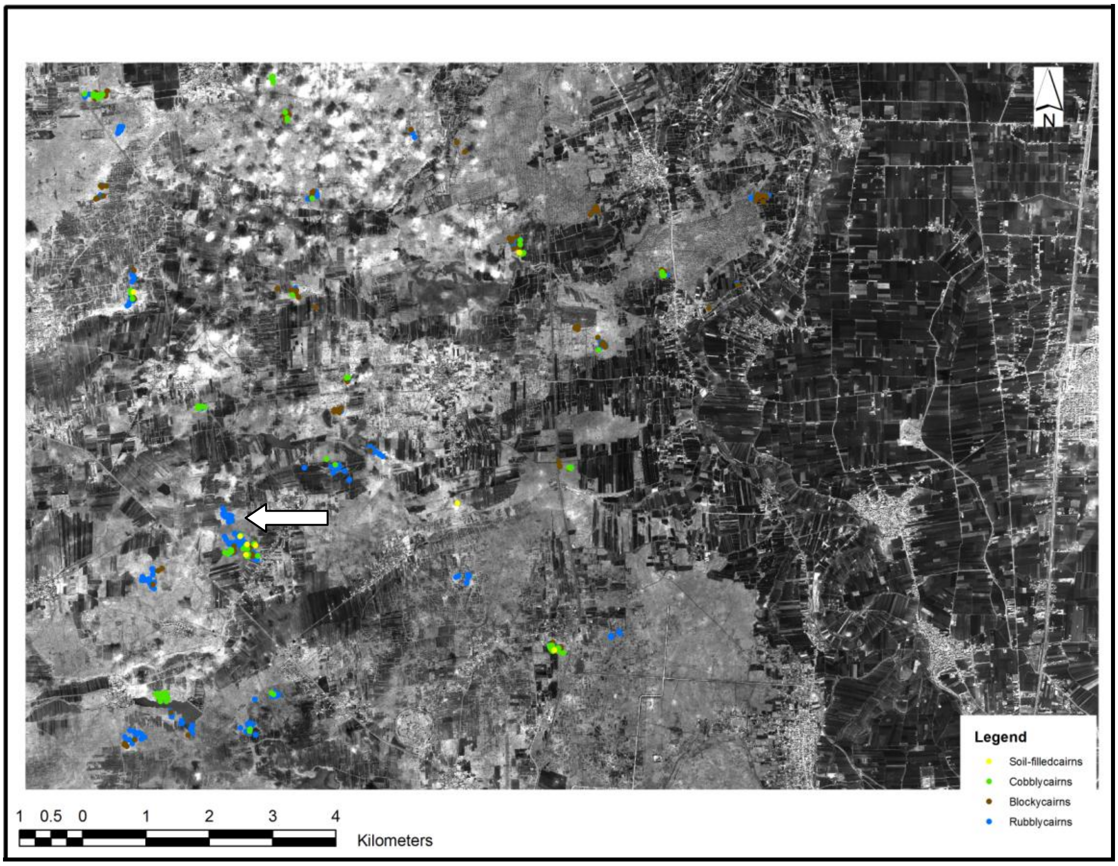


Figure 5.26. The distribution of building material forms across the NSA (Clusters 14 and 15 are marked by an arrow).

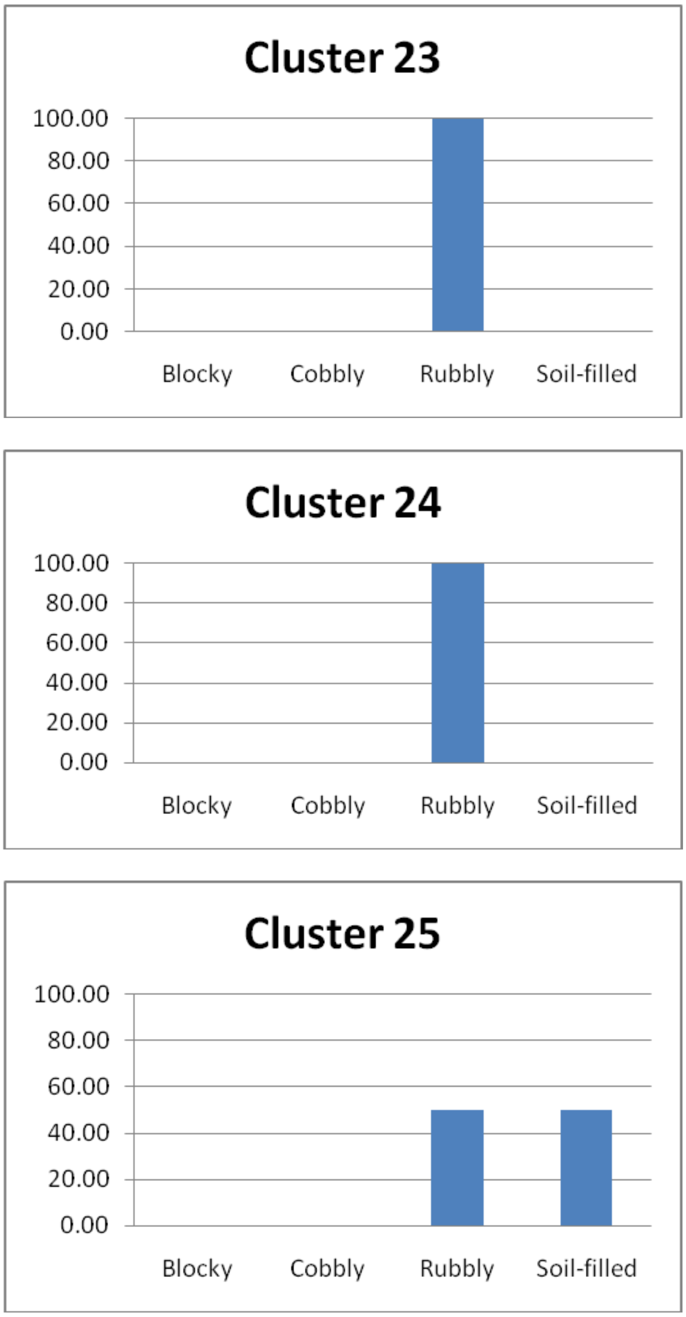


Figure 5.27. Clusters 23, 24 and 25

The majority of cairn clusters (80%) show evidence for two forms of building material, whilst the building materials most predominantly found together are *Blocky* and *Rubbly* cairns (Figures 5.24 and 5.28-9). Soil-filled cairns generally appear in combination with all four different building materials. The only exception is Cluster 25 (see Figures 5.27 and 5.30). Survey at this cluster was carried out due to the dense array of cairns identified in this area from 1960s Corona imagery. In addition, a group of irregular clustered structures was recorded in the region, alongside evidence for relict field systems. Unfortunately, bulldozing post-2002 (some of the structures were still visible on 2002 satellite imagery) has destroyed this area and the two cairns recorded within this cluster represent the only two still extant examples in 2009 (see figure 5.30.). As such, given the limited sample size this pattern may be the result of destruction.

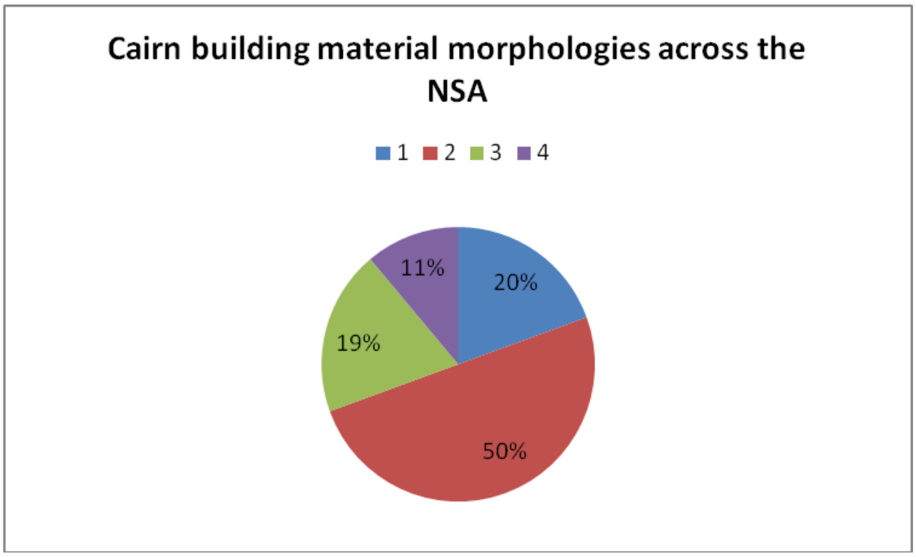


Figure 5.28. Showing the distribution of different cairn building materials across clusters. Clusters range from those with just one type of building material to cluster with all four.

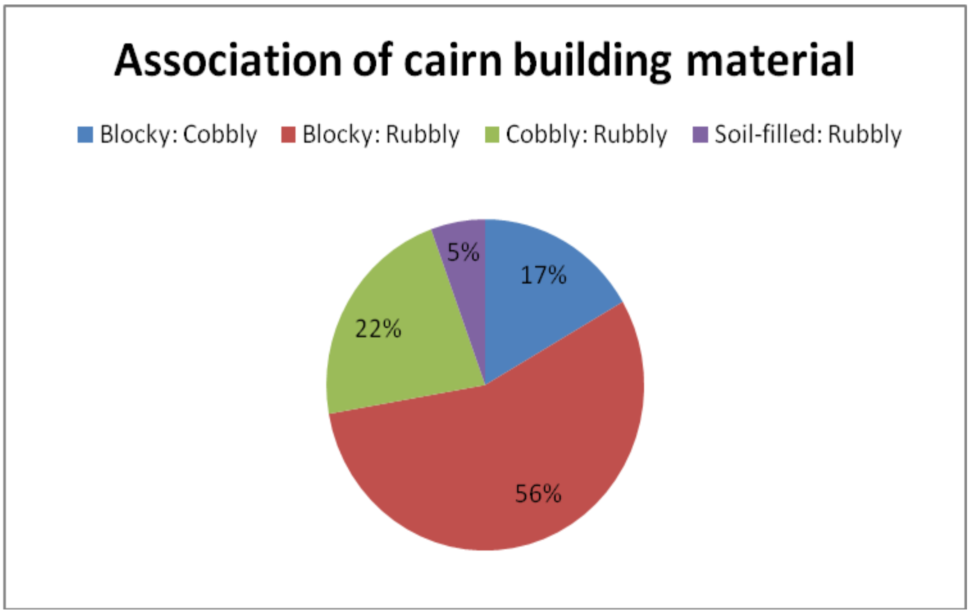


Figure 5.29. Showing the cairn building material morphologies (where two morphologies present) seen in association with one another in clusters.

Figure 5.30. Cluster 25 as seen on 1960s Corona Imagery and 2002 Ikonos Imagery. The cairns marked as 'preserved' on the imagery have now been destroyed.

5.1.5. Area of Cairns across the NSA

The majority of cairns (70%) within the NSA are between 0-100m^2 in area (*width x height x length*). A further 20% are between 101-250m^2 in area. Very few examples are above these figures and in total only 7 cairns (out of 525) are above 800m^2 in area.

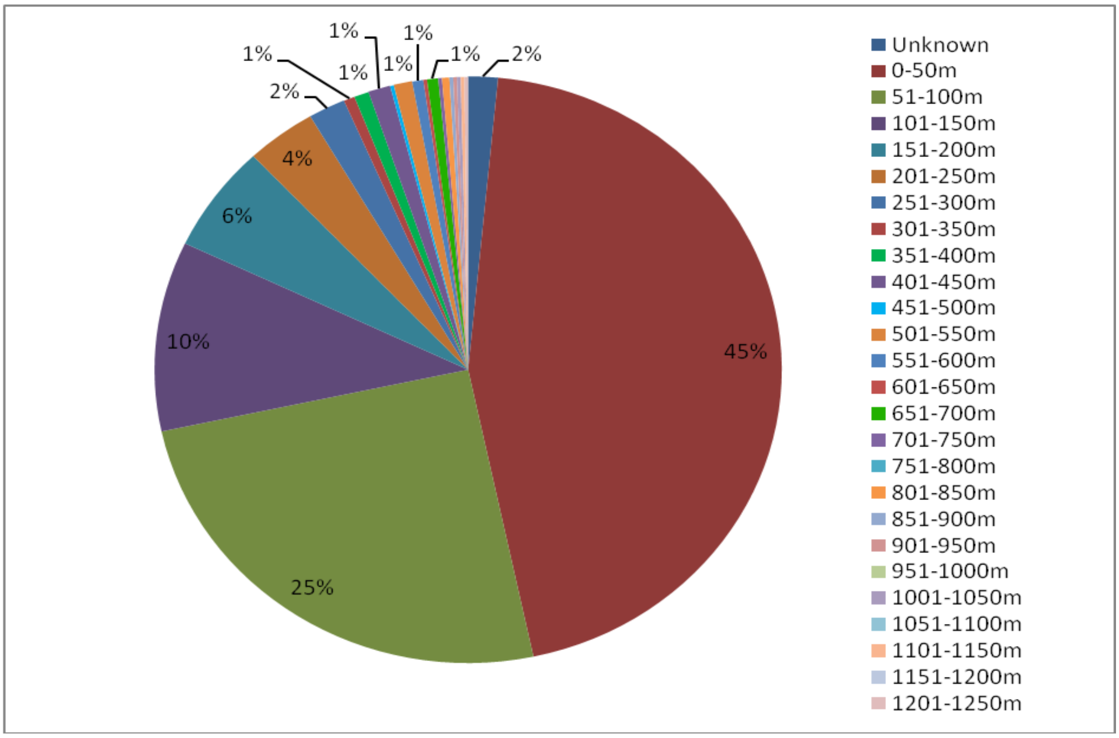


Figure 5.31. Areas of cairns across the NSA (based on length, height and width measurements recorded in the field)

Considering the small number of cairns which are over 800m^2 in area (e.g. less than 5%), it is interesting to note that they appear to be clustered in three locales (Figure 5.32). Three clusters are in the vicinity of SHR 913 and 914, both of which show evidence of Chalcolithic-EBA activity. Two clusters were found in the area of the dammed lake, which has evidence of both 'early' and Roman-Byzantine activity and further two clusters were within the vicinity of SHR 59 an ICS, which is tentatively assigned to the Chalcolithic-EBA (see section 5.2 and Chapter 7 for further discussion). Cairn 326 (809.4m^2), the only cairn above 800m^2 in area to yield diagnostic surface material, revealed evidence for both a clear revetment, as well as an internal chamber. Pick-up from around this structure consisted of "Late" pottery, in addition to a collection of lithics. The range of material found from and in the vicinity of these cairns suggests that correlations between period and size, at least for cairns over 800m^2, cannot be seen. However, the potential clustering of these monuments may indicate some association with the archaeological features present in these locations, although at present it is difficult to assess the exact nature of this.

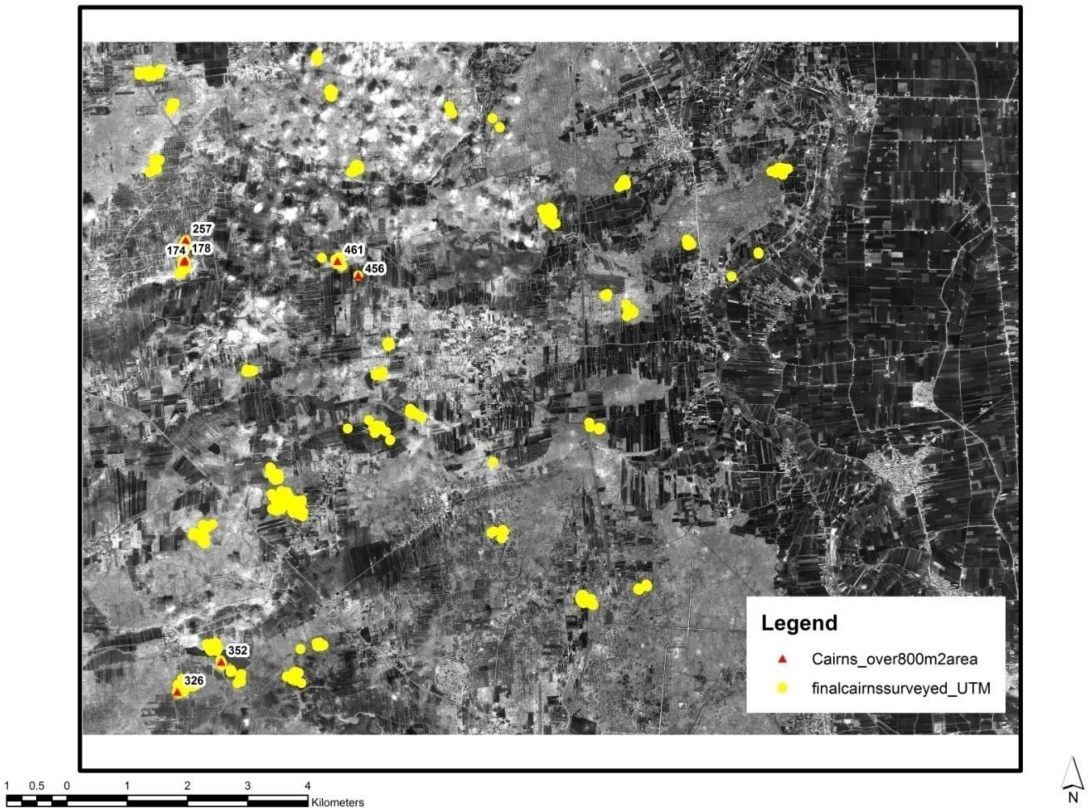


Figure 5.32. Distribution of Cairns over 800m^2 in area.

As Figure 5.33 highlights, if we group cairns of area >300m^2 into a single category, there is significant variation between cairns with smaller areas. Whilst, a substantial percentage falls into categories between 0-30m^2 in area (30%), a large percentage also fall within 31-70m^2 in area (24%), with a further 18% falling between 71-140m^2 in area. If we examine the distribution of cairn areas at the broad scale across the whole NSA, no clear visual spatial clustering is apparent (Figure 5.34). A concentration of cairns measuring between 1-10m^2 can be seen within the vicinity of SHR 362 (Figure 5.35). However, given the large percentage of cairns surveyed in this area, this should not necessarily be considered as a strong spatial relationship between locale and cairn size. Moreover, the site appears to have cairns ranging in size from under 10m^2 in area to over 300m^2, highlighting the variation and potential multi-phased construction of this monument (see Appendix 5.4).

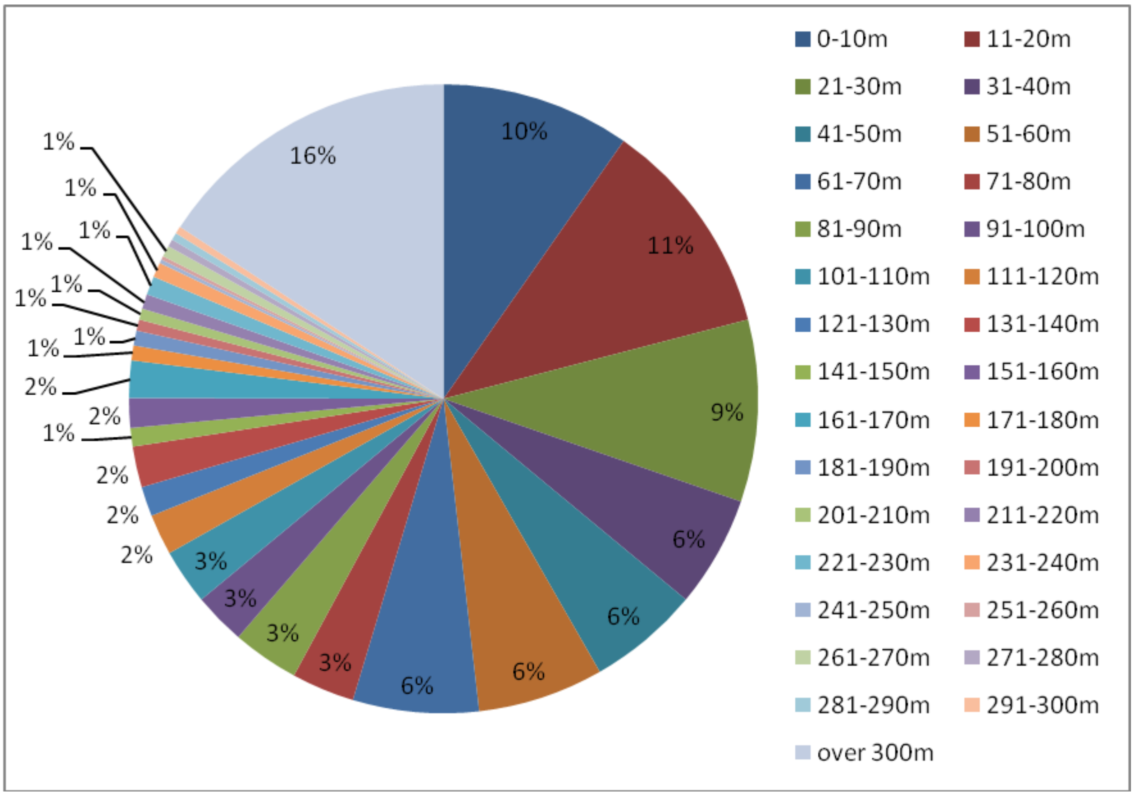


Figure 5.33. The variation in cairn size across the NSA. Cairns over 300m^2 in size are grouped together.

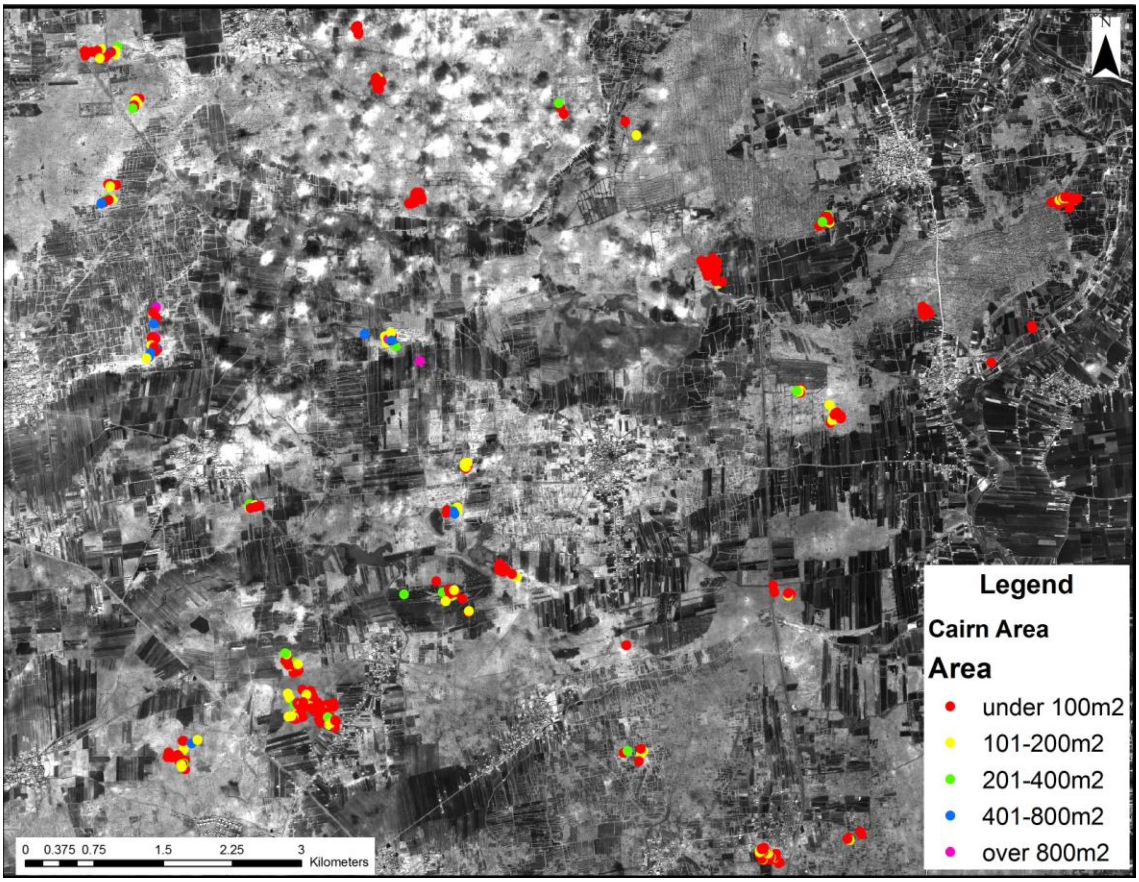


Figure 5.34. Cairn Areas across the NSA

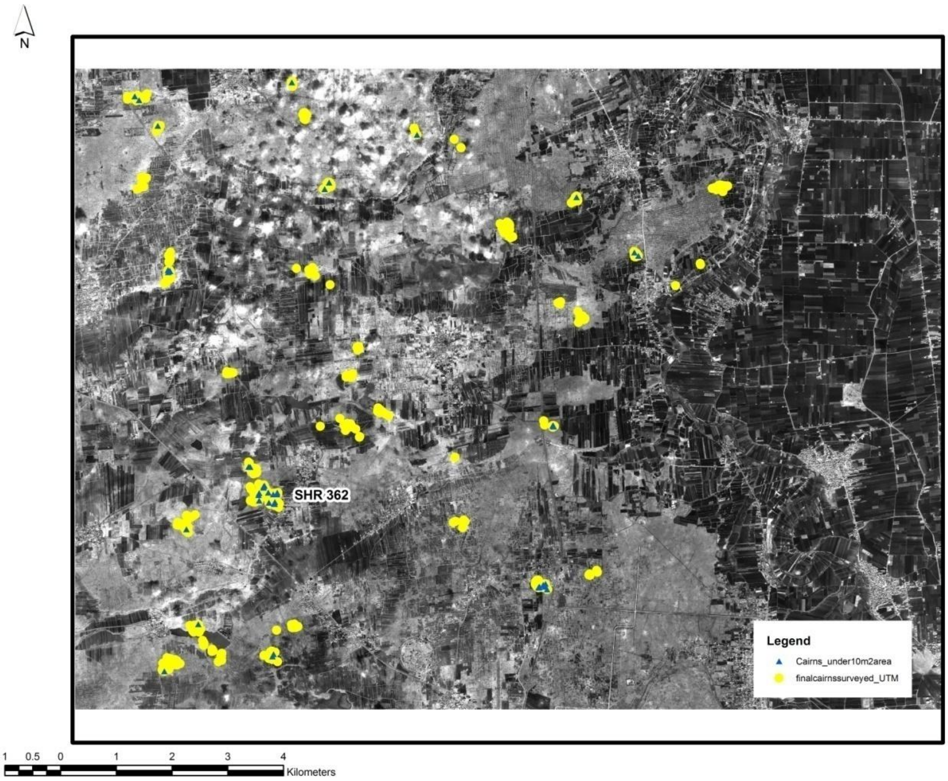


Figure 5.35. Distribution of cairns under 10m² in area (blue triangles) across the NSA. All the surveyed cairns are in yellow.

An examination of the distribution of cairn features in relation to cairn area reveals some patterning (Figure 5.36). Whilst cairns with zero to three features appear to all demonstrate the same general pattern of association between cairn features and area (the number of cairns decreasing as the area of the cairns increases), it is clear that cairns with four or more features do not follow this trend. It should be acknowledged that only eighteen cairns (out of a total of 517 for which area is known) have four or more associated features. Whilst cairns with zero to three features show a peak of cairns measuring between 0-50m^2 in area, those cairns with four or more associated features have a peak between 51-150m^2. This observation is not necessarily surprising and suggests that there is a degree of accuracy to the hypothesis that with increasing size, increasing structural complexity can be observed. Having said this, no cairns with more than four features are above 650m^2 in area and the only cairn with six associated features measures around 120m^2. As such, it can be argued that given the presence of cairns ranging up to around 1200m^2 in area that either these larger examples do not show an increased complexity and number of associated features, or possibly that within these examples their size and associated decay has led to the obscuring of possible associated features.

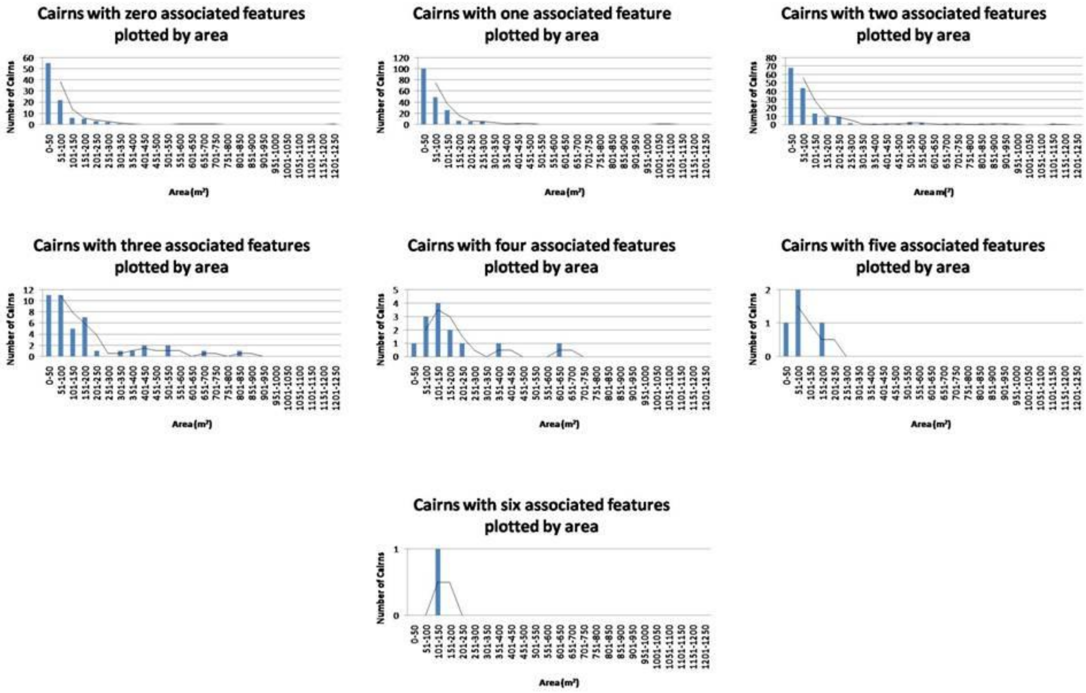


Figure 5.36. The relationship between cairn features and cairn area measurements

Given the above hypothesis, a consideration of the association between cairn area and preservation is necessary. The majority of surveyed cairns within the NSA are 100% intact (Figure 5.38). Moreover, Figure 5.39 shows the same general trend in the relationship between cairn preservation and area across all of the graphs. It is interesting to note that whilst the majority of cairns which are 100% intact are between 0-300m^2 in area, there appears to be greater variation in size observable amongst cairns, which are less than 100% intact (e.g. more than 50% intact; less than 50% intact). Again it should be noted that the sample of cairns in the two later categories is smaller (109 and 46 respectively compared to 362). However, the trends observed in these datasets might suggest that some association can be seen between cairn size and preservation. This may indicate that either larger cairns are on the whole more prone to decay, or alternatively that they have been targeted for looting and destruction.

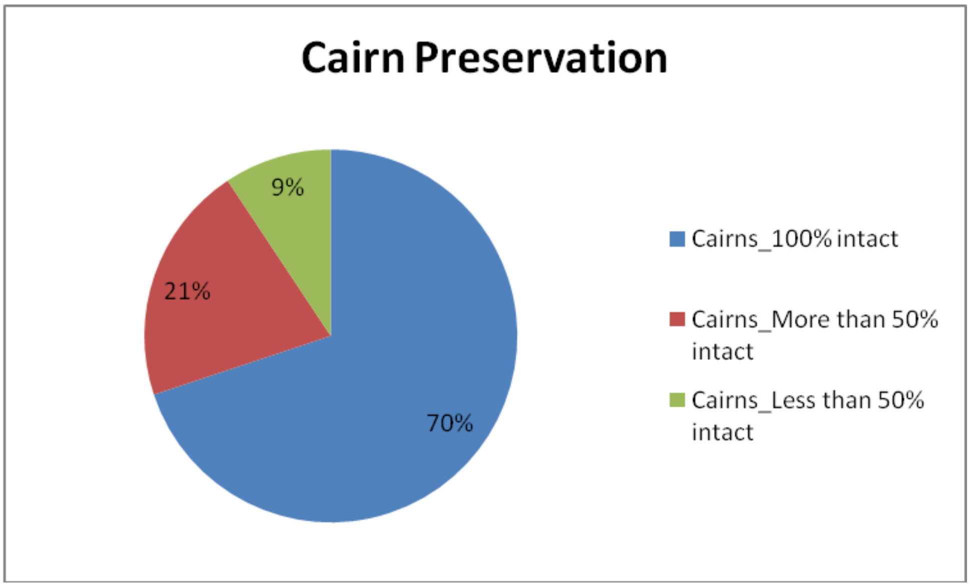


Figure 5.37. Preservation of cairns across the NSA.

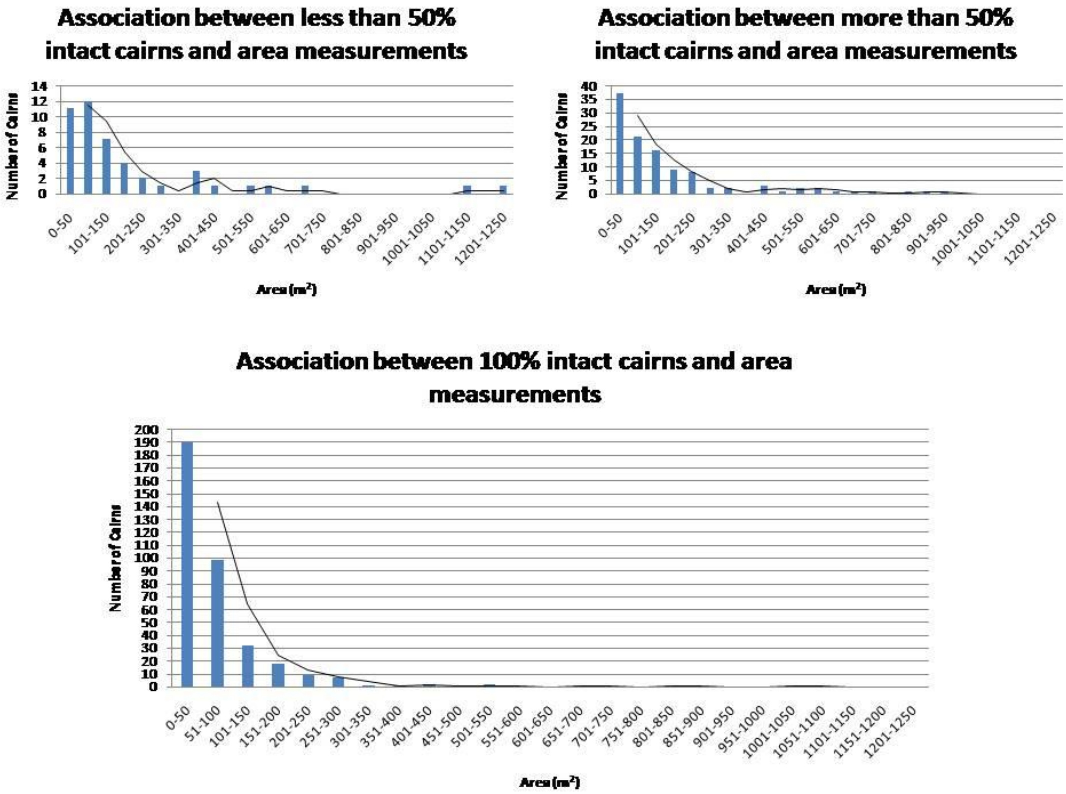


Figure 5.38. The relationship between cairn area and preservation of cairns across the NSA

Figures 5.39-40 display possible relationship between area, cairn shape and cairn building material (see Appendix 5.2). An examination of these plots demonstrates that these variables seem to follow the same broad trends demonstrated by the plots of cairn area across the NSA (Figure 5.31). In other words, as the cairn area increases the number of cairns within each area category decreases. Two observations are worth mentioning in more detail. Firstly, all of the soil-filled cairns appear to fall within the first category of cairn area i.e. under 50m^2 in area (Figure 5.39). Although this observation is based on a small number of soil-filled cairns the findings are indicative of a relationship between these two variables.

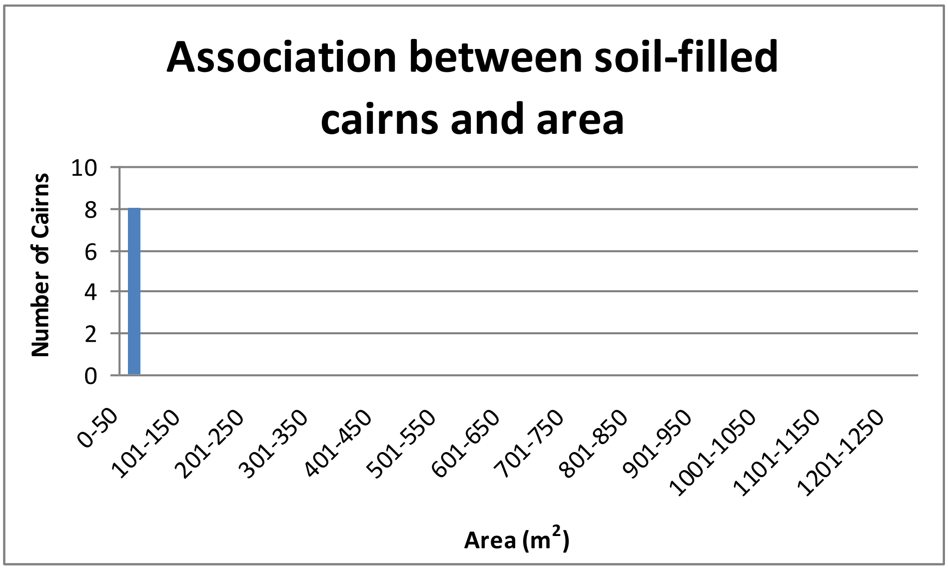


Figure 5.39. The relationship between Soil-filled building material and cairn areas

Secondly, rectangular and square cairns (Figures 5.40-1) appear to depart from the trend, with 5 out of 7 of the square cairns falling within the 51-100m^2 area category, whilst only 2 fall within the 0-50m^2 category. In this case the fact that this association is based on only 7 cairns must encourage caution. Rectangular cairns, in relation to other cairn shapes, appear to show more variation in terms of size, although they still follow the broad general trend of decreasing cairn numbers as area increases. No simplistic one-to-one relationship can be seen between size and building material. Having said this, the greater variation in terms of area seen within rectangular and square cairns, as well as the limited numbers of these forms, may suggest that these forms of cairn show a higher level of distinctiveness. At this point it would be premature to suggest that this was a deliberate attempt to make these cairns stand apart from the rest. Similarly, given the small number of soil-filled cairns within the region it is not clear whether the small size of these monuments was a specific cultural or social choice, a result of the use of a soily matrix preventing the construction of larger monuments, a chronological indicator or alternatively represents a pattern resulting from the small sample of these constructions.

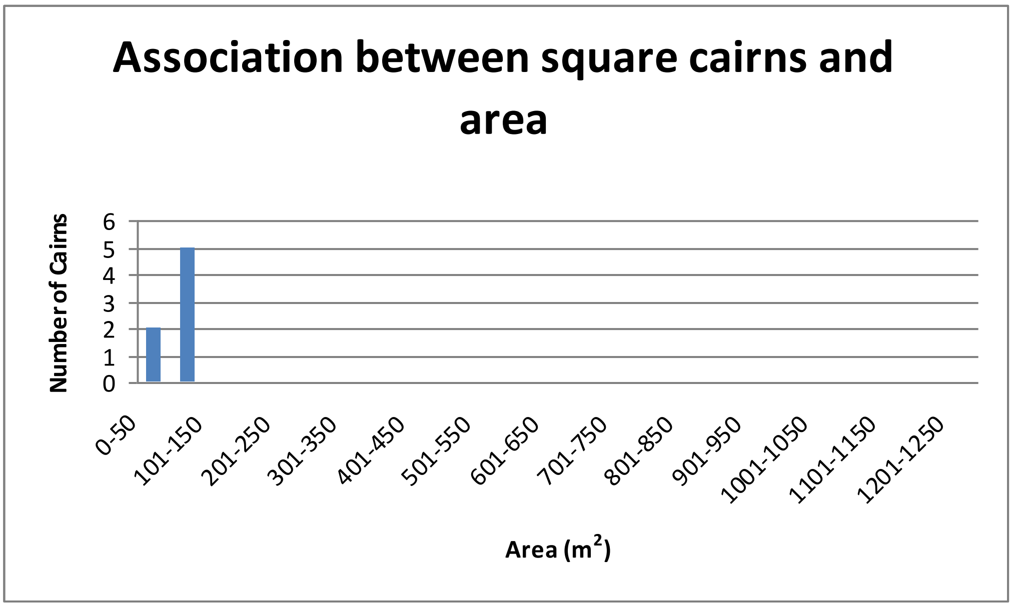


Figure 5.40. The relationship between square cairns and area measurements

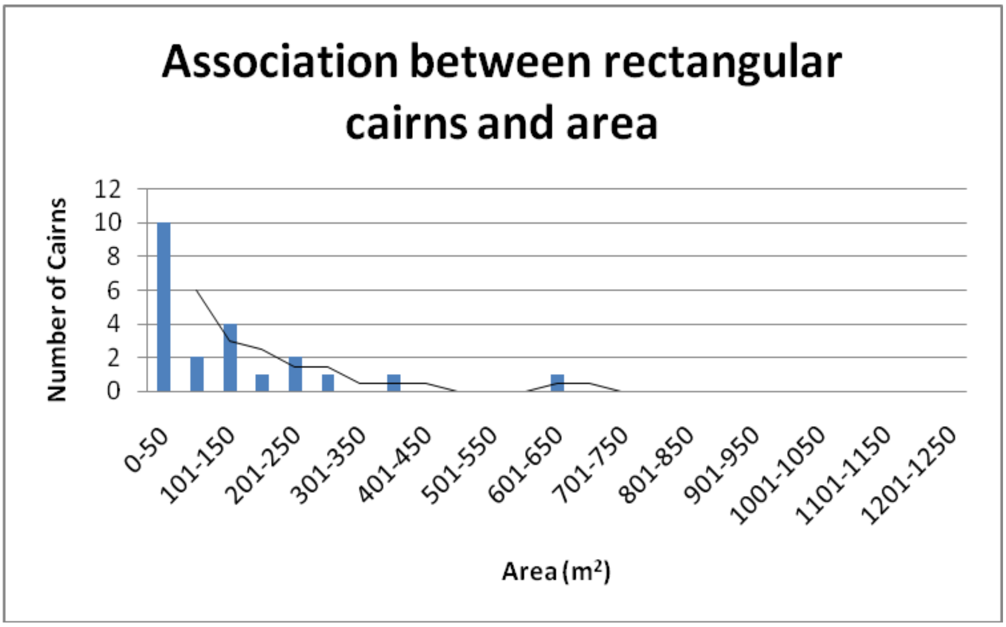


Figure 5.41. The relationship between rectangular cairns and area measurements

5.2. Problems of Chronology: Dating Features in the Homs NSA

As graph (Figure 5.42) shows, the majority of cairns have no dating material associated with them (72%). Out of the 203 cairns where surface pick-up was attempted (see Chapter 1 for discussion of methodology) only 27 revealed any period-specific artefactual material. A further 30, due to the un-diagnostic nature of the material, could only be classified as "Late" (see Table 5.1). The six soundings carried out in the Homs NSA revealed no dating material at all. As such, any chronological interpretations remain tentative at best and highlight the fact that dating monuments on the basis of material culture is extremely difficult. Over 50% of the cairns were associated with material which could only be generally classed as "Late". When more precise periods could be classed, the majority of cairns (67%) show evidence of single-period use, or at least single-period activity in the areas surrounding them (Figure 5.42).

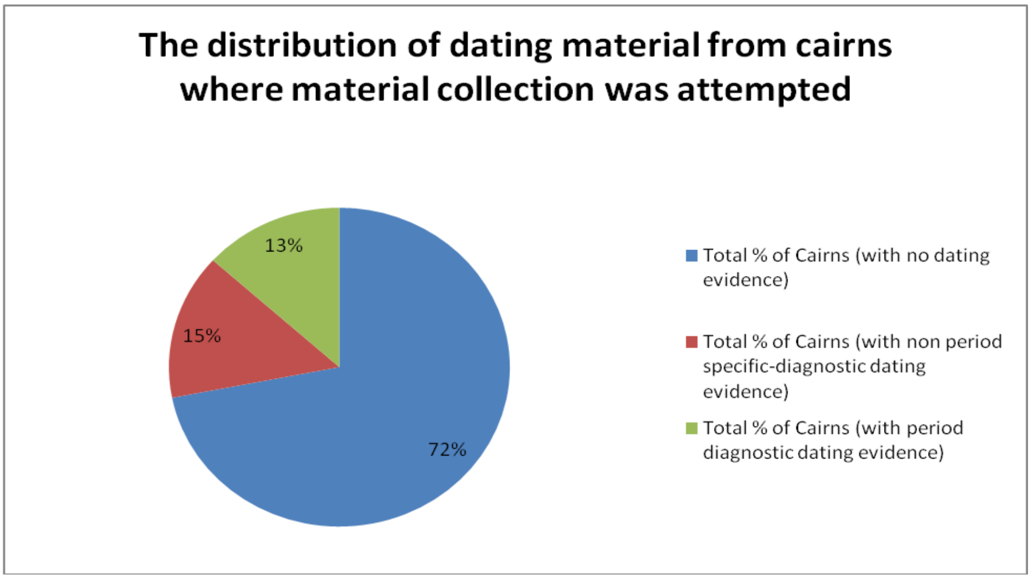


Figure 5.42. Presence and absence of diagnostic surface material from cairns and 1m survey radius around cairns (where surface pick-up was carried out) within the NSA.

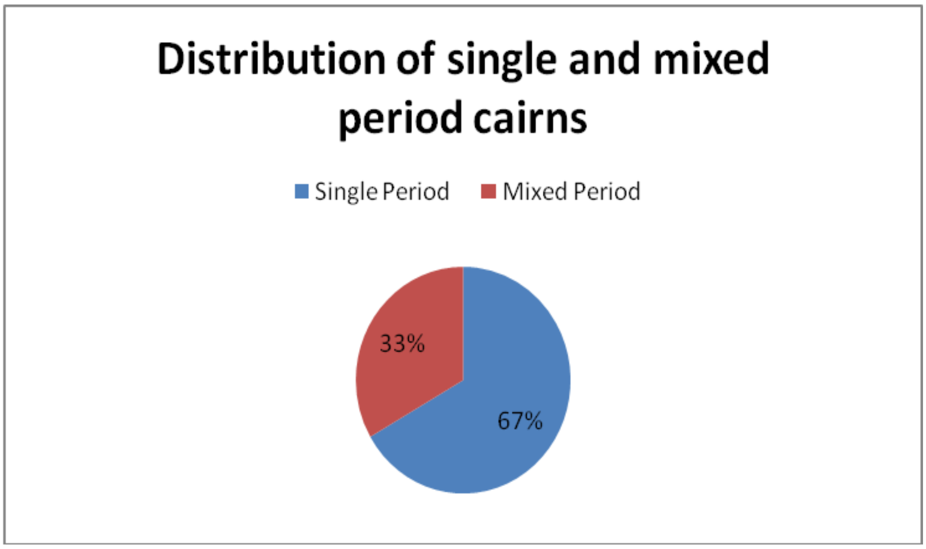
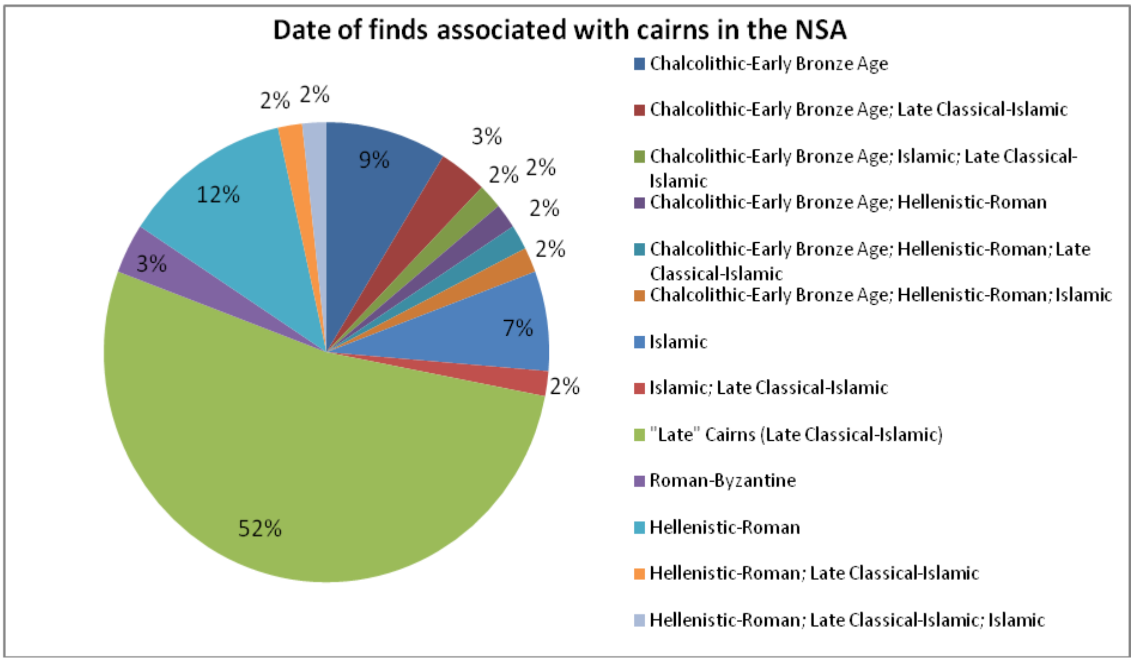


Figure 5.43. The relative frequencies of cairns from which single and mixed period evidence has been found (not including 30 cairns identified as "Late")

Cairn dating	No of Cairns
Chalcolithic-Early Bronze Age	5
Chalcolithic-Early Bronze Age; Late Classical-Islamic	2
Chalcolithic-Early Bronze Age; Islamic; Late Classical-Islamic	1
Chalcolithic-Early Bronze Age; Hellenistic-Roman	1
Chalcolithic-Early Bronze Age; Hellenistic-Roman; Late Classical-Islamic	1
Chalcolithic-Early Bronze Age; Hellenistic-Roman; Islamic	1
Islamic	4
Islamic; Late Classical-Islamic	1
"Late" Cairns (un-diagnostic post-Iron Age material-i.e. no Chalco-EBA)	30
Roman-Byzantine	2
Hellenistic-Roman	7
Hellenistic-Roman; Late Classical-Islamic	1
Hellenistic-Roman; Late Classical-Islamic; Islamic	1
TOTAL	**57**

Table 5.1. The dating of material associated with cairns based on in-field spot dates.



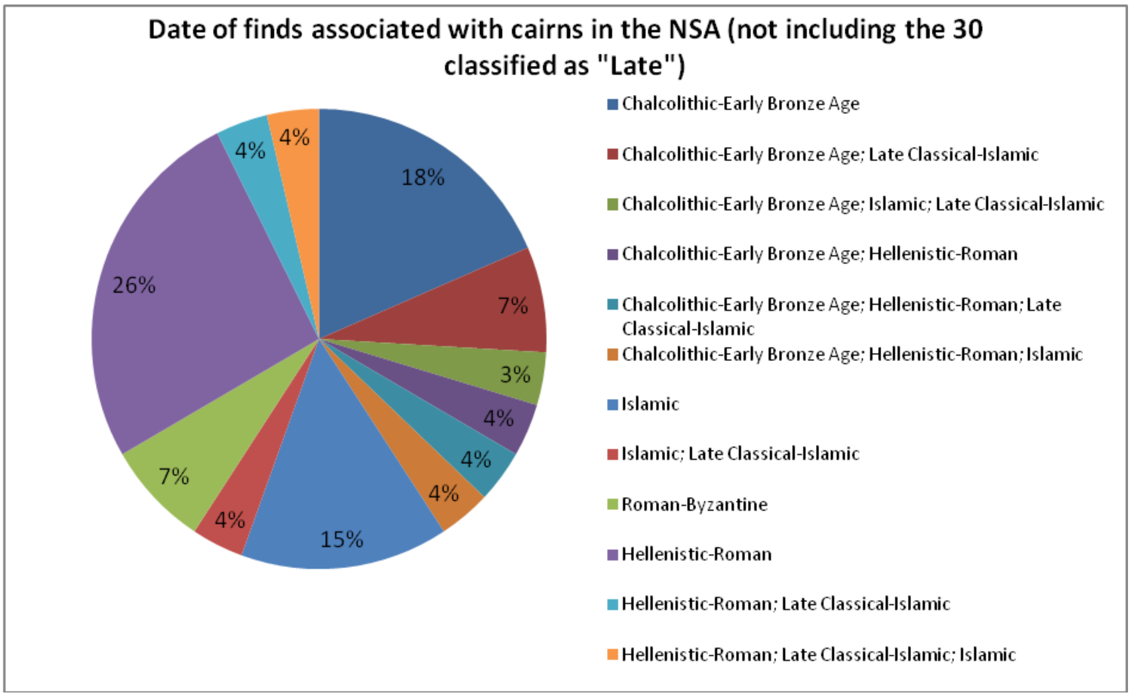


Figure 5.44 and 5.45. Preliminary dating of Cairns based on material from cairns and survey radius surrounding cairns (Figure 5.44 includes the 30 cairns generally specified as "Late" whilst Figure 5.45 discounts these examples).

From the 27 cairns, which revealed diagnostically datable material, 26% showed evidence for Hellenistic-Roman material, whilst 18% yielded evidence for Chalcolithic-EBA activity, emphasising the importance of considering the multi-period use of such structures (see Chapters 3, 4 and 9 for further discussion). 15% of monuments showed evidence for Islamic utilisation or activity. A further 7% showed evidence for Roman-Byzantine activity. The remaining cairns demonstrated evidence for multi-period utilisation or activity within their vicinity (34%). From surface assemblages, beyond suggesting that the data indicates multi-period use of these monuments, little more can be argued. However, what is perhaps notable is the lack of diagnostic material dating to the 2^{nd}-1^{st} millennia BC (e.g. Middle-Late Bronze Age and Iron Age). This absence correlates well with findings from the SHR project which suggests a major drop-off in occupation of the NSA between the Early Bronze Age and Hellenistic-Islamic periods (pers comm. Philip 2010). Instead, the main evidence for the construction of cairns appears to correlate with two broad phases, the first in the Chalcolithic-EBA and the second in the Hellenistic-Islamic period. This fits well with evidence for settlement and activity within the NSA during these periods (Newson *et al.*, 2008-9, Philip and Bradbury, 2010). It should be emphasised that in the majority of cases the dating of activity, at and surrounding these monuments, is based on a very limited sample of material (Appendix 5.3 for full table). Despite this, mention should be made of several cairns which yielded substantial surface assemblages. Cairn 146 (Figure 5.46), located next to the southern seasonal lake, revealed over 100 pottery sherds, all of which were diagnostic of Late Roman-Byzantine activity. Tile fragments were recovered from this structure, corroborating its classical/post-classical dating and indicating the possible original presence of a roofed superstructure. Cairn 146 represents an important case study within the NSA. Initial survey of this monument in 2007 revealed that the structure, on the basis of a 'typological' approach, was similar to those recorded elsewhere in the NSA, albeit on a larger scale. Looting in the intervening year between 2007 and 2008, however, revealed the presence of seven possible chambers as well as structural features, including lintels, more akin to features known from Roman mausoleum recorded in this region by the SHR Project (Newson *et al.*, 2008-9: 29-30). This example not only highlights the potential wealth of material from such structures when recently looted (see section 5.3) but also illustrates the problematic nature of assigning dates to structures on the basis of morphology, especially without excavation.

Figure 5.46. Image of example cist from Cairn 146 (Photograph Arthur Anderson 2008)

Cairns 450 to 455 are located in a cluster in the northern half of the NSA (Figure 5.47). They yielded the largest assemblage of Chalcolithic-EBA material associated with cairn structures from this region. These structures do not, in terms of morphology, particularly stand out from the rest of the sample from the NSA. All bar one, Cairn 451 which has suffered from modern activity (see 5.3 for further discussion), show evidence of related features, such as chambers or uprights. However, more impressive examples, in terms of associated morphological features, exist within the NSA. This observation again emphasises the difficulties in trying to assess chronology on the basis of associated features and 'typology'.

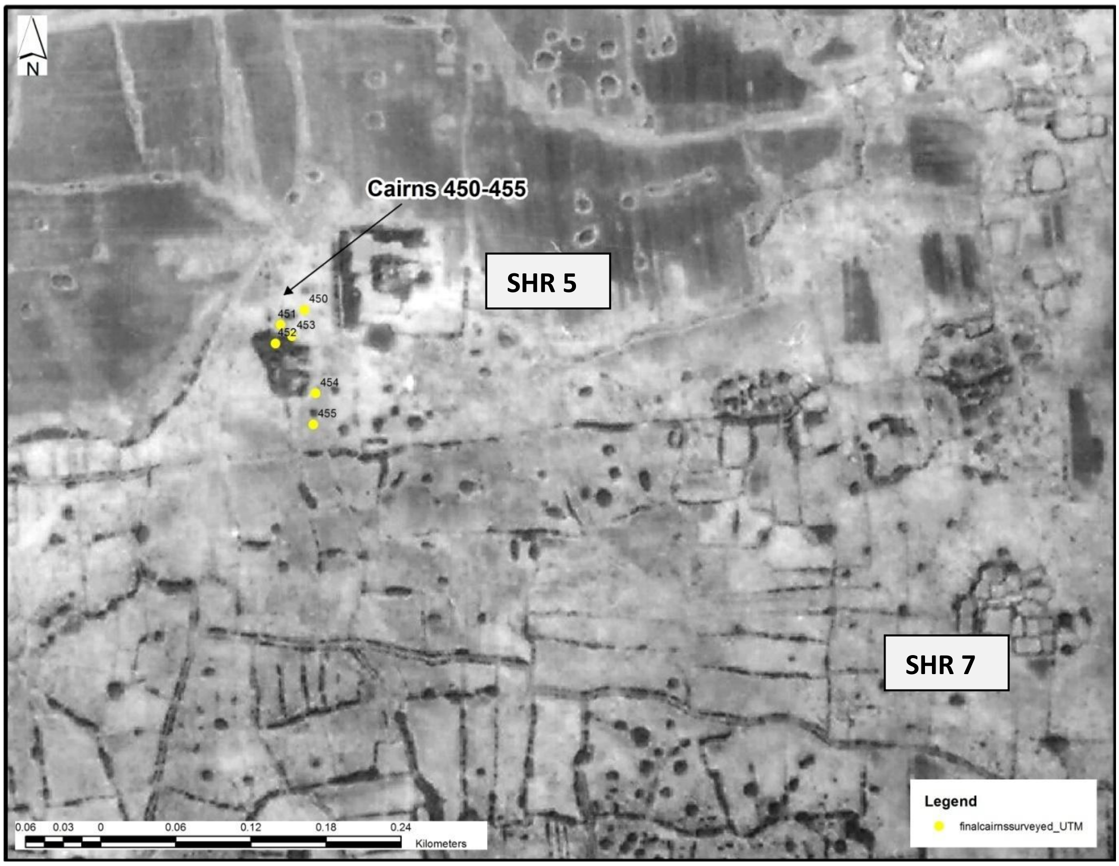


Figure 5.47. Cairns 450-55 seen on Russian Aerial Photographs (1959) note the square structure to east of the cairns (SHR 5), which is interpreted as a Hellenistic Tower but may, given the density of Chalcolithic-EBA material from and surrounding the cairns have evidence for earlier settlement. An Irregular Clustered Structure (SHR 7) can also be seen in the lower right half of the image.

5.2.1. Cairn Features and Period

Given the range of material found associated with cairns in the NSA it is worth considering any potential relationships which might exist between the morphological features recorded at these structures and the dating materials collected. In order to do this, the association between cairn shape, associated features and building materials has been considered alongside pick-up spot dates. The dating ranges are the same as those in Table 5.1, although it should be noted that “Late” has been used in the graphs and tables instead of "Late" Cairns (Late Classical-Islamic) as above.

An examination of the relationships between cairn shape and possible period of use demonstrates no clear patterning. Indeed, as seen throughout this chapter, variation appears to be typical. If we examine Figure 5.48 showing the relationship between ovoid cairns and dating materials, it appears that there does seem to be a general trend towards a later date for these structures (over 80% have “Late” or Hellenistic-Roman material associated with them). However, 18% also show evidence for Chalcolithic-EBA material. Moreover, as throughout this chapter it should be highlighted that this pattern is based on a limited sample (28 cairns from a sample of 57 with dating material), as well as a limited surface collection and thus, could be as much of a product of the inadequate size of the sample as a true archaeological association. This appears to be the case for all of the associations between cairn shape and possible periods of use (see Appendix 5.2 for further examples).

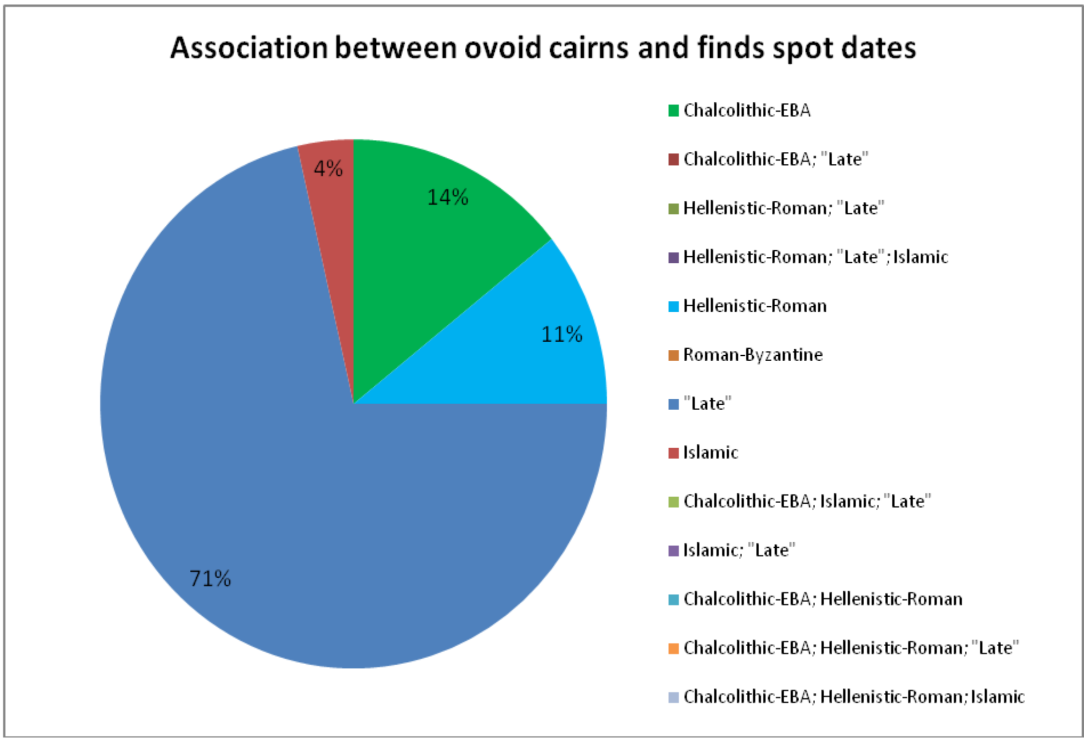


Figure 5.48. The relationship between ovoid cairns and the date of finds associated with these structures.

An analysis of the potential relationships between the number of cairn features and possible period of use again demonstrates a similar pattern. As might be expected, given the general representation of "Late" material across the NSA, over 70% of the cairns associated with a single feature are related with materials dated to this broad period (Figure 5.49). Indeed, whilst fewer periods are represented in both figures 5.48 and 49, it is clear that they are both broadly consistent with the patterns from the overall dating of cairns across the NSA (i.e. Table 5.1. and Figures 5.44 and 5.45). What perhaps are more important are the associations, which do not follow this broad pattern, showing less or perhaps more variation.

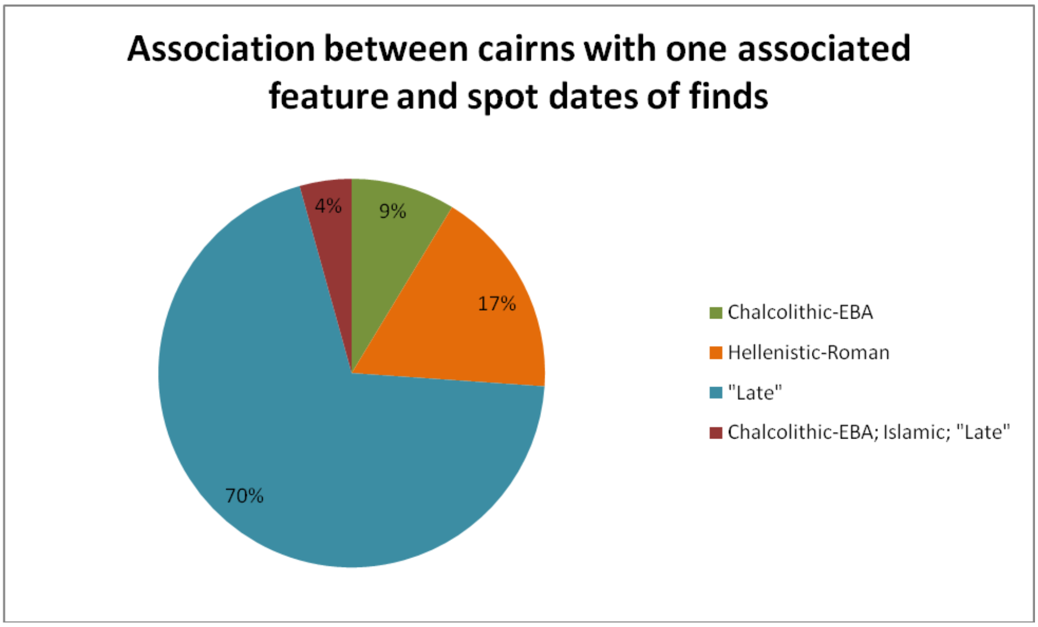


Figure 5.49.The association between cairns with one feature (most predominantly seen across the NSA) and potential period(s) of use based on surface collections.

With this in mind it is worth considering the association between period and building materials, especially that seen by 'blocky cairns'. As Figure 5.50 shows there appears to be an increased association between Hellenistic-Roman material and blocky cairns, in addition to a lack of Chalcolithic-EBA material, unless in association with "Late" material (11%). Indeed, the majority of material remains in this analysis, associated with 'blocky cairns', is classical or later in date (89%). A note of caution is needed. This analysis is based on a sample of 9 'blocky cairns' from which dating material has been collected, hardly forming a statistically significant or reliable sample. Moreover, if we examine the location of these cairns across the NSA and the location of Rectilinear Clustered Structures (interpreted as Classical-Islamic in date [see (Philip *et al.*, in press) for further discussion] a very small percentage of these can be seen to have a spatial relationship (less than 4% are within 100m of each other). As such, all that can be said is that possible patterns may exist, although at present there is little further evidence to suggest this. Moreover, if we consider 'Rubbly cairns', which appear in relation to dating material in the largest sample (34 out of 57), the general patterns of period association seen in Figure 5.51 again appear to be present (i.e. "Late" material is well represented, with variation being seen across the other categories). Thus, it suggests that the patterns present within this data set could be related to the limited size of the sample, rather than observable archaeological features.

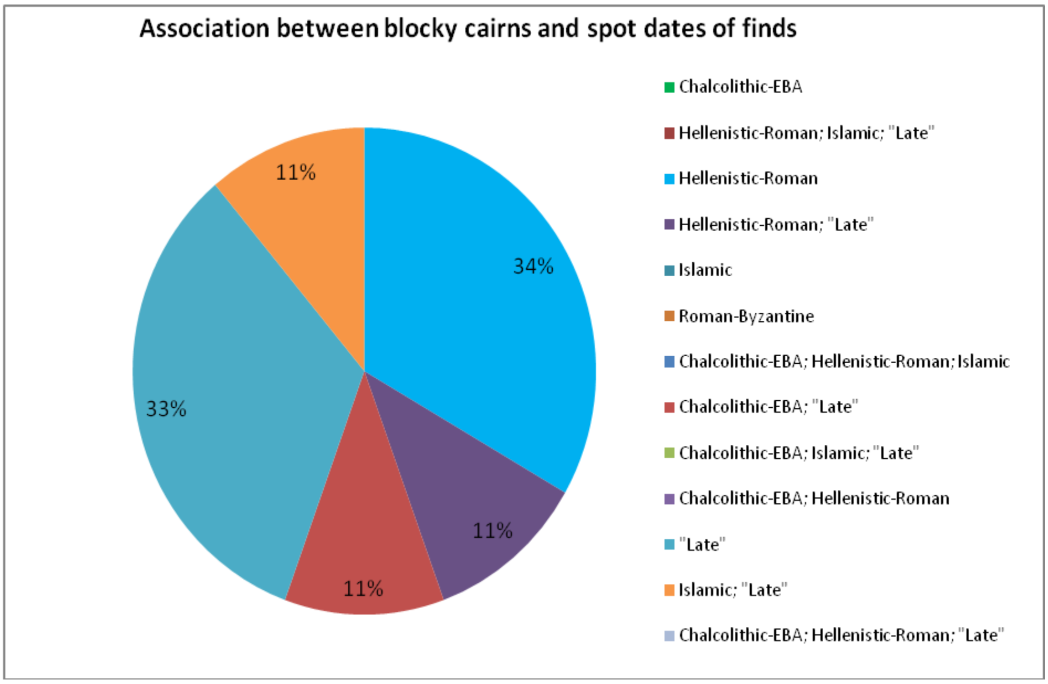


Figure 5.50. Association between spot dates for cairns and building materials (Blocky)

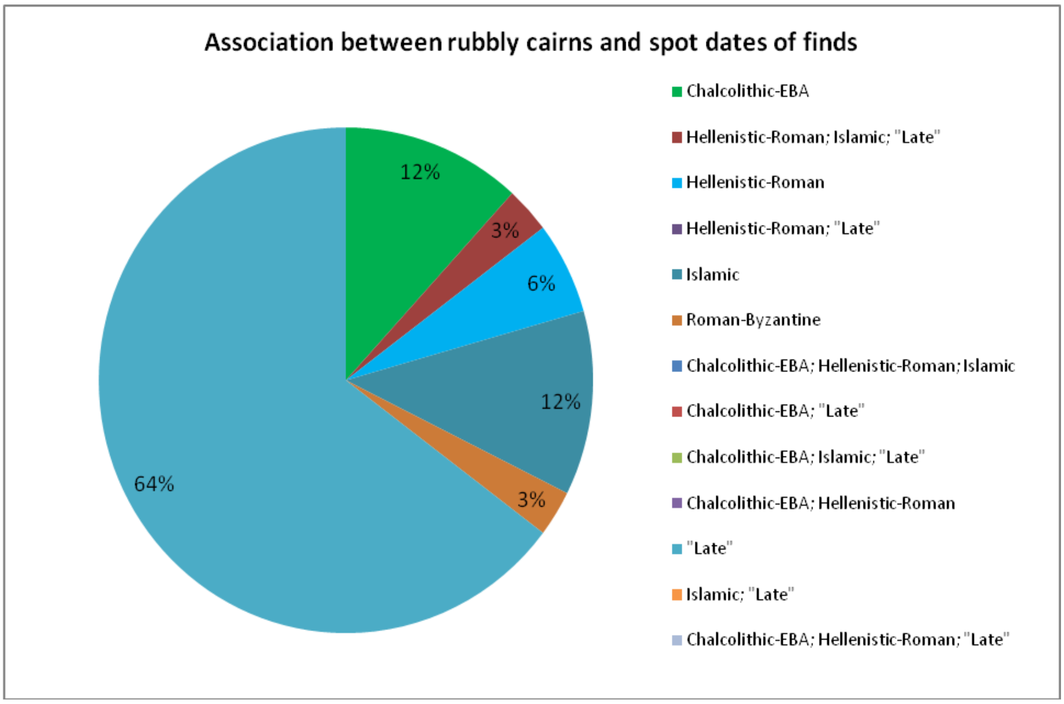


Figure 5.51. Association between spot dates for cairns and building materials (Rubbly)

As figures 5.48-51 have highlighted no clear associations between cairn features, cairn shape or cairn complexity and chronology can be seen. Indeed, every feature/attribute identified within the cairns of the NSA appears to show an association with a wide range of periods, suggesting that any chronological assessments on the basis of typology are dubious. This observation is emphasised by the fact that only 57 of the surveyed cairns actually revealed any dating evidence. The earliest diagnostic material associated with these structures, at present, can be broadly assigned to the 4th-3rd millennia BC. This would suggest that this material is representative of the first major construction of cairn monuments. However, based on the evidence for multi-period activity in the region (Figure 5.43) and structures, such as Cairn 146, the presence of later material should not be seen solely as re-use. Instead, as Cairn 146 demonstrates the potential for such monuments to have been constructed during later periods should not be under estimated (see Chapters 6 and 9 for further discussion).

5.2.2. Dating sites in the Northern Study Area: The Chalcolithic-EBA material

Over the past twelve years, during which survey has been carried out in the NSA, a range of material dating to the 4th-3rd millennia BC has been collected from sites across the area. This, in turn, has been examined by various specialists involved with the Homs Regional Survey project (thanks to Drs. Stephen Bourke and Anne Pirie and Professor Graham Philip without whom the below analysis would not have been possible). It should be noted that the below represents an overview of the current dating evidence from these sites, rather than an exhaustive discussion of the material culture (publication of this material is planned), much of which has not been studied specifically by the author. Descriptions and associated illustrations of all the material collected during this thesis can be found in Appendices 5.4-6. This section aims to present the results of analysis.

160 pottery assemblages from sites, transects and cairns were examined/ re-examined during this thesis. The majority of these revealed mixed period assemblages of varying quantities and diagnostic quality (Figure 5.53). Where material was diagnostic, each sherd was given a sherd number and catalogued, with drawings and photographs also being made where appropriate (Appendices 5.4-6). These assemblages are additions to collections made by the SHR project between the years of 2002-2007, which shall be discussed alongside the below in Chapter 7.

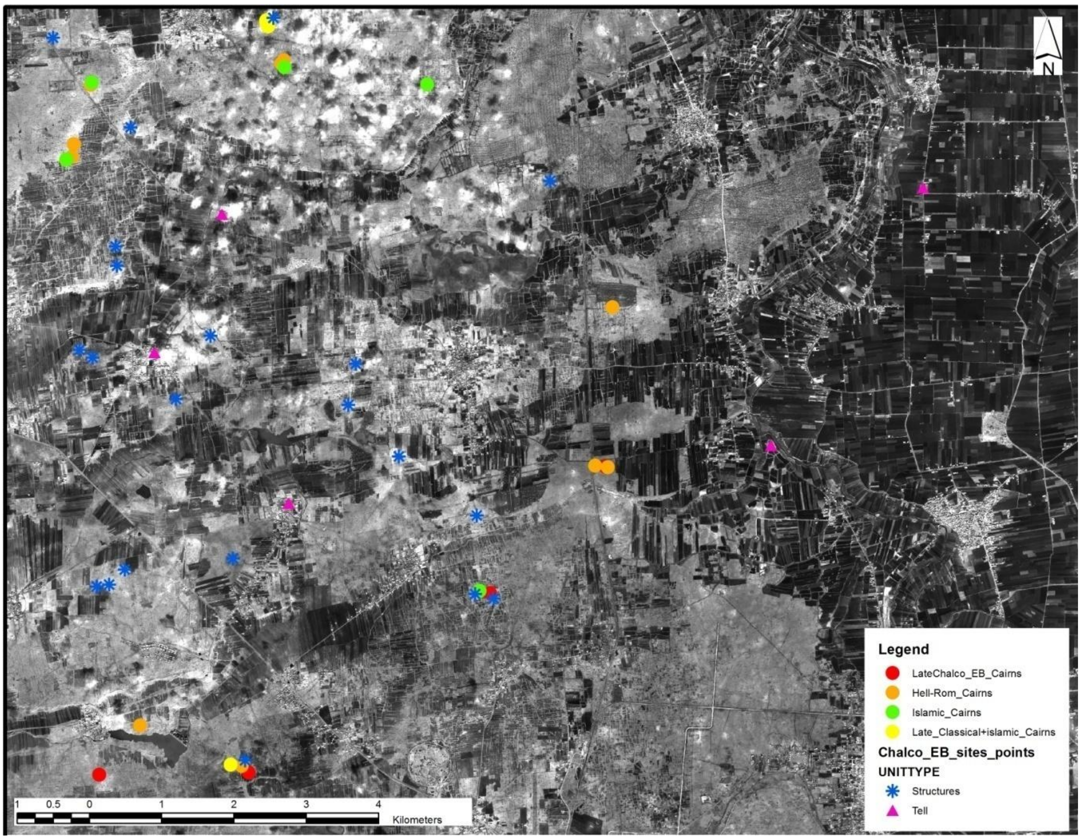


Figure 5.52. Plot of dating material collected during 2007-9 across the NSA

The majority of material collected and studied in detail by the author during the 2007-9 survey has been preliminarily dated to the Chalcolithic-EBA on the basis of the presence of holemouth jar forms and chaff tempered fabrics [known from Chalcolithic-EBA deposits at Trench VIII at Tell Nebi Mend in the form of both holemouths and everted rim vessels (see Chapter 7 and Appendix 5.4-6 for further discussion and illustration of this material)]. However, substantial collections of later material were also recovered from a number of sites. In particular, SHR 1184 is worth highlighting. Recorded by the SHR Project in 2002 as an area of burial cairns and mausolea structures this site revealed a mixed assemblage of both Chalcolithic-EBA material ('Early'), alongside Roman-Byzantine material ('Late') (Figure 5.53). Whilst the early pottery was more prolific, a substantial collection of late pottery was also recovered, highlighting the range of material found at many sites within the NSA. The multi-period use of areas and structures has been already been discussed in Chapter 4 and shall also be returned to in Chapter 7.

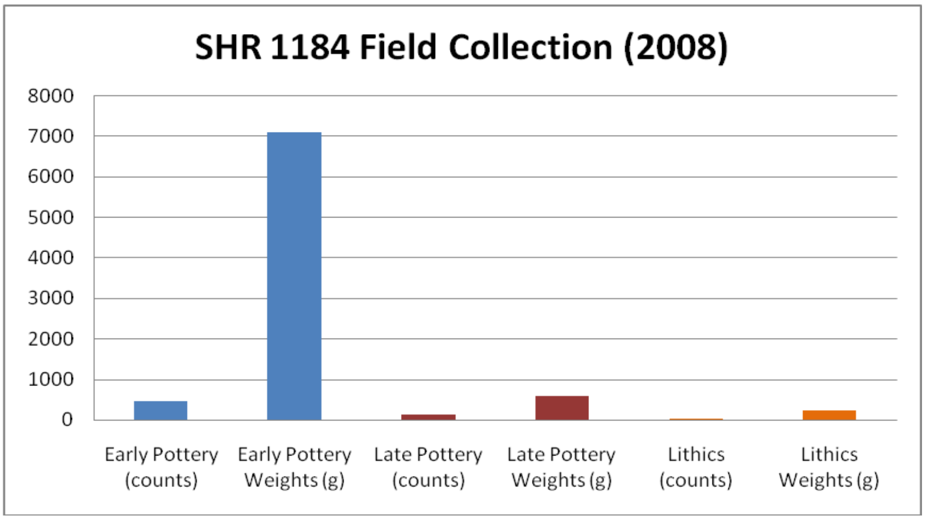


Figure 5.53. Plot of material recovered from SHR 1184 following bulldozing of the structures at the site. Both counts and weights of material are plotted. Note the significant difference between the weights of the 'early' coarse hand-made material and the 'late' finer material.

5.2.3. Forms and Fabrics

Whilst the nature of the material collections studied during this thesis will be discussed contextually in Chapter 9 it is worth noting a number of general patterns seen across the NSA in relation to Chalcolithic-EBA (4^{th}-3^{rd} millennia BC) material. A back-ground 'noise' of later Roman-Islamic material is seen across the region; however, specific concentrations of Chalcolithic-EBA are apparent at a number of sites across the Homs Basalt. In total, 24 sites (three tell sites and 21 irregular clustered structure sites) within the NSA show evidence for Chalcolithic-EBA activity (Figure 5.54). This does not include the 11 cairns which have shown evidence dating to this period. The majority of this material consists of highly degraded body sherds: we have a limited assemblage of diagnostic material dating to this period (Figure 5.55). Despite this, examination of material collected between 2007 and 2008 has revealed a number of diagnostic forms, in addition to a number of preliminary fabric types (Figure 5.56).

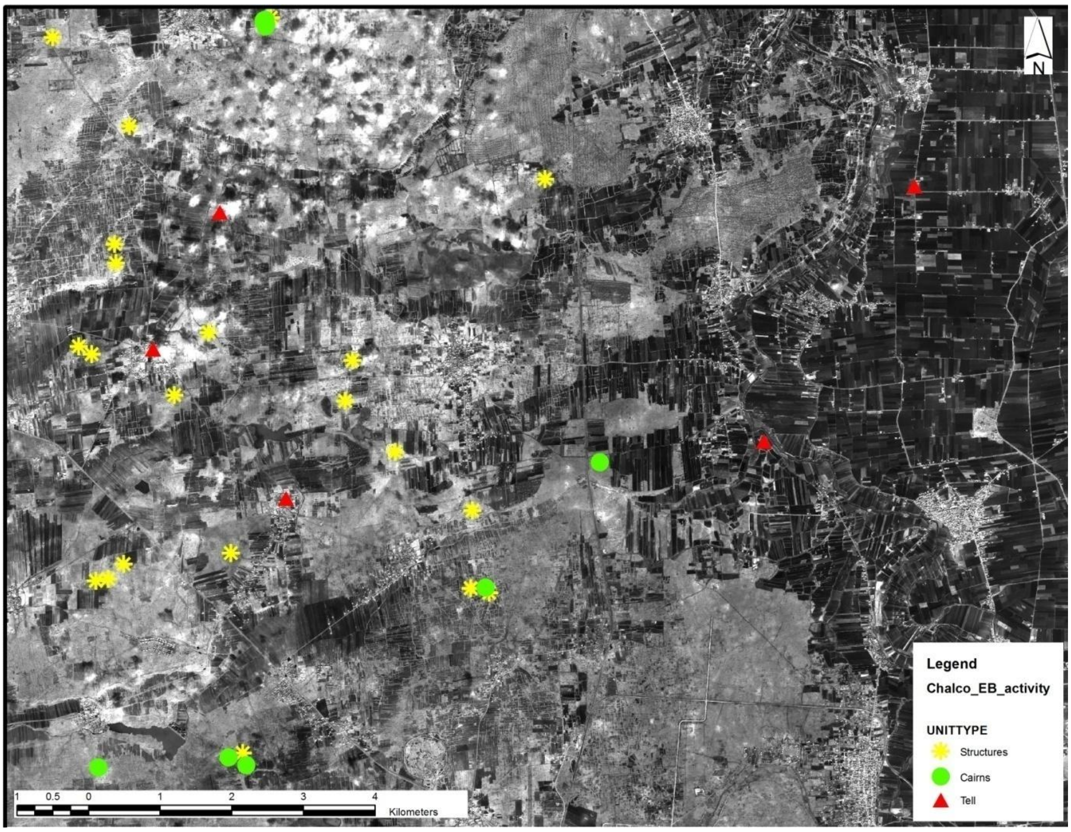
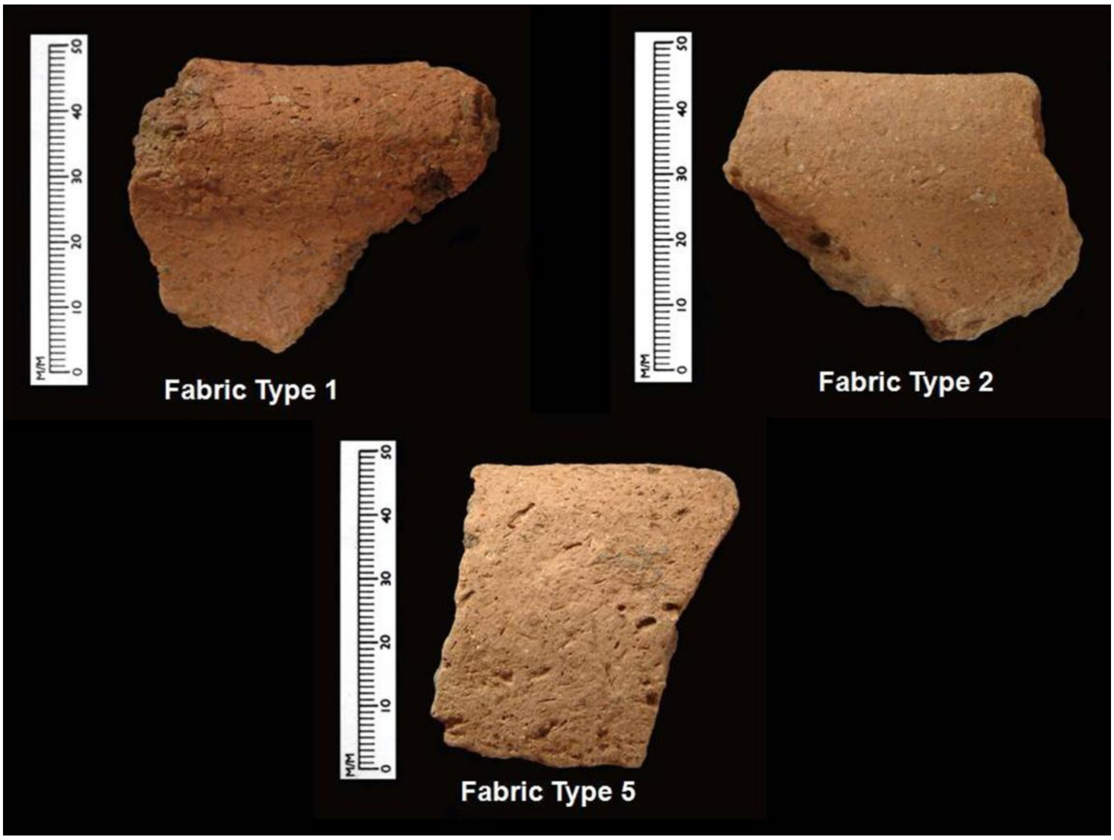


Figure 5.54. Plot of Chalcolithic-EBA Material

Site ID	Bowl Deep	Everted/Outflaring Bowls/Platters	Upright rim bowl forms	Everted/Outflaring Rim Jars	Jars (Upright Rims)	Jar Holemouth	Ledge Handle	Loop Handle	Strap Handle	Base Flat	Lid
1179/1/100				2		2					
1184/1/100				1		4					
1194/1/100											
1197/1/100				1		1					1
312/1/100	1										
362/1/100						1					
4/1/100					1						
49/1/100	6	1		3	3	3					
5/1/100											
5/1/701					1						
62/1/100		1		1							
64/1/100				1							
666/1/100		1	1			2					
666/1/1200				1							
666/1/200			3	1	2	4					
7/1/100						14		1			
850/1/100									1		
914/1/100				1							
915/1/100							1				
920/1/100	1	1	1	2						1	
991/1/100	1				2	1					

Figure 5.55. Chalcolithic-EB IV Diagnostic pottery forms from the NSA excluding decorated body sherds (studied by this author during 2007-2010 and Dr.Stephen Bourke). A full list of all diagnostic material including descriptions, fabric and form types and period assessment can be found in Appendix 5.5



Fabric No.	Characteristics
1	Dark red-brown mineral tempered has large, angular, basalt inclusions
2	Dark red-brown mineral tempered with smaller, gritty basalt (and other) inclusions.
3	Similar to Fabric 2 but contains an appreciable quantity of chaff temper, examples often have a reddish orange exterior and a dark core
4	Similar to Fabric 3 but contains both basalt and chaff temper and reveals evidence of either smoothing or burnishing of the vessel exterior
5	Buff-orange, chaff tempered, with distinctive grey core. It is unlikely that these vessels could have been produced using clays that were readily available within the basalt landscape.
6	Tan coloured. Very rough fabric with a variety of medium sized inclusions, including basalt. Only one sherd (ledge handle-P10020) has been found in this fabric.

Figure 5.56. Fabric Types seen within the NSA. Fabrics 1-4 are indicative of local production whilst Fabric 5 represents a definite import (either clay or finished vessels) whilst the origins of Fabric 6 are unknown at present.

There does appear to be a preliminary association between fabric types and forms, with the majority of diagnostics identified as Fabric 1 and 4 being classified as holemouth jars, whilst the rest of the fabrics appear to be associated with a broader range of forms. These findings can only be seen as preliminary interpretations, especially given the very small samples that are being used (in total 41 diagnostic sherds were considered). Thus, rather than providing evidence for a direct link between fabric and form, this finding should be viewed as indicative of possible relationships between these two variables, a hypothesis which could only be tested via the collection of more material.

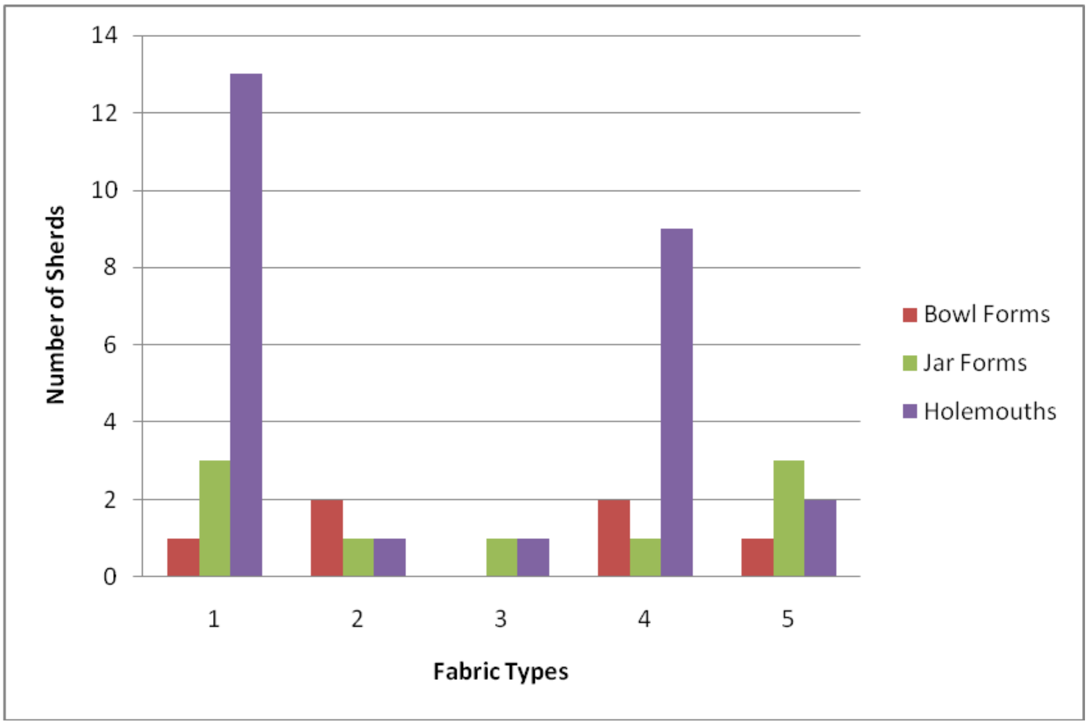


Figure 5.57. Correlation between rim form and fabric in the NSA (please note that fabric 6 has not been included in this analysis due to the fact that only one sherd, at present, has been found in this material).

Also worth noting are the preliminary distinctions concerning pottery dating which are emerging from a detailed study of the forms, in particular of holemouths, within the NSA (see Appendix 5.5-6 for a breakdown of these details). Whilst only based on a very small sample it is apparent that EB I-II forms are visible within the region, whilst EB III and later material is less significant. The implications of this will be discussed in more detail in Chapter 9. However, the dating evidence from both the cairns and structures appears to suggest that the first large scale utilisation of this region dates to the Chalcolithic-EBA (pre-EB IV) period, with a substantial drop-off following this. A second peak in activity, based on evidence from cairn structures and findings from the SHR project [see (Newson *et al.*, 2008-9, Philip *et al.*, in press) for further details], is appreciable during the Classical-Islamic period. Until excavation is carried out within the NSA, interpretation of this evidence has to remain generalised. However, the above has demonstrated a number of potential patterns of chronology and material culture utilisation which may be distinguishable within the area and through excavated sequences may be possible to elucidate further.

An additional note should be added concerning the lithic material found during 2007-2010 in association with archaeological features across the NSA (Figure 5.58). This small assemblage of material is yet to be fully examined and it is hoped that future excavations might reveal a larger collection of material. Having said this it is worth noting that pick-up has revealed evidence for both flint and obsidian, both of which are not found naturally in the Basalt (see Chapter 7 for further discussion). The current author does not possess the expertise to analyse the lithic dataset, however, comparison with material which has already been dated by the SHR lithics specialist (Anne Pirie) suggests that at least some of the material collected during this thesis would fall within a broad Chalcolithic-EBA horizon. The Obsidian may date to an earlier period (Pirie, 2008). It is also worth noting that several basalt flakes were identified in the field (see Appendix 5.7-on attached DVD) although these are yet to be fully analysed and studied.

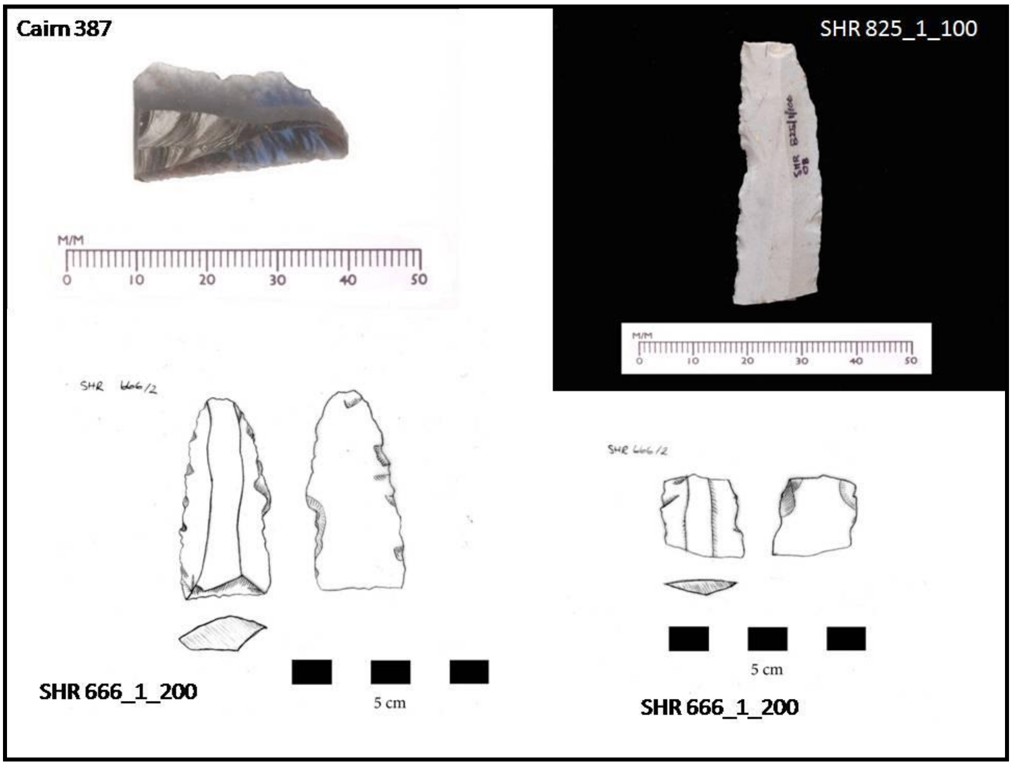


Figure 5.58. Lithic material from the NSA (photographs taken by Arthur Anderson and lithics drawn by Mhairi Campbell). Note the examples from Cairn 387 and 666_1_200 (right hand drawing) are obsidian. The other two examples are manufactured from a creamy/light grey coloured flint.

5.3. Pick-up densities: Comparing cairns and sites

Due to the limited amount of surface material recovered from the sites a detailed statistical analysis is limited and may be un-representative. However, differing levels of material can be found at cairns and sites within the NSA (see Appendix 5.4). Figure 5.59 highlights that the majority of cairns (over 80%), from which material was collected, have between 1 and 5 total finds, with only one example (Cairn 146) showing evidence for over 100 finds. In contrast, assemblages from sites cluster between 1 and 40 total finds, whilst a few can be seen to have assemblages of over 300 total finds (Figure 5.59). Comparing the weights of pottery finds (Figure 5.61), from both cairns and sites, again shows a very similar pattern. Overall, as would be expected sites predominantly (whether bulldozed or not) yield more surface material than the surrounding cairns.

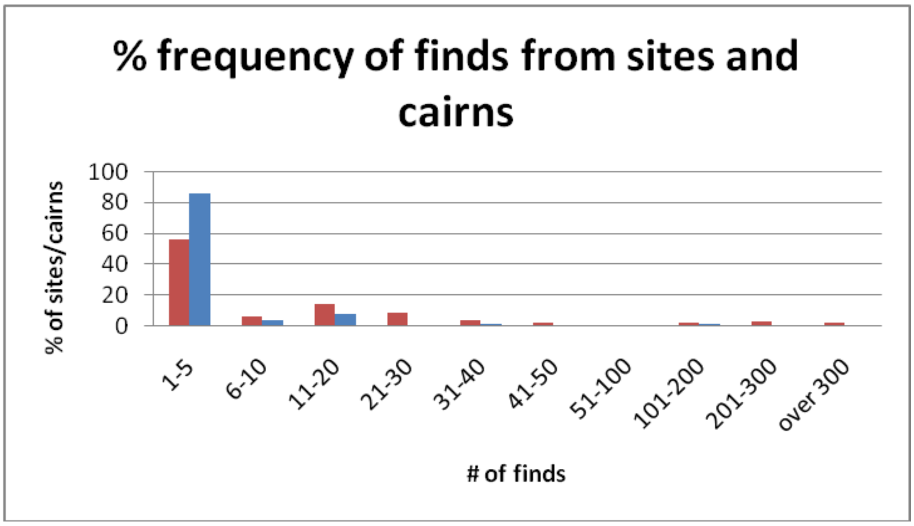


Figure 5.59. The % frequency of all finds (Pottery and Non-Pottery) from sites (red) and cairns (blue).

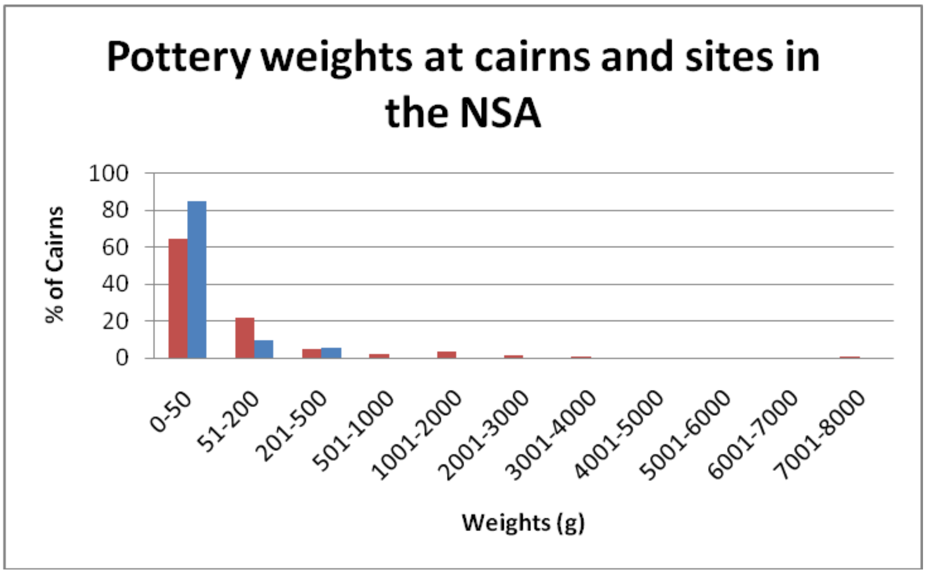


Figure 5.60. The % weight of all pottery finds from sites (red) and cairns (blue).

When these weights are plotted out as in Figure 5.60 and 5.61 it becomes strongly apparent that the distribution of pottery is not even across the different sites and cairns and thus a possible reason has to be sought for this.

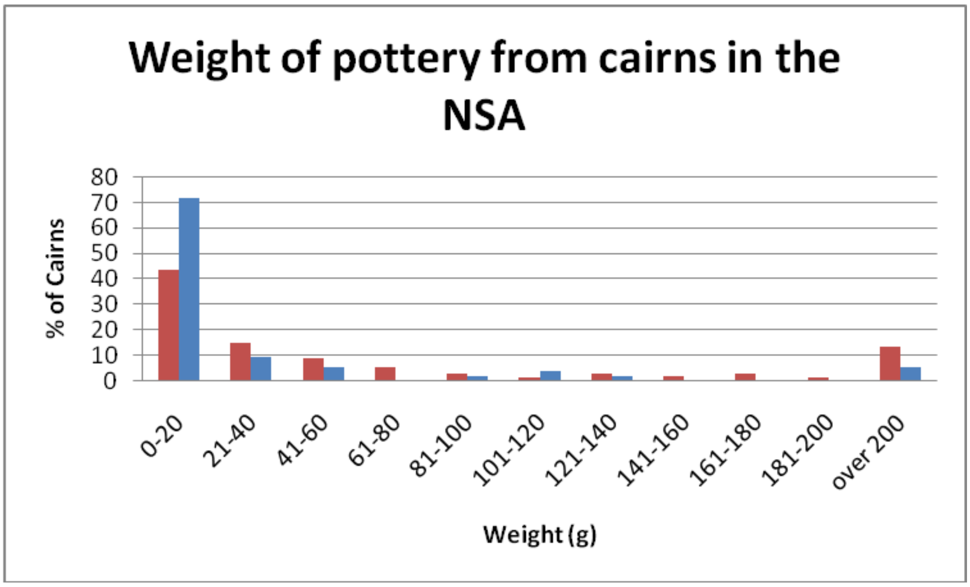


Figure 5.61. The % weight of all pottery finds from sites (red) and cairns (blue). Note the peak of cairns and sites in the "over 200g" category.

Only three cairns from the NSA (146 and 451 and 455) have pottery assemblages which weigh over 200g (Figure 5.61). Cairn 146, dated on the basis of surface finds to the Late Roman-Byzantine period, had suffered from serious looting and damage leading to surface pottery and tile being scattered across it. In contrast, Cairns 455 and 451 showed little evidence of damage and were dominated by Chalco-EB material (see Chapter 9 and Appendix 5.4-6 for further discussion and illustration of dating material). Both Cairns 455 and 451 are located within a cluster of cairns, all of which revealed relatively high densities of surface material. In these cases it is interesting to note that whilst no recent looting activity appeared to be present at this cluster, Cairn 451 was abutted by a modern wall, suggesting that material may have been gathered from the surrounding area and dumped up against this monument, possibly explaining the high levels of material from this cairn. Cairn 455 does not show similar modern construction. These examples indicate that there is no clear association between the density of material and chronological period. Moreover, it appears that whilst, recent damage, looting and modern construction can lead to substantial material assemblages being revealed, in some cases such material may already be on the surface.

In terms of site level assemblages, two examples stand out as remarkable, 7_1_100 and 1184_1_100, both of which have pottery assemblages weighing over 2000g in total. The sites are dated via surface material to the Chalcolithic-EB period (and the Chalcolithic-EB and Roman period in the case of 1184_1_100) and have revealed a range of both body and diagnostic sherds. What is particularly interesting about both these examples is their overall level of preservation. As already mentioned, 1184_1_100 was recorded as an area of Roman mausolea and cairn structures in 2002. A visit during 2008 revealed that these structures had been completely bulldozed and the area heavily ploughed (Figure 5.62). SHR 7_1_100, whilst intact in the early 2000s, had been partly bulldozed by 2009 (Figure 5.63). Both of these examples highlight that whilst surface assemblages from un-bulldozed/ploughed sites may be limited, the density of artefactual material at these locations is considerable, thus with excavation potentially large stratified assemblages may be recoverable.

Figure 5.62. View of SHR 1184_1_100, which in 2002 displayed a range of built structures, however, by 2008 had been bulldozed.

Figure 5.63. The bulldozed area of SHR 7_1_100, from which surface material was recovered in 2009.

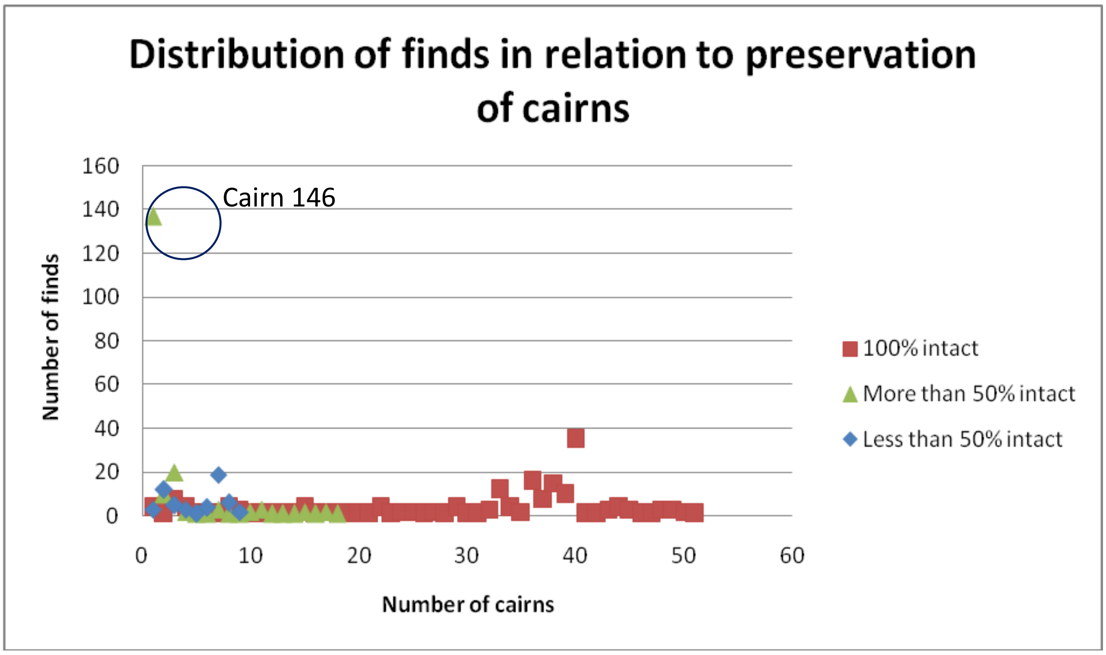


Figure 5.64. The presence of finds in relation to the preservation of cairns (100% intact; more than 50% intact; less than 50% intact)

It appears that a relationship can be seen, in some cases, between recent looting and density of finds (i.e. Cairn 146). However, as Figure 5.64 shows, no overall association can be seen between the level of preservation of cairns and the density of material. Indeed, all of the cairns that were less than 50% intact or more than 50% intact (if we discount Cairn 146) have less than 30 finds, whilst those cairns which were 100% intact had a wider distribution of finds density. In part this may relate to the age of the destruction/looting of cairns, with the majority of monuments in the NSA appearing to have been disturbed at some point in the past, rather than within recent history.

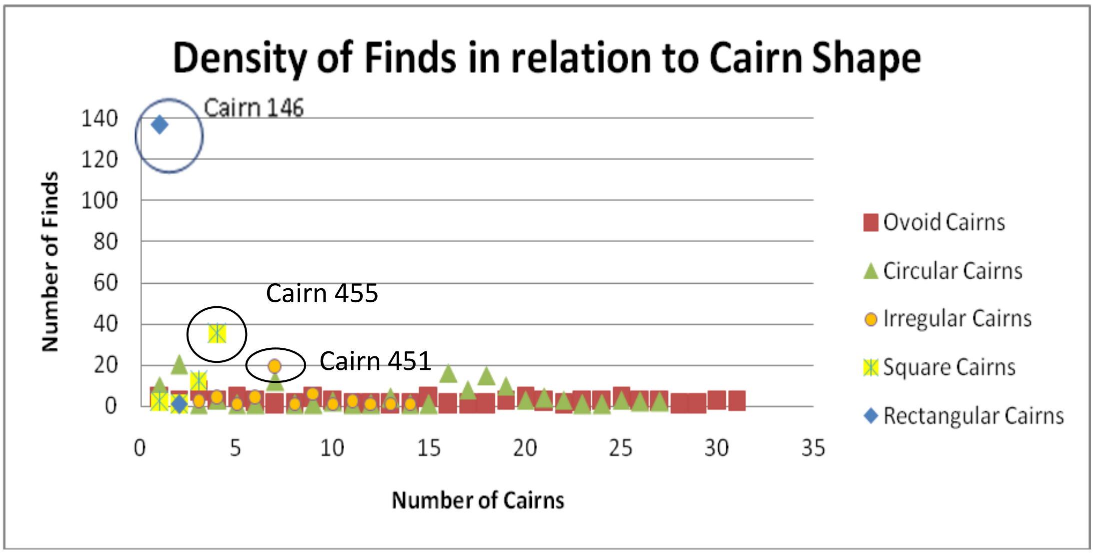


Figure 5.65. The presence of finds in relation to the shape of cairns

Similarly, there appears to be no direct association between the density of finds and cairn shape, with Cairn 146 again being an outlier in this plot (Figure 5.65). Whilst square cairns are unusual within the study area, one example has a higher density of finds than others within the NSA (Cairn 455). As already mentioned this cairn is within an area of structures with a higher than average percentage of finds, with a variety of shapes being seen within the cluster (e.g. Cairn 451 is irregular in shape and also has a higher than average percentage of finds). Given the area of Cairn 146 and high percentage of material from this structure, it could be suggested that a relationship between average cairn area and percentage of material might be present within the study area. However, as Figure 5.66 highlights this is not the case and instead, Cairn 146 again appears as an outlier. Indeed, the largest structure this sample of structures, appears to have a minimal number of surface finds, indicating that no direct relationship can be seen between cairn size and number of finds.

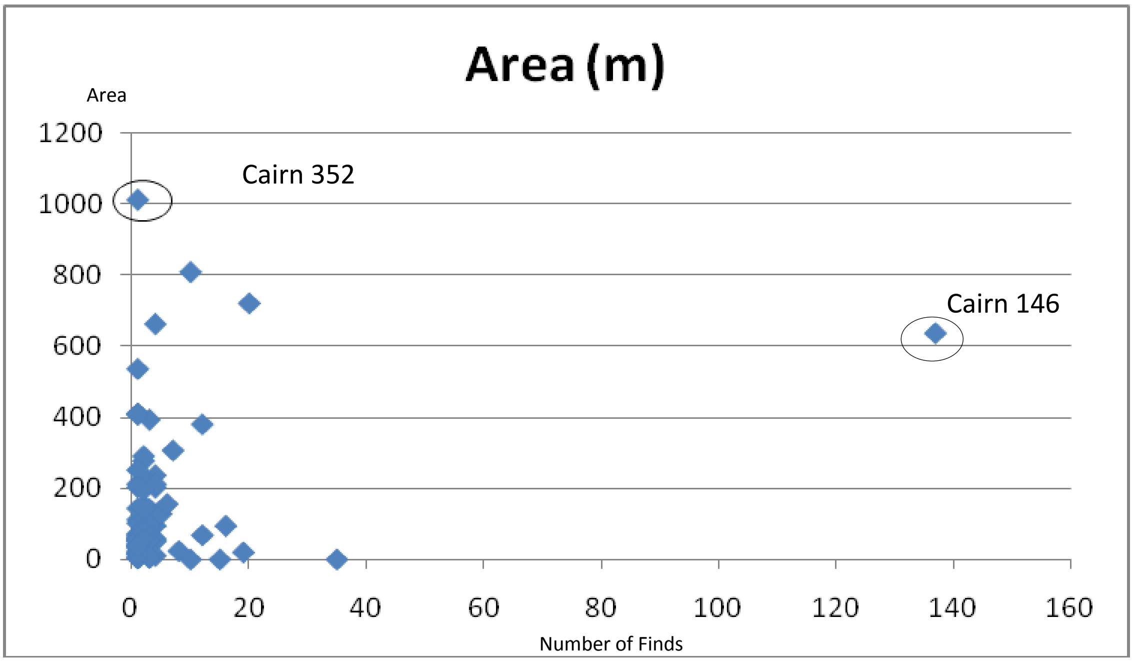


Figure 5.66. The presence of finds in relation to the area in metres covered by the cairn structure

There appears to be a complex and variable relationship between find densities across the NSA. Moreover, whilst larger assemblages are derived from 'sites' it is also clear that cairn clusters (Cairns 450-55) or single structures (Cairn 146) can yield substantial assemblages. These findings suggest that dating these monuments, especially via surface collection is particularly problematic. However, a number of the structures in the Homs region have shown the clear potential and necessity for excavation if we are to gain a greater understanding of the chronology of these monuments.

5.4. Summary and Conclusions

This chapter has demonstrated the relationships between morphology, chronology and archaeological features. As will be further demonstrated by Chapter 6, substantial variation appears across the NSA. However, some localised patterns in chronology, cairn morphology and archaeological sites have been demonstrated.

5.4.1. Typology vs. Morphology

Chapter 3 illustrated the difficulties in adopting a 'typological' approach for the study of stone burial monuments. Rather than placing structures in discrete categories, this analysis has attempted to examine the variability in morphology (shape, size, building material, associated features etc) of cairns. Variations have then been considered through an analysis of landscape location and spatial and chronological association. The key outcome of this analysis has been the emphasis on the lack of patterning. The Homs dataset appears highly varied with relationships between the presence/absence of features or morphologies showing no distinct spatial or chronological patterns.

Along with the discussions in Chapter 3 these findings challenge, especially in relation to the Homs data, the value and significance of typologies.

5.4.2. Burial vs. Clearance

Despite the difficulties in identifying patterns in monument distributions and morphologies what has emerged from the analysis is the lack of evidence for the cairns in the NSA solely representing clearance activities. This does not rule out the possibility that some of the structures digitised in the entire region may have resulted from land clearance (see Chapter 6). Based on the 525 cairns surveyed and the fact that c.80% of these structures showed associated features, their sole use for this purpose is brought into question. Having said this, as was illustrated in chapters 3-4 it is possible for structures to have multiple purposes and meanings. The common association of features, such as internal chambers within structures also indicates that at least a percentage of these structures may have been used within mortuary practices. This being said, as evidence from other regions such as the Negev has illustrated this does not necessarily mean that skeletal material would be found within [(e.g. Haiman 1992a: 37) and see Chapter 3.2.1.]. Despite these issues, the features found associated with cairns in the Homs region would suggest that a substantial percentage of these monuments may have a role within the mortuary sphere.

5.4.3. Distributions and relations to enclosures and tells

Cairns are widely distributed across the NSA with the only gap in distribution appearing to be in the region of valley bottoms (see Chapter 6 for further discussion). This analysis demonstrated that no clear relationships could be seen between cairns and other archaeological features (e.g. irregular clustered structures etc.) within the region. In addition, there are no distinct patterns between the appearance of specific features/morphologies and other archaeological features. This correlates well with evidence suggesting that the cairns in this region represent a palimpsest of activity. Having said this, local clustering and association of cairns and other archaeological features does appear to exist (e.g. cairns in the area of SHR 63, 64, 61 and 676 and see chapter 6.3.2.). These relationships do not, however, appear influential beyond a highly localised scale.

5.4.4. Chronology and Material culture

The lack of surface material found associated with cairns parallels findings from other regions of the Levant. Indeed, even when structures have been excavated, both within the NSA (small soundings only) and in the rest of the Levant (e.g. Epstein 1985a; 20), finds have often been limited. However, similar to traditional interpretations of stone monuments in the rest of the Levant, the initial construction of cairns in the Homs region appears to broadly date to the 4th-3rd millennia BC (Late Chalcolithic-EBA). Following this a gap, in both cairn construction and occupation, appears to be present in the NSA. The second phase of cairn construction appears to date to a broad 'Late' phase, spanning the Hellenistic-Islamic period. In addition, possible constructions dating to the 18-19th centuries have also been noted via discussion with the local community. This is not to suggest that no cairn constructions dating to either a pre-4th millennium BC period or a post-EBA phase (MBA-Iron Age) period exist (see chapter 7 for further discussion). Instead, it indicates that the main phases of construction appear to date to the aforementioned periods.

CHAPTER 6: DISTRIBUTIONS, DENSITIES AND IMAGERY: CAIRNS, STRUCTURES AND TELLS IN THE HOMS NSA

Introduction

This chapter will present the main findings of the satellite imagery analysis which was carried out as part of the PhD. 29,190 potential cairns were identified within the NSA using a combination of satellite imagery and aerial photographs (see Chapter 1 for a discussion of the datasets used). Across the Vanishing Landscape region as a whole, 169,800 potential cairns have been identified. The satellite imagery and aerial photographs obtained for this region cover an area of around 21,466 square kilometres. A variety of additional features, such as structures and tells, have also been identified within the Homs region and wider Vanishing Landscape area. The morphology and dating of these have been discussed in some detail in Chapter 5 [also see (Philip and Bradbury, 2010) and Appendix 5.1] and thus, this chapter will focus upon extrapolating beyond the Homs NSA and interpreting patterns across the wider Vanishing Landscape region.

Details of research specifically carried out by the Leverhulme funded Vanishing Landscape project will not be discussed here. However, a number of points are worth highlighting. Whilst the incredible benefits of employing aerial reconnaissance within survey methodologies are well known (e.g. Altaweel, 2005, Beck *et al.*, 2007, Kennedy, 1998, Kouchoukos, 2001, Philip *et al.*, 2002), it is important to remember that without field checking, any data obtained from such sources represents an interpretation of imagery and thus, not a definitive interpretation of site function and morphology. As such, sites which have not been visited in the field cannot definitively be ascertained as an archaeological feature, although different levels of certainty do exist. Moreover, the different resolutions of imagery should be considered when reconstructing site density patterns. This will, in some cases suggest that patterning of archaeological features is as much a result of the resolution and availability of imagery, as any true archaeological distribution of sites.

6.1. Hydrology, Topography and Archaeological Features

6.1.1 Geology

Within the Homs Study Region, no cairns have been recorded from the Southern Marls or Northern Alluvium/Marls via field survey although a small number have been identified via satellite imagery (see below for further discussion). Instead, there appears to be a strong correlation between basaltic geology and cairn location. This pattern can also be seen across the wider Vanishing Landscape region. In this area, out of the 169,800 potential cairns identified, over 90% intersect with basalt geology

(Figure 6.1). Out of the 13,176 potential cairns, which do not intersect with basalt geology, over 2000 are within 200m of basalt geology (Figure 6.1). As such, it may be that populations were exploiting local basalt outcrops and moving the raw materials. This hypothesis needs to be examined via fieldwork. Alternatively, there may be map or digitisation errors, due to the processes of geo-correction of the imagery and geological maps. Thus, basalt geology may actually be in closer proximity to outlying cairn monuments than depicted. We also have to take into account errors in the geological mapping. Based on the Homs XIII Geological Map and Syrian Geology Map (Wolfart, 1967) it would appear that a small percentage of cairns can be found in association with lacustrine marls [see Figure 6.2 (c. 6%)]. However, the majority of these are clustered along the River Orontes, where Basalt flows are known to have extended across the river [(Na'aman, 1951: 5, Vaumas, 1957: 103, 196) and see Chapter 2.2.1. for further references and discussion]. Thus, we may be dealing with localised outcrops of basalt. Having said this, there are a number of cairns which are located in association with lacustrine marls and are a considerable distance from Basalt geology. Given, that no cairns have been identified via fieldwork in the lacustrine marls it may be that these features represent anomalies.

In addition to those found on the lacustrine marls, cairns are also found in association with limestones, clays and sands. As might be expected a strong correlation exists between cairns and limestones [(87%) and see Figure 6.2). Similarly to basaltic cairns, monuments in limestone areas may be visible due to their stony construction. In contrast, part of the reason for the relative lack of cairns found in association with lacustrine marls (6%) might relate to both preservation issues, as well as a lack of stone building material (although see Chapter 7 for further discussion of the relationships between the Marls and Basalt). Until field visits take place to ground-truth imagery within this wider region, no detailed analyses concerning the relationship between cairn monuments and non-basalt geology in this area can really take place. However, bearing in mind discussions in Chapter 3, this evidence might suggest that given appropriate raw materials cairn monuments can be found associated with a wide range of different lithologies. As such, perhaps we should be considering areas where the geology is appropriate but, based on satellite imagery analysis, cairns do not appear to exist.

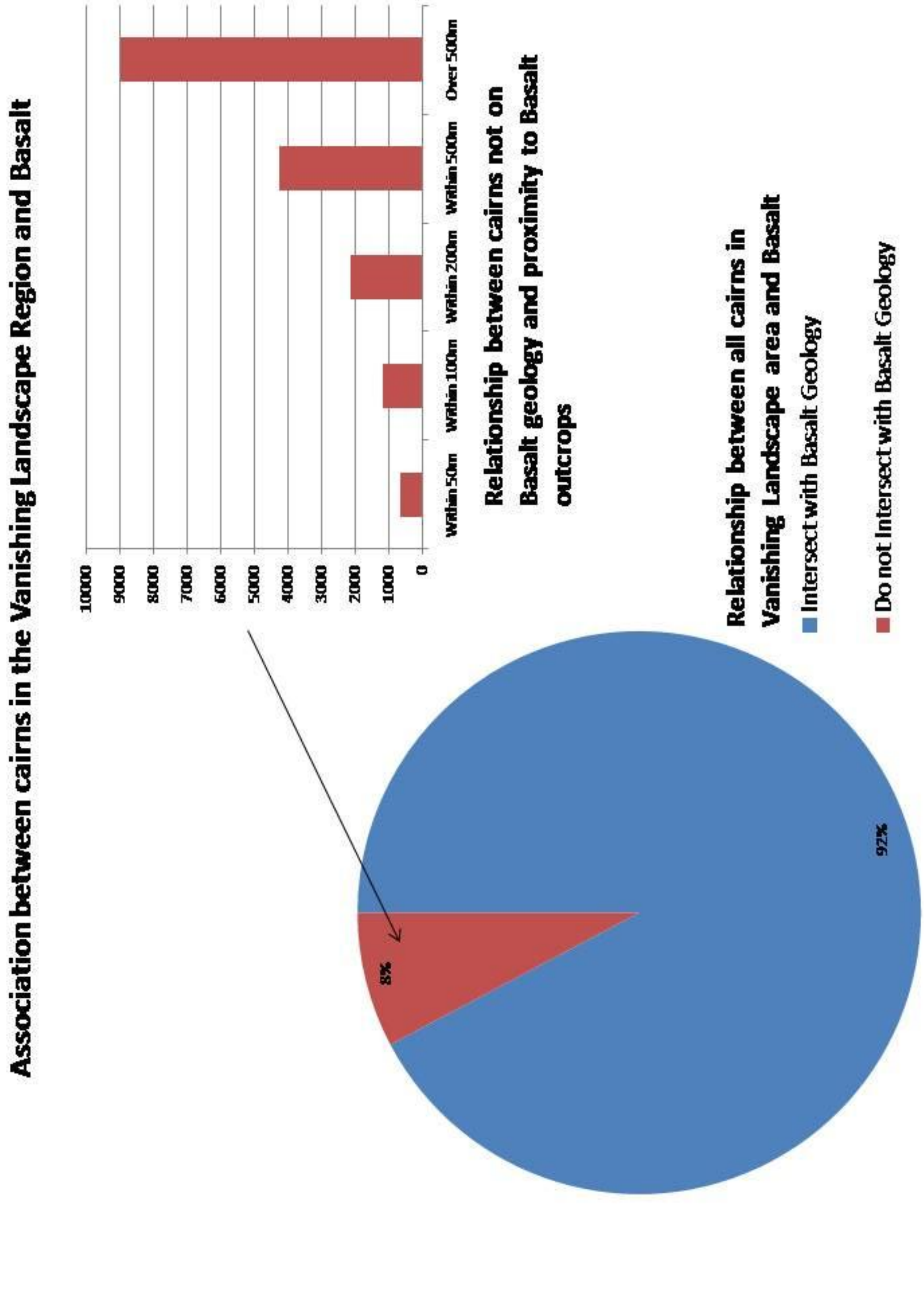


Figure 6.1. Cairns identified from the Vanishing Landscape region plotted in relation to the location of basalt geology

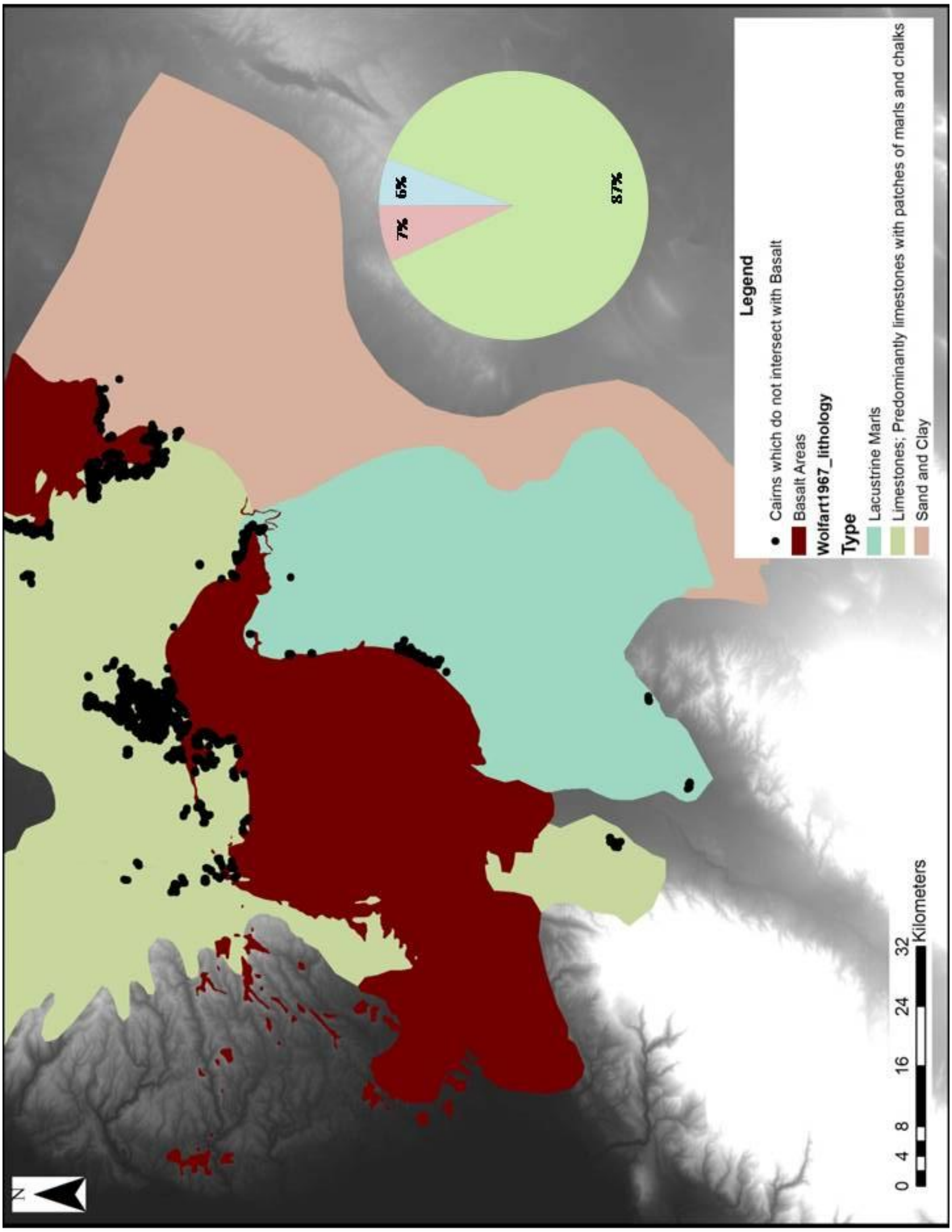


Figure 6.2.Correlation between cairns and geology across the Vanishing Landscape Area [See Appendix 6.1 for calculations (after Wolfart 1967)]

One such area within the Vanishing Landscape region is present to the west of the NSA (Figure 6.3.). Whilst basalt geology is present, no cairn features have been identified from satellite imagery. Two possibilities exist. Firstly, it may be that no cairns were ever present in this landscape, either due to local traditions of use, or possibly lack of occupation. Secondly, and preferred by this author is the fact that this region is hilly. Research, as part of the Vanishing Landscape project, revealed a large number of sites in this area which were identified as 'Tell' on maps but could not be identified on the satellite imagery. Thus, whilst cairns may be present in this landscape, the topography of the region may be preventing their identification using satellite imagery.

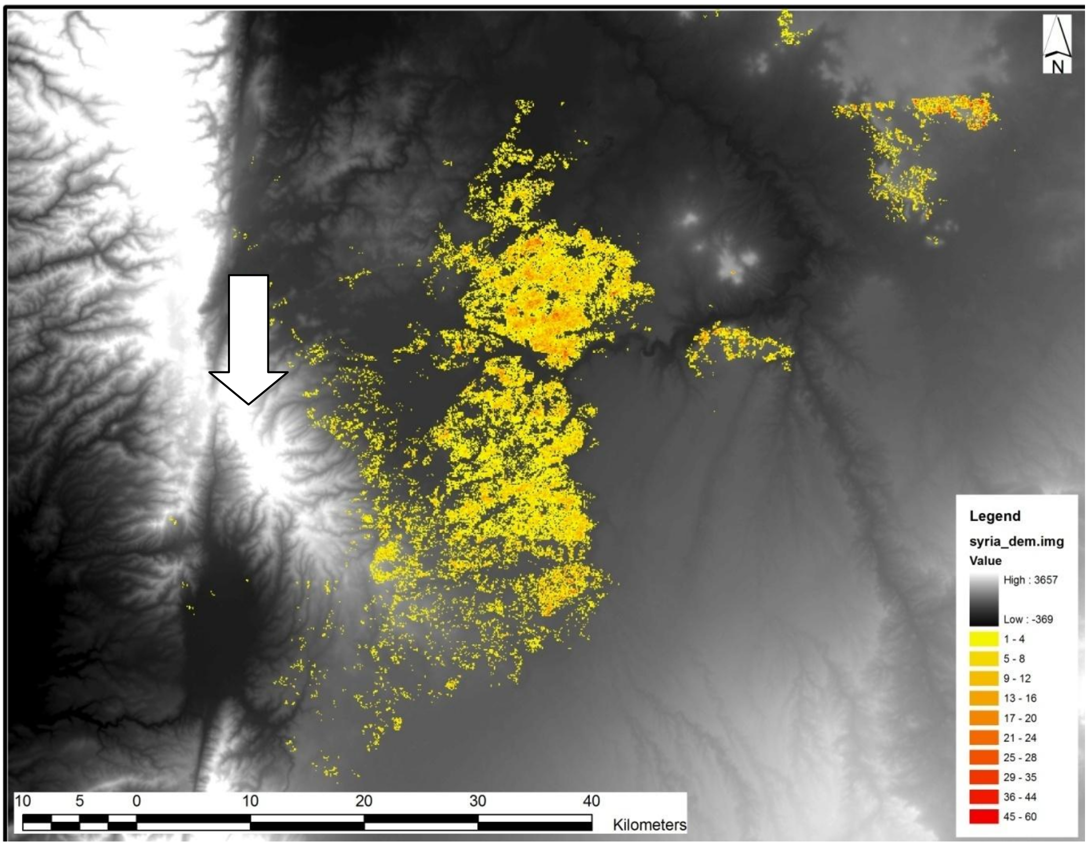


Figure 6.3. Image of hilly area to west of NSA with no cairns. The colour of the cairns (yellow-red) corresponds to the levels of density that can be seen across the area.

6.1.2. Seasonal wadis

Considering the strongly seasonal nature of the Homs Basalt (see chapter 2.2.1.), the correlation between the location of potential archaeological features and seasonal water sources is of major importance. Such relationships have a bearing upon access to, and utilisation of, water, for both human and animal consumption, as well as routes of access. Presumably these relationships would have altered over the year as seasonal water bodies dried up. In order to consider some of these elements, potential flows have been generated using DEM/SRTM data. These do not represent the actual flow of water, but instead reflect locales which given sufficient rainfall, would retain water. Comparisons between these generated *wadi* flows and the location of present water flows from Ikonos imagery (February 2002) suggest a close correlation. The *wadis* have been categorised as Major and Minor, based on the potential intensity of flow along these courses. These levels are generated automatically in ArcMap, via a calculation of how many potential water sources flow into and out of each *wadi* course (see Appendix 1.2. for a breakdown of the stages involved in the generation of *wadi* systems).

Analysis has been performed for both archaeological features in the NSA, as well as the wider Vanishing Landscape region (which includes the whole region examined by the author, not just the areas of basalt geology). Both plots (NSA and Vanishing Landscape area) show the same basic trends in the location of archaeological features in relation to seasonal *wadi* sources. As Figure 6.4 demonstrates, the majority of features are located at a distance of over 500m from a major seasonal *wadi* system. However, when seasonal lakes identified from Ikonos imagery are also included in the analysis (Figure 6.5.), two broad trends become apparent. Firstly, the majority of Rectilinear Clustered Structures (RCS) and Tells are within 500m of a seasonal water sources (both *wadis* and seasonal lakes). Secondly, Irregular Clustered Structures [ICS (c. 75%)] and cairns (c.60%) are predominantly found at distances of over 500m from a seasonal water source. Comparing these findings against plots of distance from major and minor wadis in the Vanishing Landscape area suggests a slightly different scenario, whereby all features (except tells in the SHR NSA) are within 500m of a seasonal water source. Re-running this analysis using only major seasonal *wadis* highlights that the only site type to show an association with these flows are tells which increase up to a distance of 500m away from a major seasonal *wadi* source whilst decreasing beyond 500m. This is in direct contrast to the trends of cairns and structures, the majority of which appear to be located at a distance of more than 500m from a major *wadi* source.

Whilst we have to bear in mind that these features are based on modern topographical features generated via a DEM/SRTM, as well as the identification of seasonal lakes from modern imagery, these findings may suggest that a closer correlation exists between proximity to water sources in the case of tells and Rectilinear Clustered Structures, in contrast to Irregular Clustered Structures and cairns, which show a much weaker correlation.

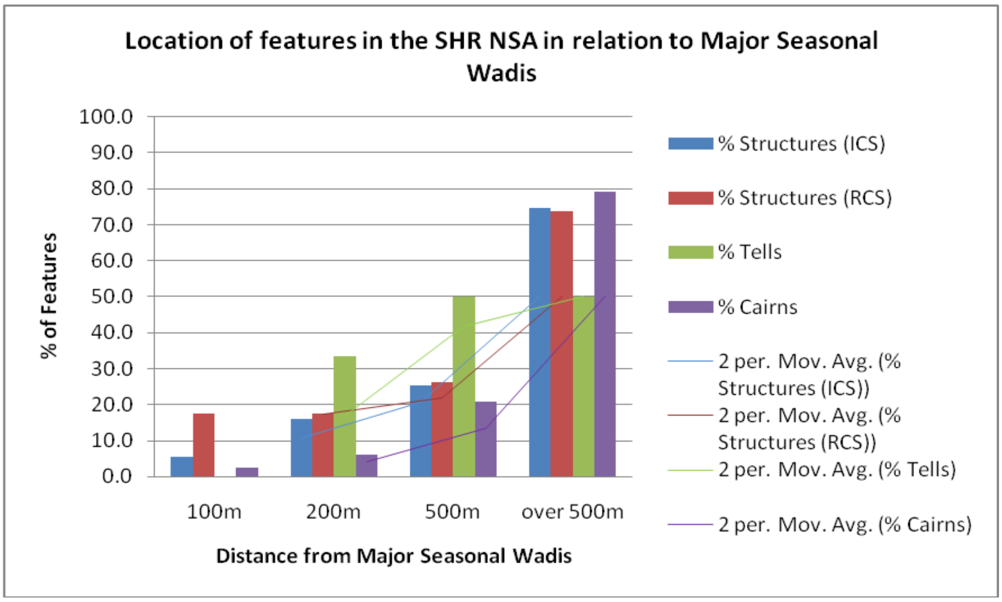


Figure 6.4. Illustrating the relationship between site location and proximity to seasonal water sources generated from a DEM (20m) and digitised using Ikonos Imagery (2002). The analysis is based on cumulative frequencies, as such the plots at 200m include those features which can be found at 100m etc.

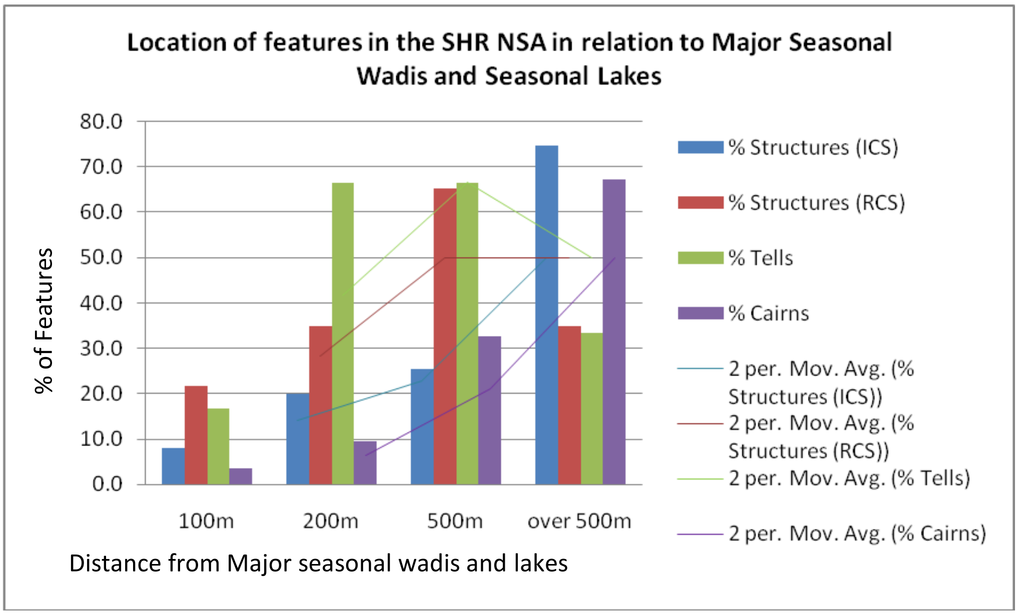
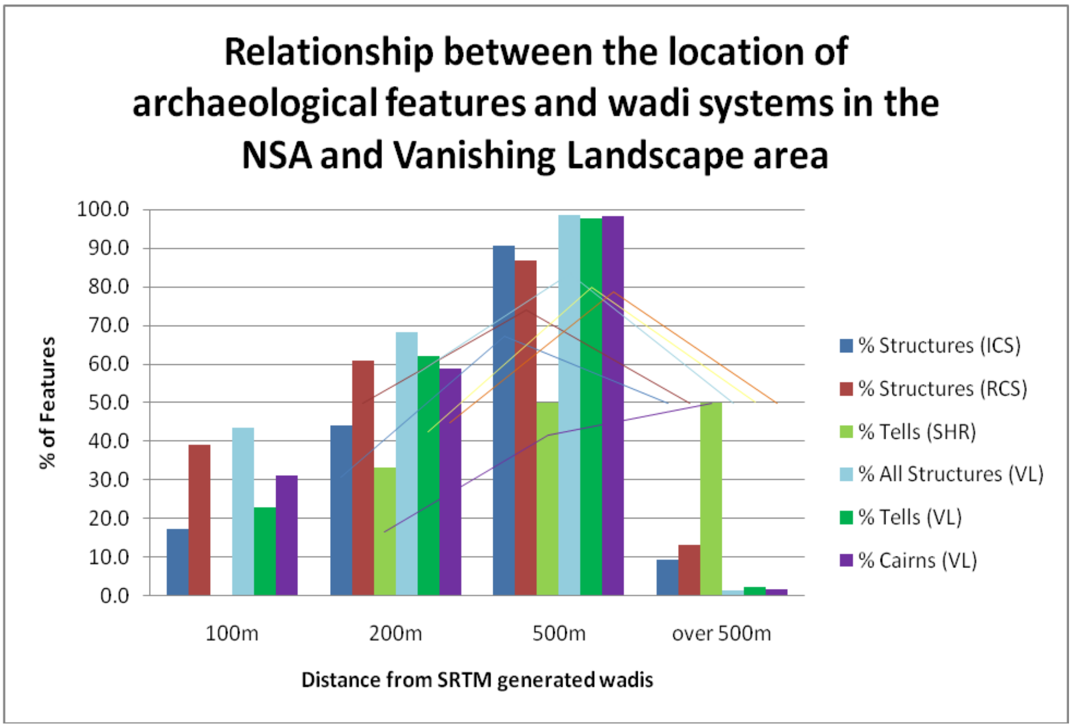
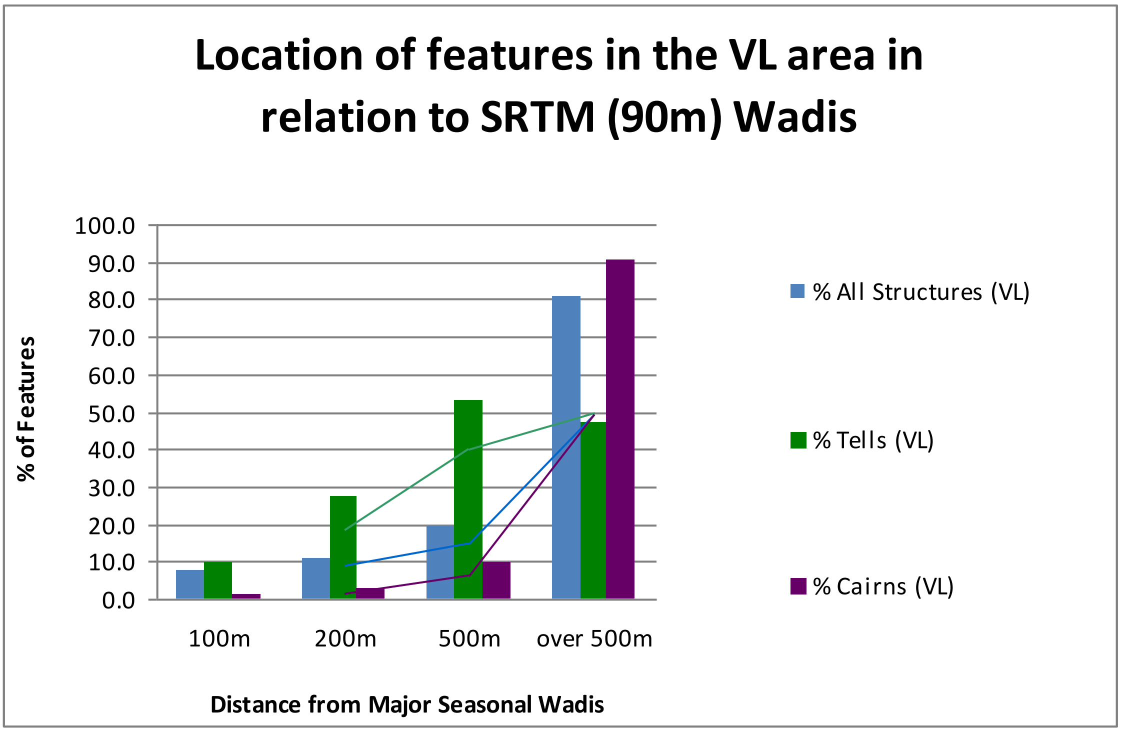


Figure 6.5. Illustrating the relationship between site location and proximity to seasonal water sources generated from a DEM (20m) and digitised using Ikonos Imagery (2002). The analysis is based on cumulative frequencies, as such the plots at 200m include those features which can be found at 100m etc.



Figures 6.6 and 7. Illustrating the relationships between the location of archaeological features in the Vanishing Landscape region and seasonal wadis generated via an SRTM (90m). The analysis is based on cumulative frequencies, as such the plots at 200m include those features which can be found at 100m etc.



6.1.3. Topography

The topography of the Homs Basalt is not particularly distinct, with elevations ranging between 400-600m above sea level. However, local topographical features are present and worth considering in relation to site location (see chapter 2.2.1. for a further description of the main topographical features in the NSA). Researchers have often emphasized the potential associations between site location and site function. For example, cairns have been shown to be associated with ridge line locations throughout the Levant (e.g. Prag, 1995). However, this one to one correlation between elevation and site morphology is not necessarily distinct in all areas. Furthermore, it is worth emphasizing that given a small enough sample, almost any hypothesis can be made to fit, and it is only when dealing with large datasets that wider patterns will emerge.

A purely visual examination of the location of ICS and tells in the NSA suggests that the latter tend to occupy a wider variety of locales, although this is likely to be related to the fact that these sites are more numerous. Having said this if we plot out the relationships between elevation (extracted from a 20m DEM) and site location, tells do seem to fall within a narrower topographical range and do not occur above elevations of 440m a.s.l.

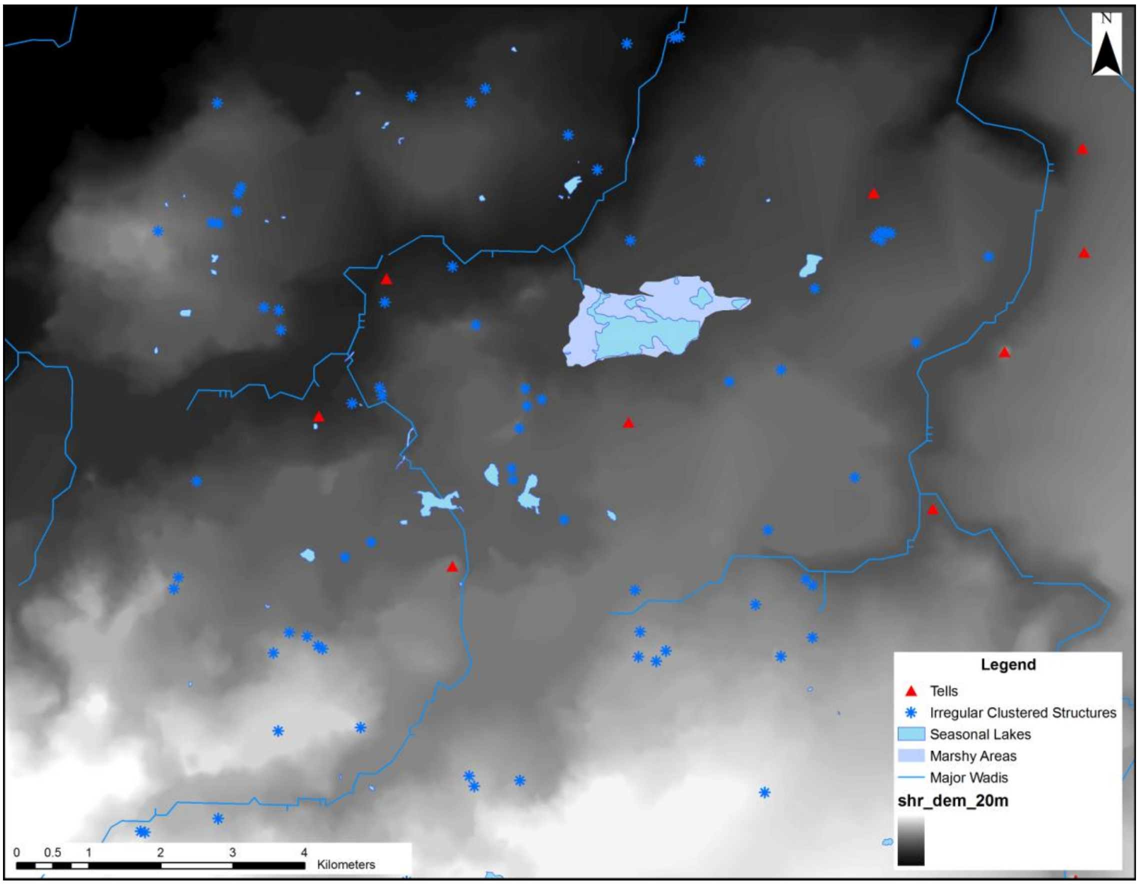


Figure 6.8. The distribution of Tells and Irregular Clustered Structures in the NSA

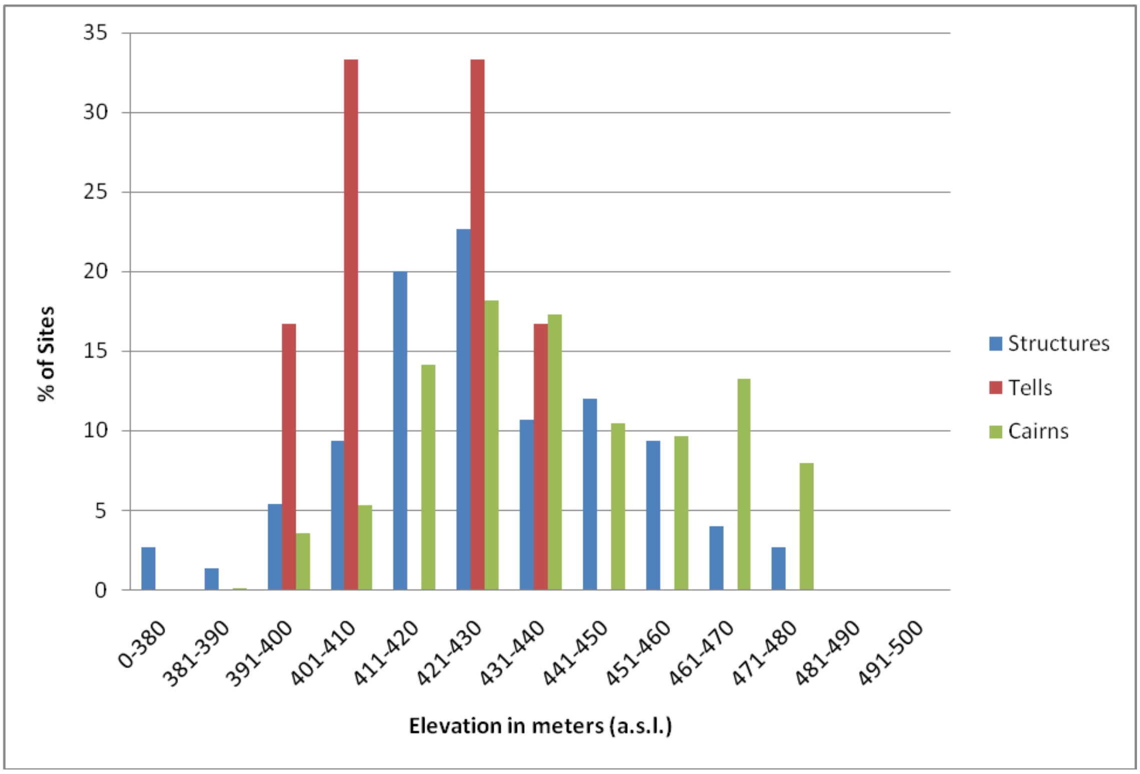


Figure 6.9. The relationship between elevation (meters a.s.l.) and site location in the NSA

This pattern does not seem to be borne out in the wider Vanishing Landscape region. This is not necessarily surprising given the more varied topography across the region, with elevations ranging between 12m and 1311m a.s.l. However, in the wider area it is tells which appear to have a more varied relationship with topography. It is difficult to make any concrete interpretations of such evidence, without further details concerning chronology and detailed landscape location and context. However, if we take a very simplistic view of this data, it does suggest that the distribution of tell sites in the Homs Basalt does not replicate those seen elsewhere in the Levant, a hypothesis which has been emphasized from the start of this thesis. In addition, the fact that cairns and ICS in this area are all located above 380m a.s.l. may indicate that these features are, at least in this area, an upland phenomenon (see chapter 7 for further discussion). Having said this, clearance activities in the lowlands cannot be totally ruled out.

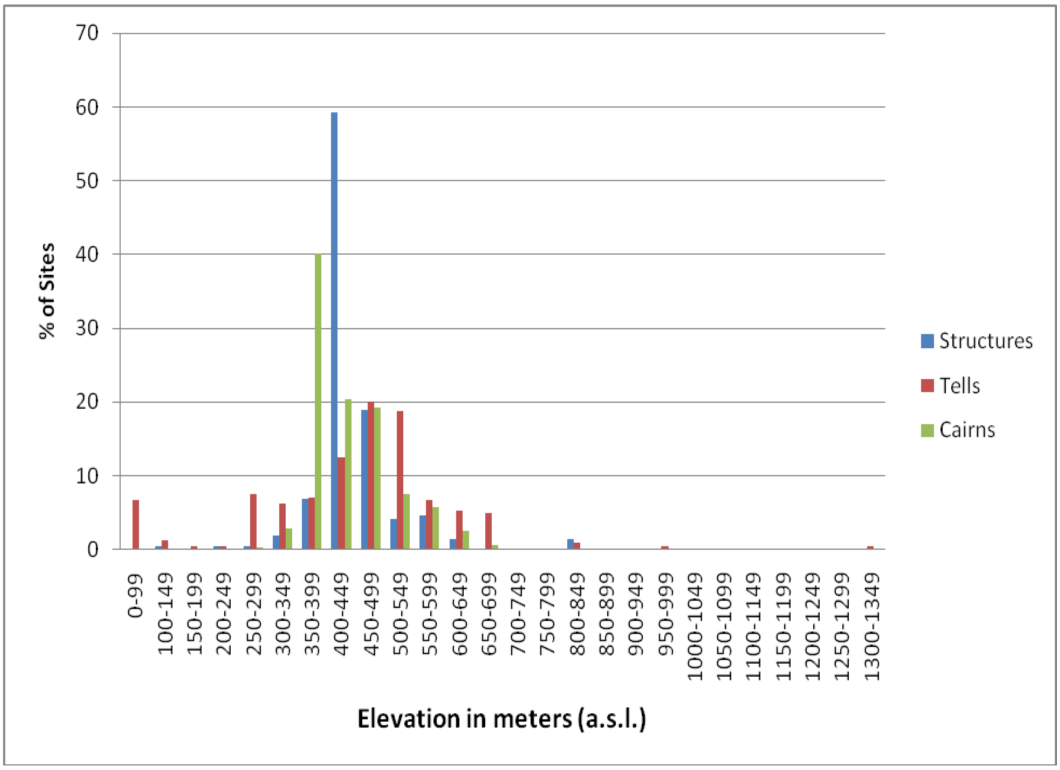


Figure 6.10. The relationship between elevation (meters a.s.l.) and site location in the Vanishing Landscape Region

The more restricted range of topographical locales which appear to be associated with cairns monuments across the Vanishing Landscape region, to some extent mask local variation. Indeed as Figure 6.11 demonstrates the cairns surveyed in the NSA appear to be associated with a various different landscape locales. Having said this, the lack of cairns in wadi bottom locations is worth highlighting and appears to also be reflected in the Vanishing Landscape dataset, where cairns plotted are all associated with elevations above 260m a.s.l.

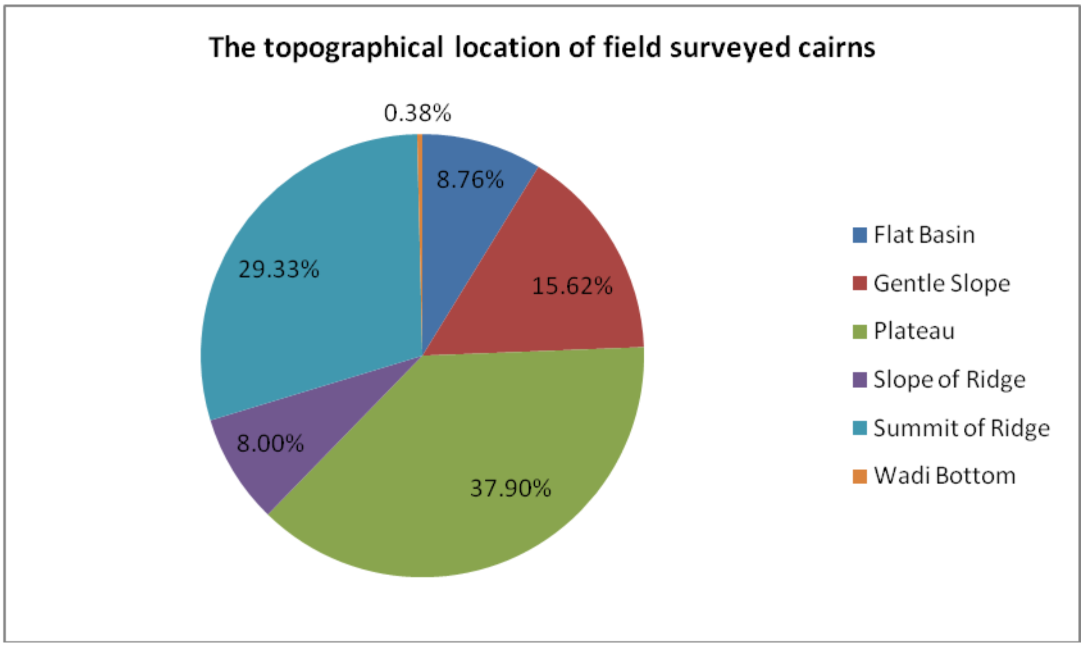


Figure 6.11.The topographical location of field surveyed cairns in the NSA.

Analysis of land aspect from the NSA and the association with cairn location would suggest that no preference can be seen for a particular aspect (Figure 6.12. and Appendix 1.2 for a description of the methodology). Thus, whilst in other areas of the Levant a relationship can be seen between the directionality of slope (i.e. cairns being located on eastern facing slopes, such as the author has observed in the Shawbak region, Southern Jordan) no such relationships can be seen in the Homs region.

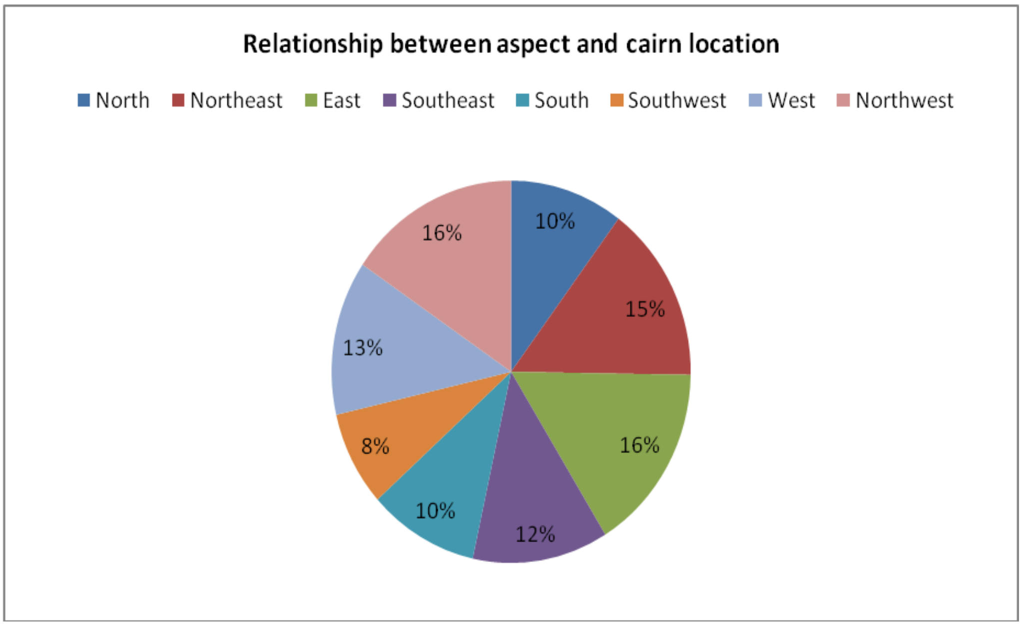


Figure 6.12. The aspect of land in association with cairn location

From the above analysis it would be appear that three broad trends can be seen in the location of sites within the NSA and to a certain extent across the wider Vanishing Landscape region. Firstly, irregular clustered structures tend towards upland locations, predominantly away from seasonal water sources, an observation which is also clear from a visual examination of site distribution. Secondly, tell sites appear to be more strongly associated with seasonal water sources. Whilst in the Homs Basalt they occupy a fairly narrow range of topographical locations (between 390-440 m a.s.l.), across the broader Vanishing Landscape they are associated with broad range of elevations. Finally, cairns appear to occupy a range of locales, including slopes, ridgelines (on the basis of field survey) and flat areas of land. However, akin to ICS they appear to be an upland phenomenon in both the NSA and Vanishing Landscape region not found at elevations below 250m a.s.l.

6.2. Clustering and Distributions in the NSA and Vanishing Landscape Region

As is apparent from Chapter 5, it is highly likely that the distribution of cairns mapped throughout the NSA and Vanishing Landscape Survey Region represents the outcome of thousands of years of construction, re-use and in recent years, destruction of cairn monuments. As such, interpreting patterns of distribution across this wider region is problematic as they may result from the multi-period use of this landscape, rather than representing any fossilised archaeological patterns of distribution. Furthermore, given the use of imagery of differing resolutions, age and quality, it is clear that we need to be aware of how this variable may have influenced the patterns of digitised monuments. As Figure 6.13 demonstrates there are areas of higher and lower density cairn distributions. In this plot, the number of cairns within a 100mx100m polygon have been counted and plotted out.

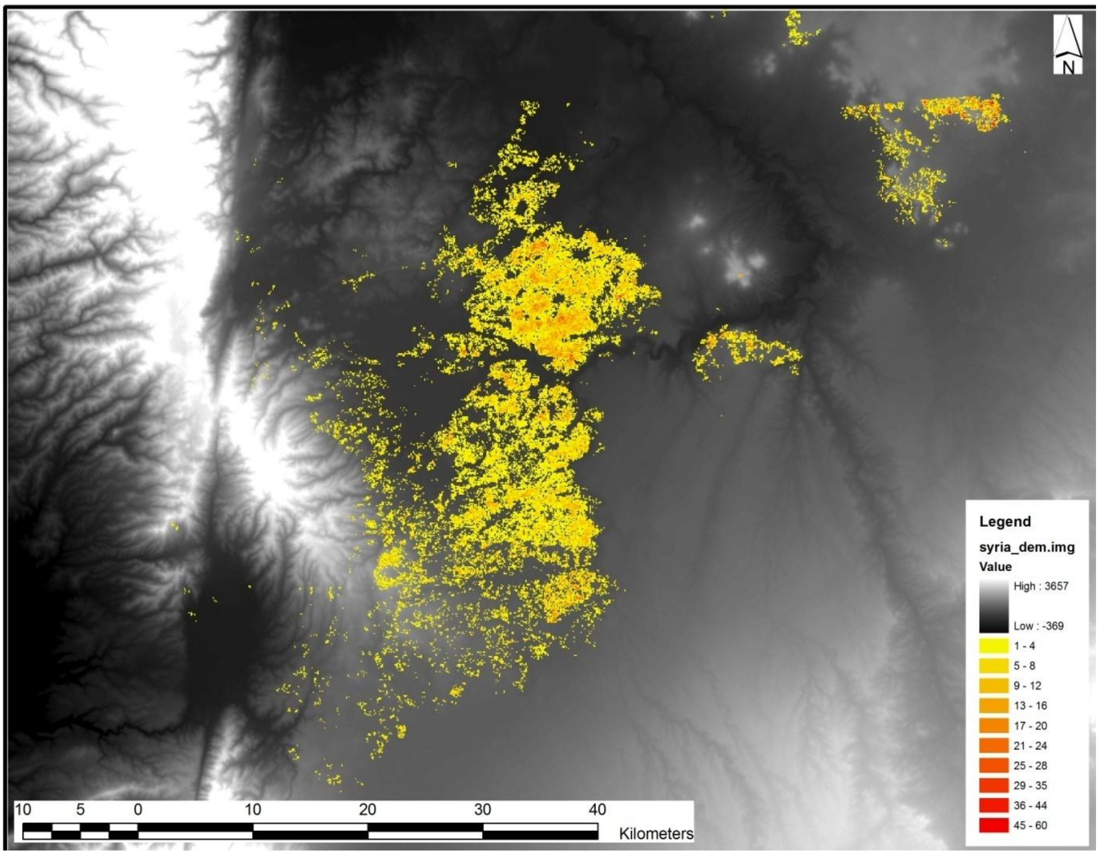
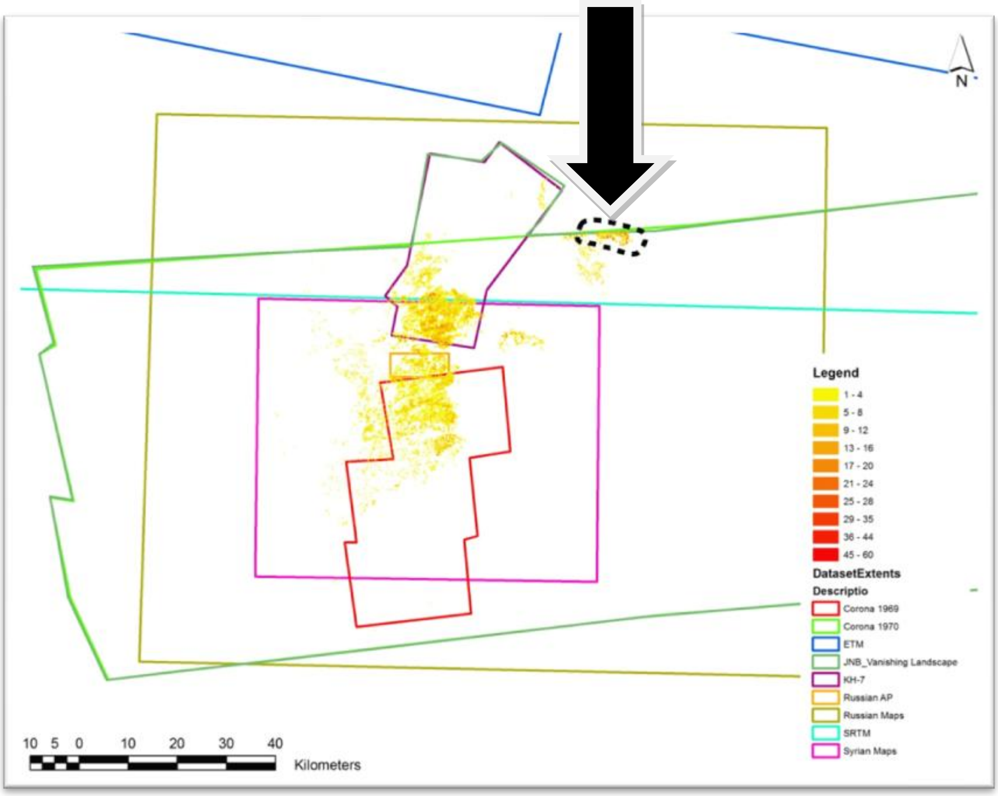
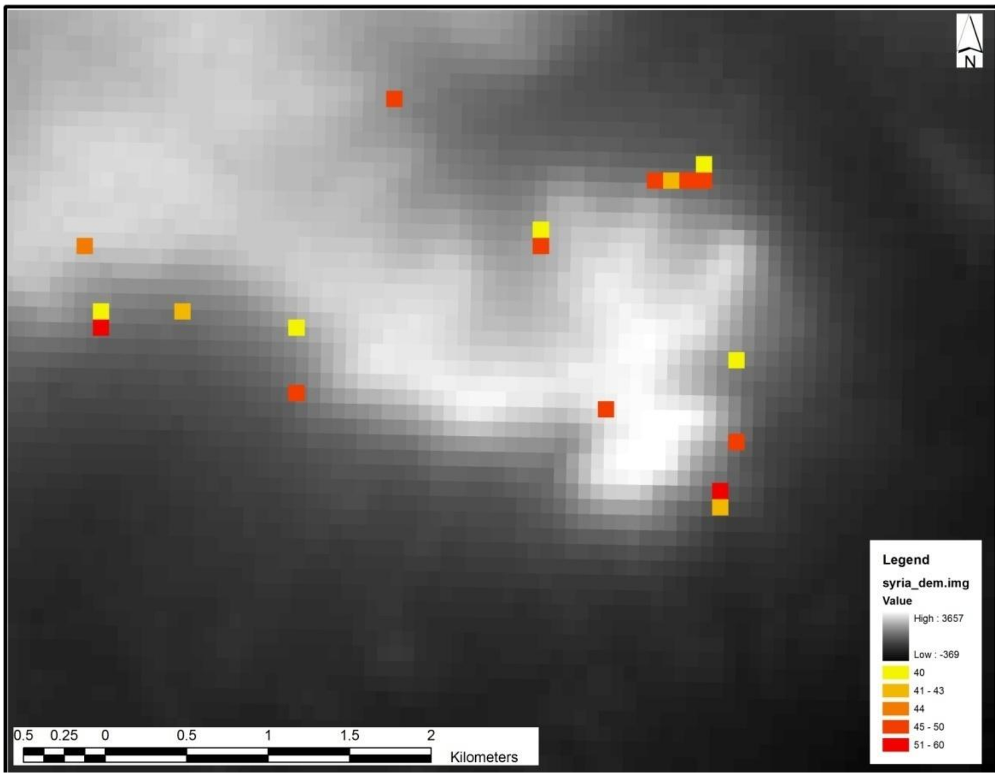


Figure 6.13. The density and distribution of cairns across the Vanishing Landscape Study Area. Cairn density is displayed via colours yellow to red. Yellow representing the lower densities of cairns (i.e. 1-4 per 100x100m) whilst red represents the higher densities (i.e. 45-60 per 100x100m)

Interestingly, given the different resolutions of the imagery used during this study the densest area of cairns does not correlate with the high resolution imagery (KH7). Instead, as Figures 6.14 and 15 demonstrate, they were located using Corona imagery.





Figures 6.14. and 15. The location (marked by black dotted line and arrow) and plot of the area where cairns are the most dense (over 40 in an area of 100mx100m).

6.2.1. Nearest Neighbour Analysis

Considerations of clustering are always difficult, especially when examining data from a number of different sources and scales. One key question is always going to be at what point does a group of features become a cluster? Moreover, it is apparent that whilst clusters may appear visually significant, when statistical analysis is carried out such clustering is either of limited significance or possibly even non-existent. In order to consider the grouping of features, across both the NSA and Vanishing Landscape Area, Average Nearest Neighbour Analysis has been carried out on appropriate datasets in ArcMap (see Appendix 1.2 for methodology).

Cairns at all levels appear to be clustered (Figure 6.16). They can be compared against the surveyed cairns which were specifically chosen as clusters for analysis. This clustering, may in part relate to the scale of analysis. In other words, given the dense distribution of cairn monuments, some clustering is bound to be visible. Having said this, it is particularly interesting to note that there appears to be a strong degree of clustering in the distribution of Chalcolithic-EBA activity locales, which include all identified sites and cairns from which Chalcolithic-EBA material has been identified (see Chapter 5 for further details on dating). In addition, ICS appear to be clustered across the NSA. In contrast, nearest neighbour analysis for RCS highlights a lack of clustering, which perhaps indicates the lengthy and multi-functional use of these features (e.g. Philip *et al.*, in press). Of particular note is the fact that whilst clustering of cairns can be seen at both the Homs Regional Survey level, as well as within the Vanishing Landscape dataset, it is clear that there are not necessarily distinct groupings within clusters. In other words, even at sites, such as SHR 362 (see section 6.3.1.), no internal group clustering is visible. Several possibilities emerge from this observation. Firstly, the potential lack of internal clustering might suggest that construction of these monuments involved a single phase, preventing any internal clustering from developing. Secondly, it might indicate that no internal clustering was ever intended for such groups of monuments. Thirdly, use, secondary destruction and alteration may be so pronounced that any distinct internal clustering which was previously present has now disappeared.

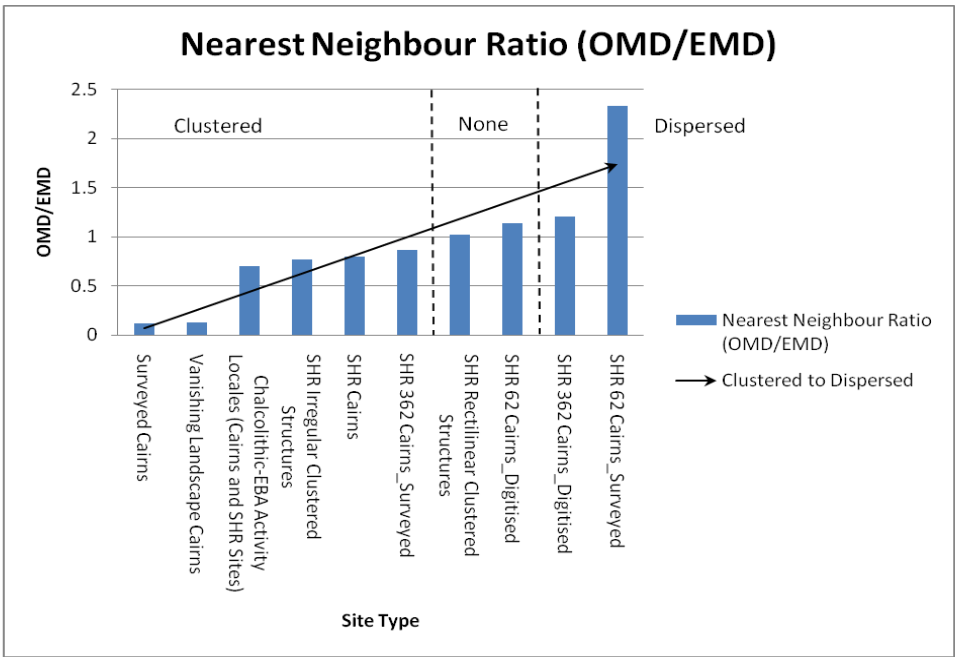


Figure 6.16. Clustering in the NSA and Vanishing Landscape region based on Nearest Neighbour Analysis carried out in ArcMap.

6.2.2. Missing Structures?

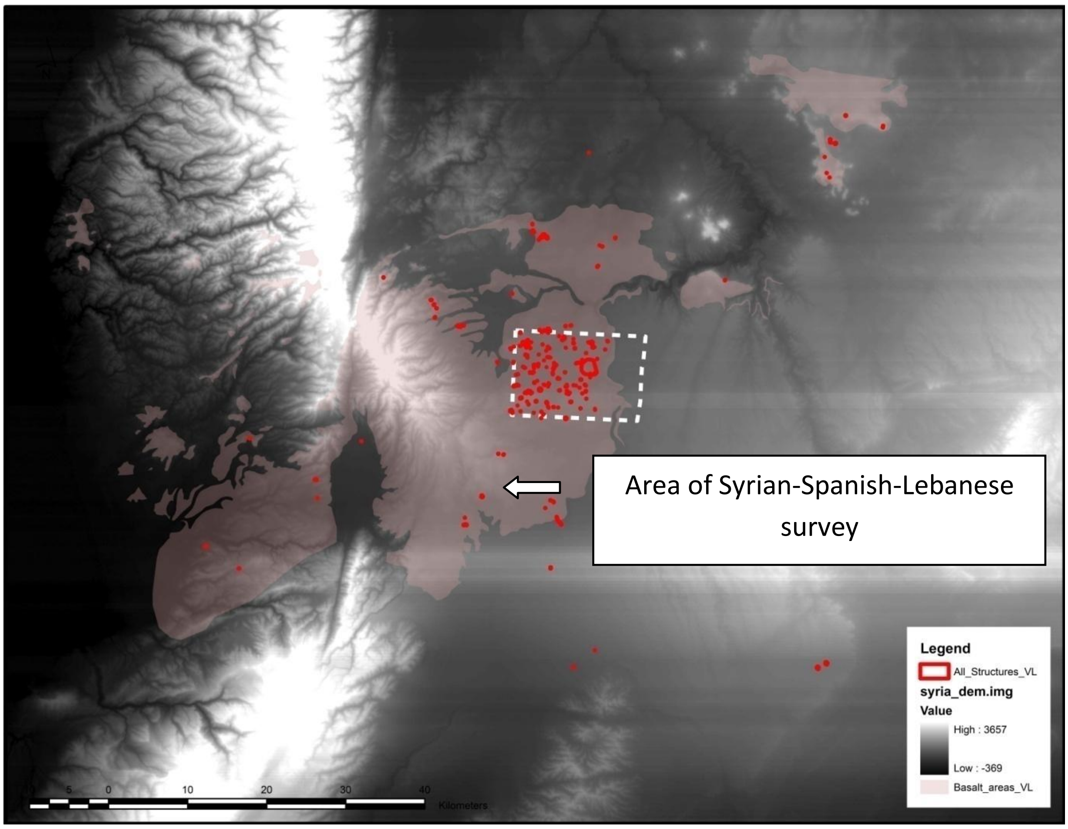


Figure 6.17. Image of the distribution of structures in the Vanishing Landscape area i.e. highlighting the lack outside the NSA (white dotted rectangle).

Analysis in the Homs NSA revealed the presence of 75 irregular clustered structures; however, a substantial drop-off in frequency of similar features could be seen outside this region. No such structures are known from the Homs SSA or the Northern Alluviums/Marls. This is not necessarily surprising given the issues of preservation in this region, as well as the possible contrasting cultural and social traditions (see Chapter 7 for further discussion). However, what is unexpected is the lack of such structures from the region to the South and west of the NSA. This region has been examined using Corona Satellite imagery (1970) and has revealed a very small number of structural features (Figure 6.17). Field survey currently being conducted by a joint Syrian-Spanish-Lebanese team in the region has also revealed limited evidence for such structures (Ibáñez *et al.*, 2004-2008; pers comm. Ibanez 2010). Given the presence of cairn monuments, similar to those seen within the Homs region, the lack of structures cannot merely be related to issues of preservation or image resolution, although both factors may play a role in this pattern. Until further imagery analysis, utilising high resolution imagery (preferably Ikonos in order to be comparable to the Homs Study Region), has taken place the full implications of this finding cannot be fully theorised. However, it does suggest that differential patterns of land use and social strategies were occurring within this region throughout history (see chapter 7 for further discussion).

6.3. Clusters, Topography, Hydrology and Chronology

6.3.1. SHR 362

SHR 362 is a large circular enclosure measuring around 300m in diameter. This monument is predominantly formed by a low wall line on, within and outside which a range of cairn monuments and features, such as monoliths can be found. Whilst easily distinguishable from satellite imagery (Figure 6.18) this monument is particularly difficult to discern on the ground, in part due to the limited height of the wall line, as well as the fact that the enclosure covers a considerable area. Investigations at the site during 2007-9 revealed that this monument was constructed, in at least part of its length, using an interior and exterior faced wall, whilst the internal matrix was composed of packed rubble and earth (Figure 6.19). In addition, it was clear that monoliths along the enclosure wall were part of this structure, built into the wall itself (Figure 6.20). Pick-up and soundings from the site revealed very little dating material and only one diagnostic sherd, a chaff-tempered holemouth rim, preliminarily dated to the 4^{th}-3^{rd} millennium BC has been found (see Chapters 5, 7-9 and Appendix 5.5-6 for discussion of dating). Mapping of this site using a differential GPS revealed a number of important features. These have been published in detail (Philip and Bradbury, 2010), but are worth briefly re-iterating here. Firstly, it became apparent through the mapping of the outer enclosure wall, interior cairns and associated features that a number of complex associations existed between internal and external features and the enclosure wall line. At various locations along the wall 'framing devices' could be seen with low pillars or monoliths, laid both horizontally and vertically, forming gaps in the enclosure wall and often being orientated upon cairns either inside or outside the enclosure wall [see (Philip and Bradbury, 2010: 148-152) and Figures 6.20 and 6.21]. In addition, the wall in parts appears to post-date cairn structures, in the eastern half running over the top of existing cairn structures (Figure 6.22). Also, in this stretch of the enclosure wall, an external wall line appears to join the circular enclosure, meeting the enclosure wall at a cairn (Figure 6.22). Clearly, the individual phases of construction are very difficult to distinguish and as such, similarly to much of the archaeology in the Homs Basalt, this site appears to represent a palimpsest of activity. Moreover, it is clear that later use of this region severely disrupted the original circular layout of this structure, with field systems preliminarily dated to the Roman-Islamic period (Philip and Bradbury 2010: 151) destroying the Northern half of the enclosure wall. More recently, clearance within the centre of the enclosure has destroyed many of the internal cairns, with bulldozing between 2008 and 2009 destroying around 60% of the total site.

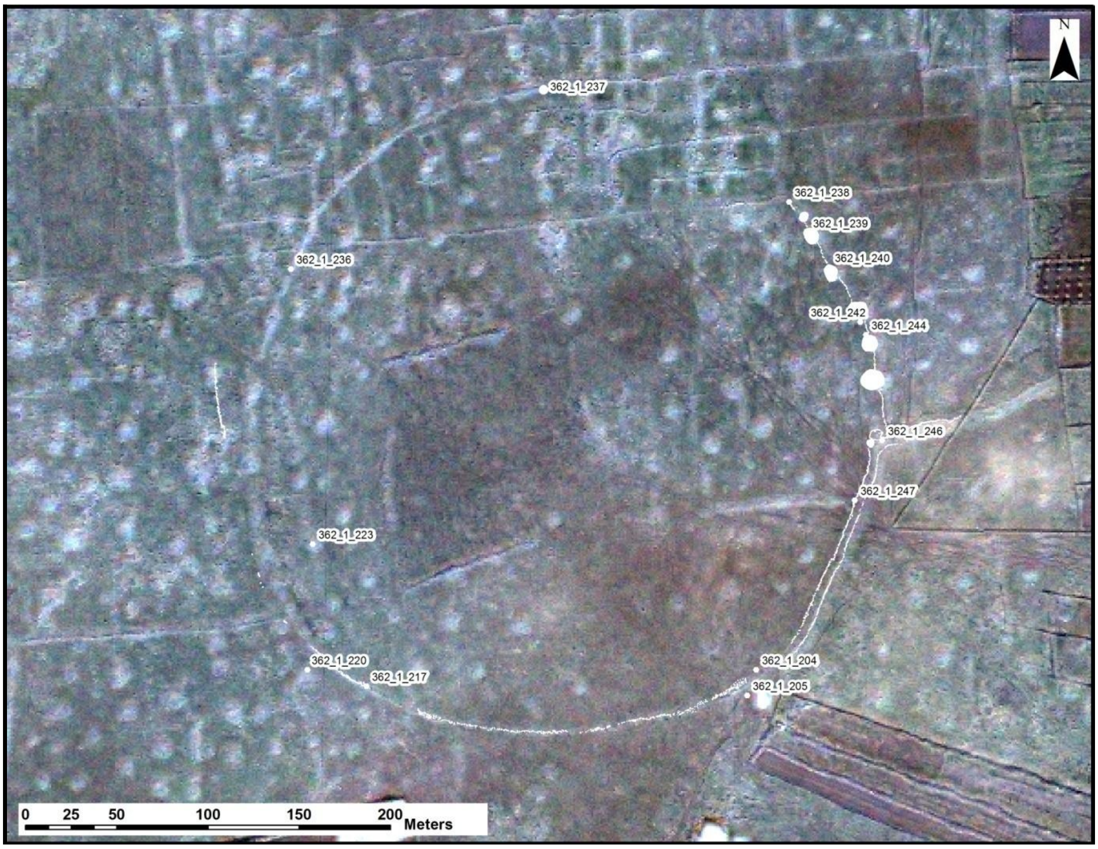


Figure 6.18. Panchromatic Ikonos Satellite Image of SHR 362 (2002)

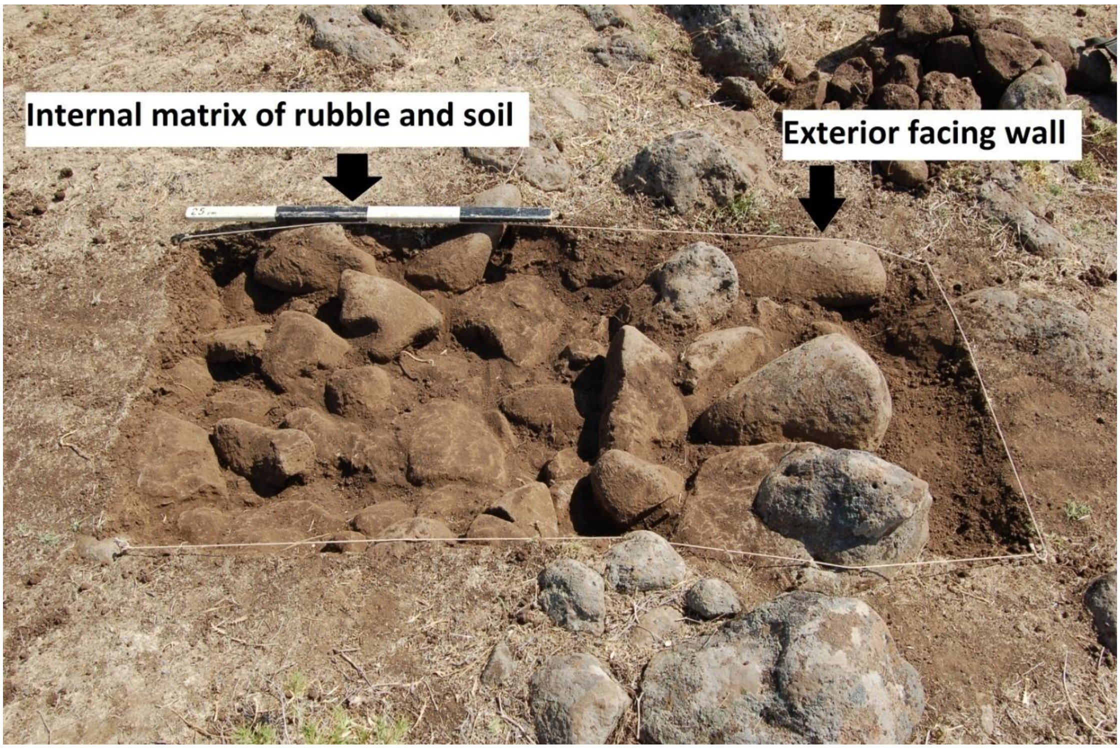


Figure 6.19. Shot of sounding showing the construction method of the enclosure wall

Figure 6.20. Shot of monoliths built into enclosure wall (Sounding 1, SHR 362)

Figure 6.21. Shot of uprights forming a 'framing device' in the eastern half of enclosure

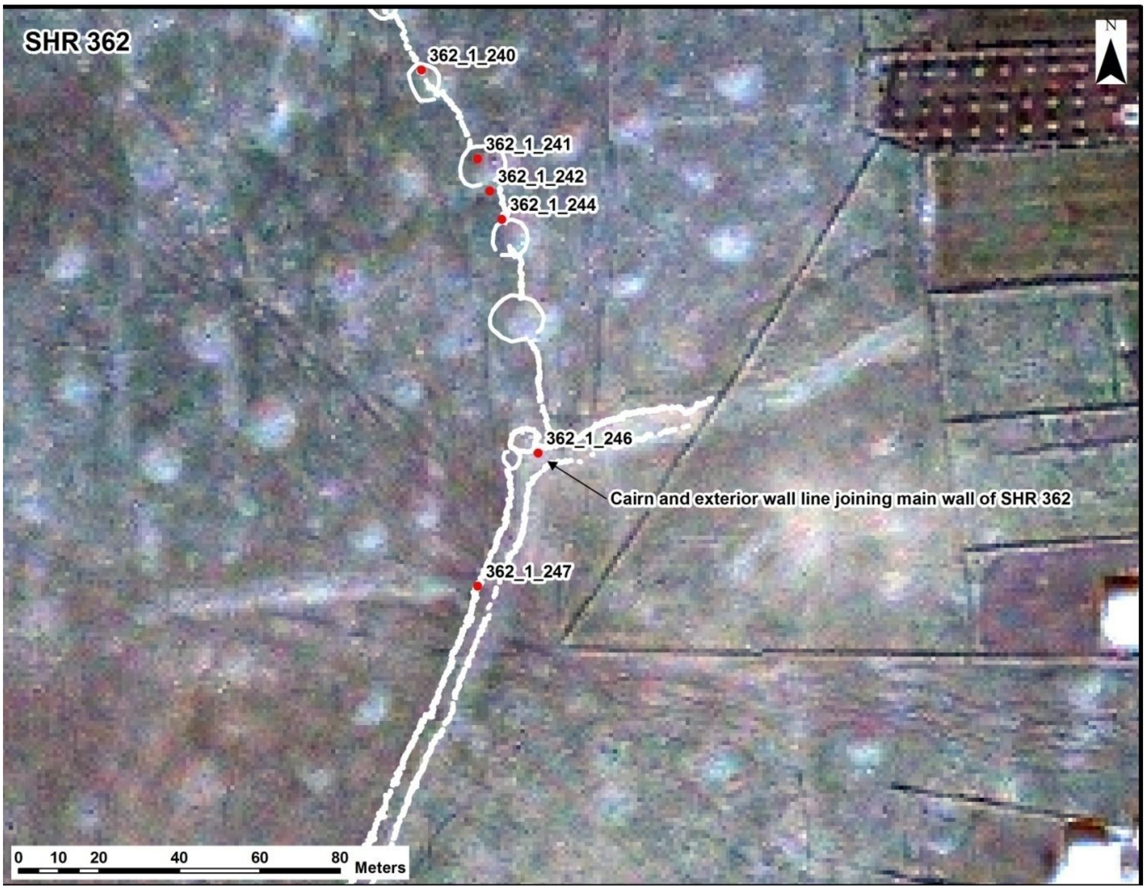


Figure 6.22. GPS map with close up of eastern half of enclosure where wall runs over the top of cairns and external wall line running to join circular enclosure

SHR 362 represents not only a site with a complex structural history, but also demonstrates the importance of considering local topographical features when examining site location. The enclosure sits on a small spur projecting towards the east. Thus, whilst generally low-lying this site is positioned on land at a slightly higher elevation than that surrounding it. Its positioning on the edge of this elevation creates, at the northern edge of the enclosure, a panorama across the Ghour-Samalil basin located to the North (Figure 6.23). The importance of this basin for local agriculture during the early 20th century is recorded by Na'aman (1951: 30-1) and thus, it could be suggested that the positioning of SHR 362 was deliberate [(Philip and Bradbury 2010: 150) and Chapter 7]. Furthermore, the site lies at the southern end of *Wadi al-Qasab*, along which a number of important Chalcolithic-EBA sites [(e.g. SHR 49) and see Chapter 2.2.1.] are located (ibid.). As such, it appears to be positioned at a juncture between two important areas of cultivation, water access and settlement. While a direct link between the importance of areas during the 20th century and prehistory cannot be made, the correlation of this information, alongside evidence for 4th-3rd millennia BC occupation in this area does suggest that SHR 362 may have been deliberately located at this point. If this is the case the site appears to have been taking advantage of and possibly employing both the panoramas seen at the site, as well as the central positioning of this spur in relation to both agricultural land and possible early settlement.

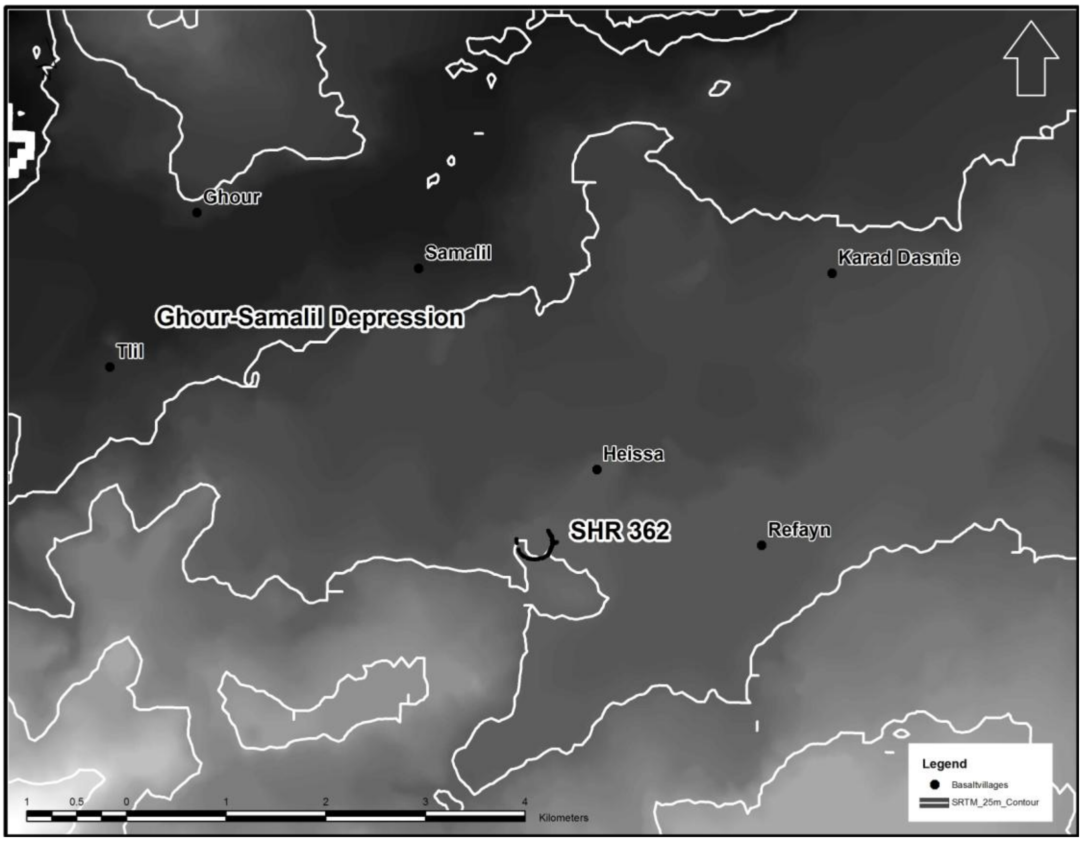


Figure 6.23. Image of topographical positioning of SHR 362

6.3.2. SHR 676, 63 and 64

Located along a low spur of higher ground projecting northwards, SHR 676, 63 and 64 have been visited and interpreted as irregular clustered structures. They vary in size, shape and number of structures (Figure 6.24); however, all have revealed evidence for a Chalcolithic-EBA presence, as well as later activity. Mapping and survey of the structures and cairns within this area during 2007-9 revealed a strong association between the cairn monuments and irregular clustered structures with, in some cases, monuments being built inside or adjoining structures (Figure 6.24). Collection from the region by the SHR Project has emphasized the utilisation of this area over the longue dureé, with evidence for pre-Chalcolithic activity being found along the spur, particularly in the areas surrounding the seasonal lakes (Figure 6.25).

Figure 6.24. SHR 676, 63 and 64 from Ikpan imagery

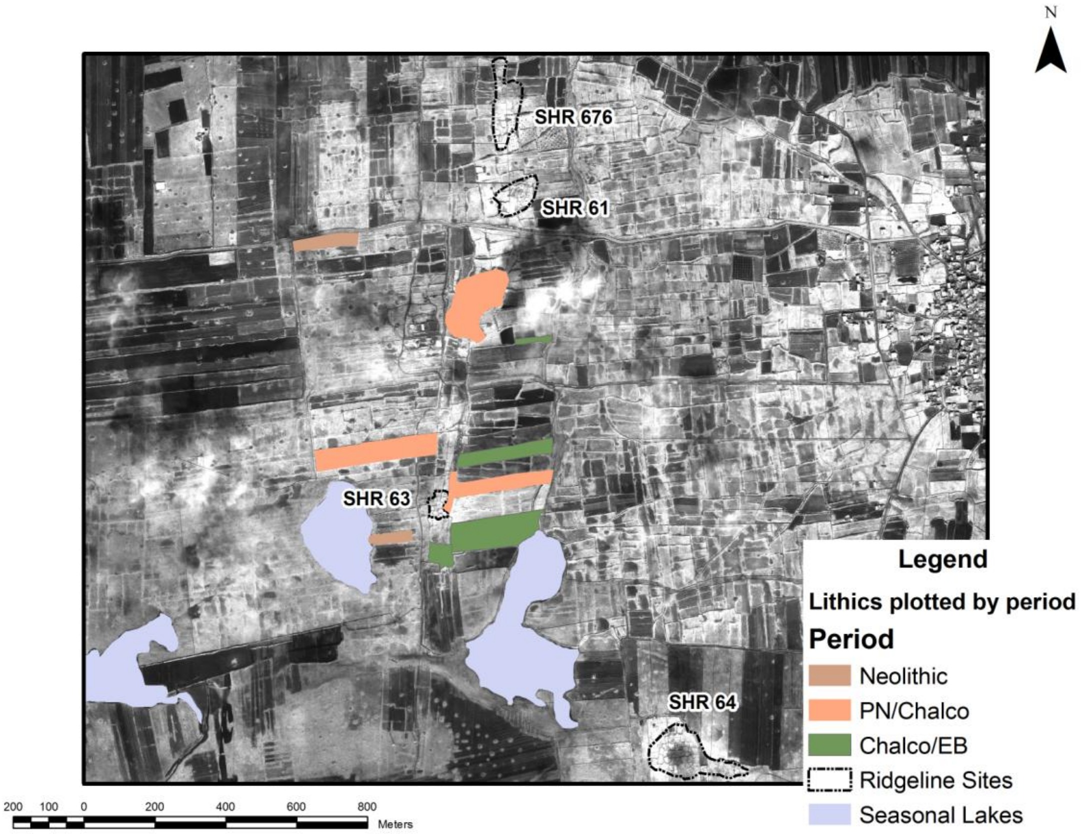


Figure 6.25. Plot of pre-Chalcolithic and Chalcolithic-EB lithic distributions from surveyed sub-units across the spur (material dated by Dr Anne Pirie).

The topographical positioning of these features requires further consideration. The spur is located a few hundred metres to the east of *Wadi al-Qasab* and is bordered by seasonal lakes to both the south-east and west (Figure 6.26). As such, movement between these structures would, if the seasonal lakes were extant during the past, have been limited at certain times of year. Whilst, it is possible to cross these areas when the seasonal lakes are dry during the late spring-early autumn, during the winter months these areas would have had to be avoided. However, they would have provided important areas for both grazing and agricultural activities and given the concentration of pre-Chalcolithic and Roman activity within this area, presumably held importance during the past.

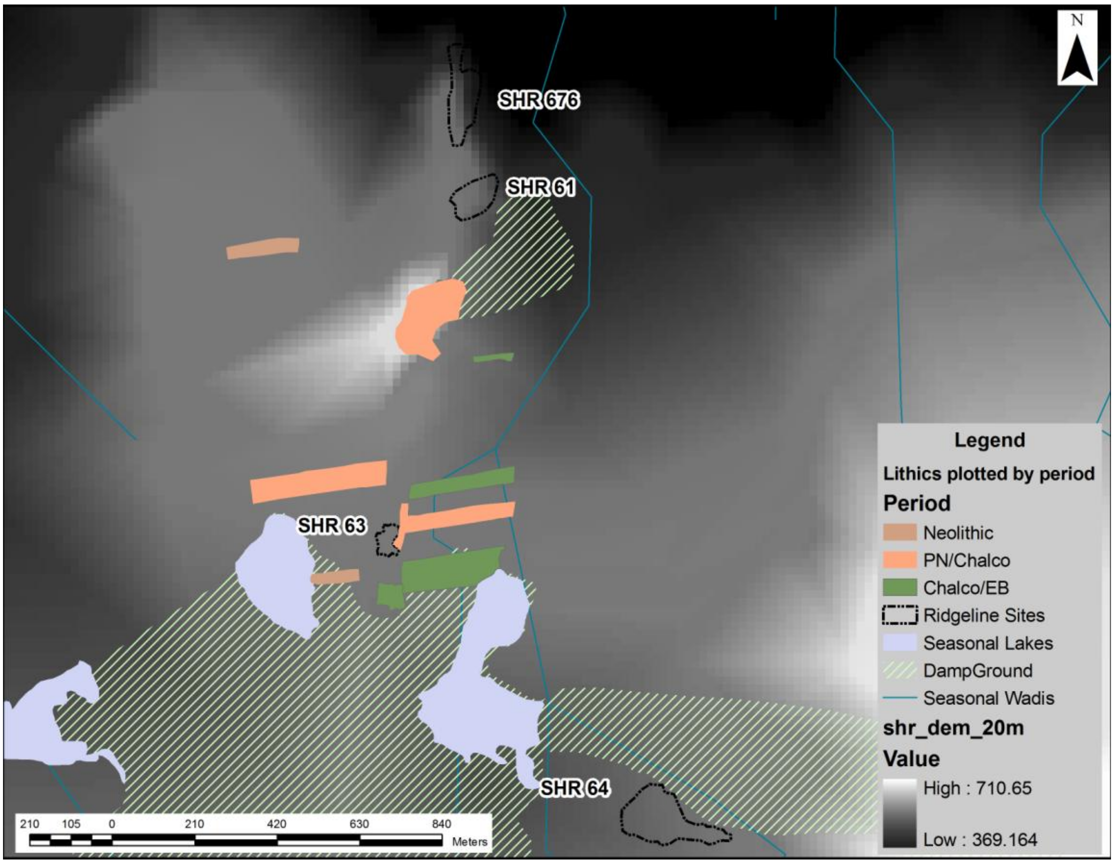


Figure 6.26. Location of 61, 63, 64 and 676 in relation to seasonal lakes and topography against the back-drop of a 20m DEM. The areas of damp ground are based on observed waterlogged areas from 2002 Ikonos, whilst the seasonal wadis are generated via an analysis of waterflow using the DEM (see Appendix 1.1)

6.4. Modern Land-Use Practices and the destruction of Sites

Current land use practices in the NSA are destroying cairns very rapidly, as such it is estimated that over 60% of the monuments recorded via satellite imagery (1960's and 2002) and field survey (2001-2009) have now been either partly or totally destroyed via bulldozing. However, as Figure 6.27 highlights, a variety of modern land use practices can be seen within the NSA with a large percentage of land (based on 2002 data) still being used for grazing. The analyses below are based on digitisation of land-use via an assessment of Ikonos panchromatic imagery dating to 2002. As such, especially given the current bulldozing rate, it is out of date and should only be viewed as indicative of modern, rather than current land-use.

The majority of tells within the NSA are located in areas which are currently occupied/ built up [83% (Figure 6.28)]. This creates an obvious methodological issue of how to survey sites under current occupation. It is also interesting to note that whilst some material has been collected from currently occupied tells, the majority of our finds come from sites, such as SHR 49, which while occupied up until the Hellenistic/Classical period are now un-occupied. SHR 49 has yielded assemblages of material dating to the Chalcolithic-EBA period from fields and transects surrounding the mound. In relation to this it is also worth mentioning the site of Dar es-Salaam which, whilst not classed as a tell, consists of a range of structures around a central mound. This site, similarly to SHR 49, was largely abandoned after the Roman-Byzantine period and as such preservation of earlier material at the site is good. Whilst the majority of features at Dar es-Salaam date to the Roman-Byzantine period, earlier material has been found in the surroundings, indicating that a large percentage of sites in the region have potential evidence for multi-period use and occupation.

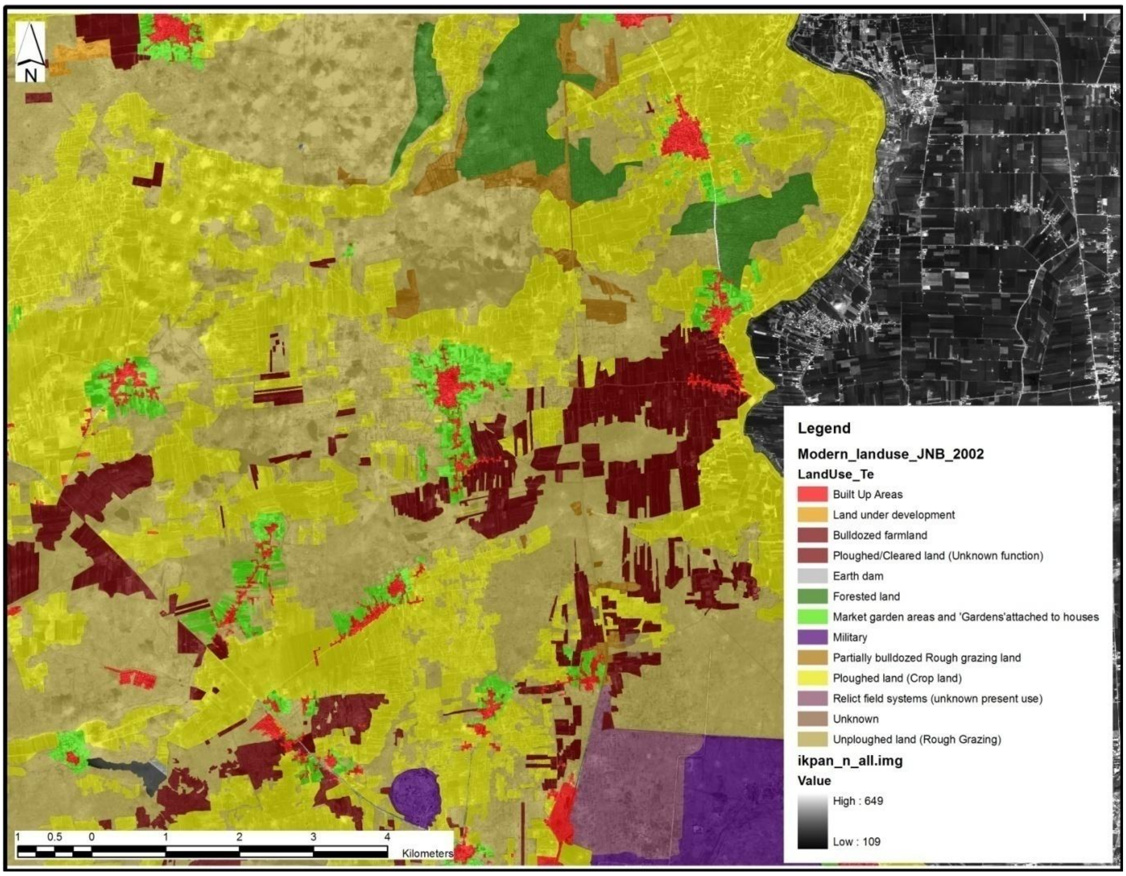


Figure 6.27. Land Use plotted via Ikonos 2002 imagery

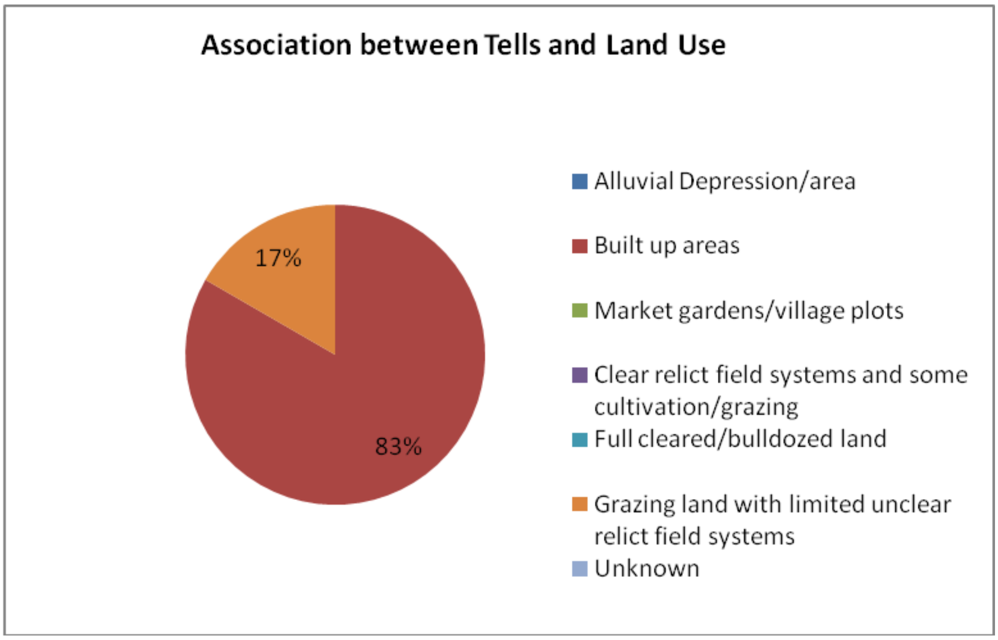


Figure 6.28. The relationship between Tell *sites and current land use*

In contrast to tell location the irregular clustered structures appear to be predominantly located on land used for grazing and cultivation, often associated with relict field systems at various levels of preservation (Figure 6.29). In 2002, according to Ikonos satellite imagery, around 13% were located on fully cleared or bulldozed land. However, fieldwork during 2007-9 has demonstrated the rapidity of clearance and bulldozing currently being carried out in the Homs basalt and thus, it is not unlikely that the majority of remains have now completely disappeared.

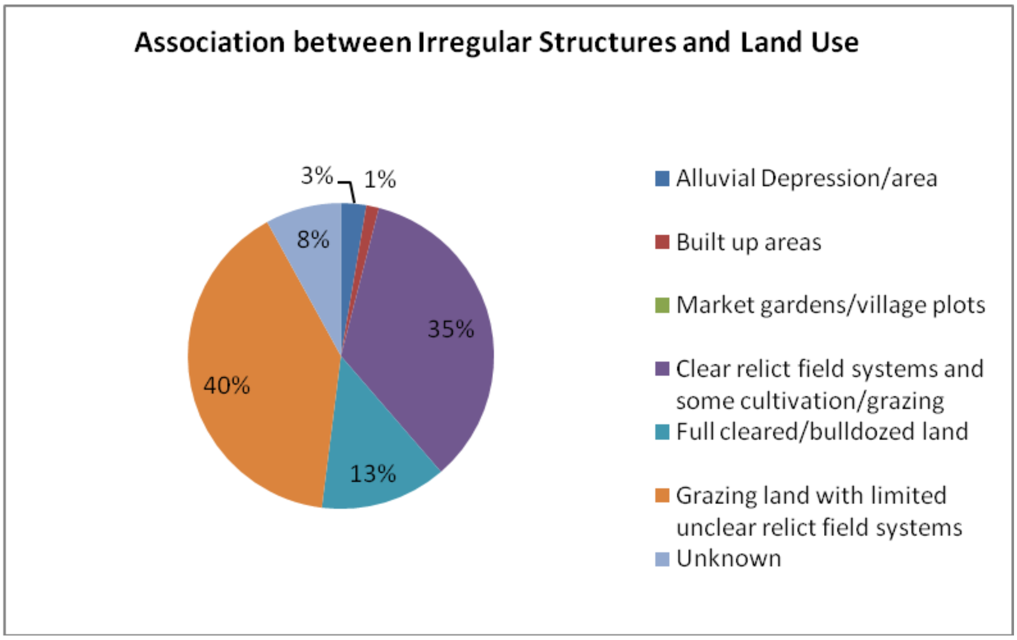


Figure 6.29. The relationship between current land use (2002) and location of irregular clustered structures in the NSA (based on 2002 Ikonos; 1960s Corona and field-survey).

Cairns show a similar pattern, the majority being located on land used for grazing or cultivation with relict field systems (Figure 6.30). Again even in 2002 around 23% of these structures, previously identified using satellite imagery, were located in areas of bulldozing and full clearance. In practice, this means that whilst originally present on 1960s Corona imagery, these monuments had, by 2002, been destroyed by bulldozing and clearance practices (Figure 6.31). Moreover, whilst groups of irregular clustered structures have been preserved to a certain extent, due to the large concentration of basalt rocks at these sites (although this situation is now changing with structures beginning to be totally bulldozed) the majority of cairns when located in areas of bulldozing and clearance have been completely destroyed.

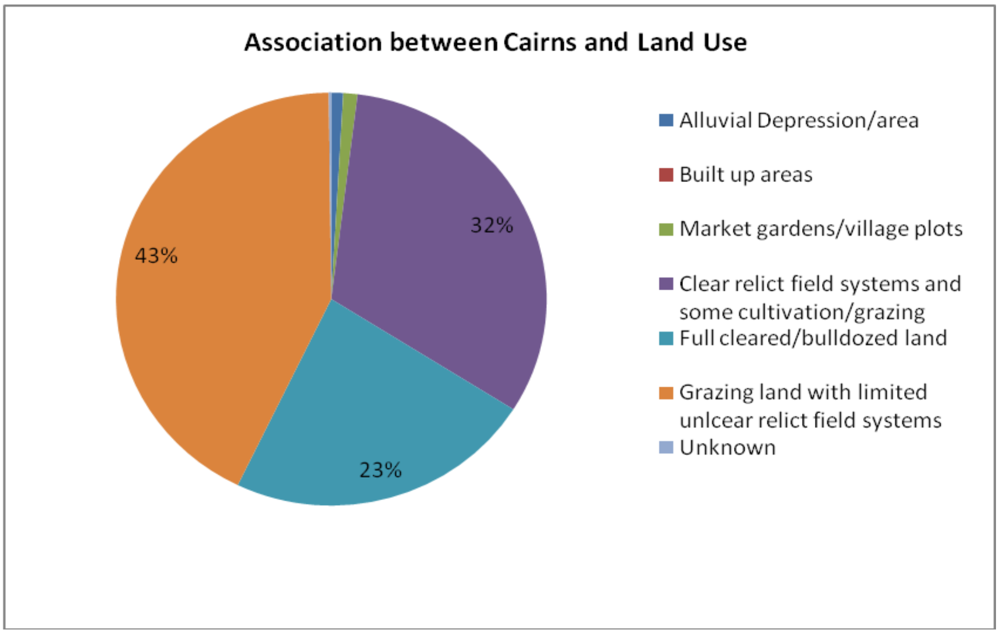


Figure 6.30. The relationship between cairn location (identified from 1960s Corona, 2002 Ikonos and field-survey) and current land use (2002).

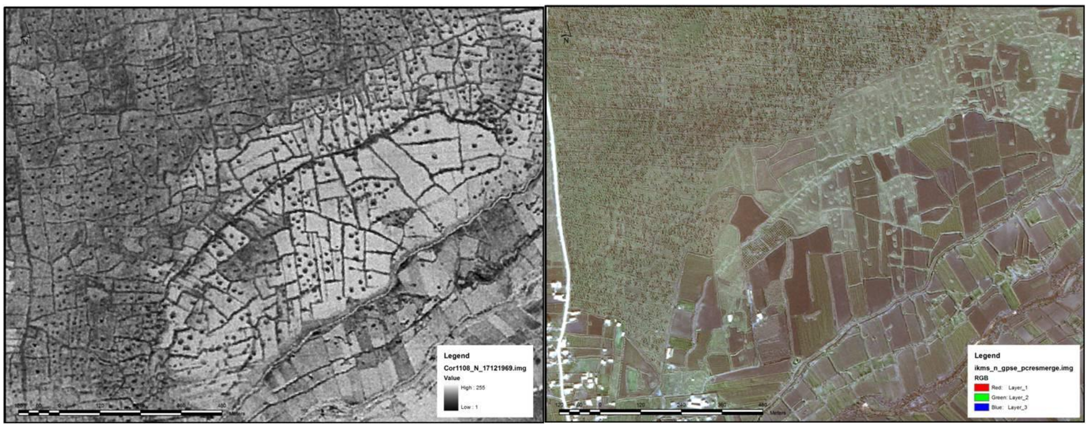


Figure 6.31. Comparison between cairn preservation from Corona 1969 imagery and Ikonos 2002 imagery. Note that whilst a number of cairns are still present on the Ikonos image a substantial percentage have been destroyed/obscured via bulldozing and tree planting activities.

6.5. Summary and Conclusions

This chapter has attempted to demonstrate wider patterns in cairn distributions in relation to natural features, such as topography, geology and hydrology. It has showed potential patterns in clustering seen across both the NSA and Vanishing Landscape Areas. From the above analyses and that of Chapter 5, variation is the dominant element within this region, especially in relation to cairn distributions. However, several main trends appear which will be relevant for further discussions in chapter 7.

6.5.1. ***Tell*** sites appear to be situated within 'valley bottoms', although at some distance from the seasonal *wadis/*seasonal lakes (i.e. predominantly between 200-500m from a *wadi* system). Their distribution across the NSA appears to be aligned towards the flow of major *wadi* systems [(e.g. Wadi al-Qasab) and see chapter 2.2.1.]. In addition, a number of tells, SHR 88 and Tell Kissine in particular, appear to be sited at important locales where local *wadi* systems join the River Orontes.

6.5.2. ***Irregular Clustered Structures (ICS)*** appear to fill in the gaps, with their distribution increasing at distances over 500m from a seasonal *wadi*. These structures appear to form discrete clusters within the NSA. In particular, the cluster of SHR 63, 62, 64 and 676 has been noted within this discussion (see section 6.3.2.). Based on the evidence from Chapter 5 these sites appear to primarily date to the 4th-3rd millennia BC (Philip and Bradbury, 2010).

6.5.3. ***Cairns*** appear to be widely distributed across the landscape. No distinct relationships between cairn location and topography, seasonal wadis and lakes exist, although cairns are generally absent from valley bottoms. At the vanishing landscape scale the cairns appear to broadly correlate with areas of basaltic geology. However, there are areas where, based on the presence of basalt geology it would be expected that cairns could be found, but they are absent.

6.5.4. ***Rectilinear Clustered Structures (RCS)***, similar to tells, are predominantly found at distance of between 200-500m from a seasonal *wadi*/lake. In comparison to tells they have a slighter wider distribution across the NSA as a whole. As these sites have been preliminary dated to the Roman-Islamic period (Philip *et al.*, in press) further discussion of them shall be limited. A full analysis of their utilisation is beyond the remit of this thesis. However, they represent a good body of data against which to compare distributions of ICS in the NSA.

This summary represents a coarse overview of the main trends in distribution and clustering seen in the NSA. The thesis will now turn to a wider discussion of the interpretation of the remains in Chapter 7.

CHAPTER 7: LIVING AND DYING IN THE *WA'AR*: THE 4TH-3RD MILLENNIA BC IN THE HOMS BASALT, SYRIA.

Introduction: Key concepts and hypotheses

From initial research within the Homs NSA, it was felt that the pre-existing archaeological models (i.e. core/periphery; desert/sown; nomadic/sedentary) concerning the role of non-optimal regions within systems of complex society and urbanisation were insufficient. The hypotheses developed within areas, such as Mesopotamia were not always applicable to Levantine contexts (see Chapter 9.1-2 for further discussion). The Homs region provided an important case study for the assessment of these models, as it presents a highly visible palimpsest of archaeological activity, which until recently had remained un-damaged. The Homs Basalt is a zone (see chapter 2.2.1. for further discussion) which offers considerable potential in terms of local resources (e.g. rainfall, Mediterranean climate and variable rich soils). There are however, clear barriers to its utilisation (e.g. stony geology, poor drainage). Its proximity to the Homs Marls, characterised by tell settlement, including the excavated sites of Tell Nebi Mend (e.g. Bourke, 1993, Mathias, 2000, Mathias and Parr, 1989, Parr, 1983, Pézard, 1931) and Arjoune (e.g. Parr, 2003) offered an important opportunity for considering the interaction between these different zones. Furthermore, whilst uniquely preserved until recently, the Homs Basalt does not represent a unique region. On the contrary, as will be shown through the discussion of the comparator regions (Hauran, Jaulan and Negev) in chapter 8, it parallels to some degree traditions of settlement, subsistence and material practice from other regions.

This chapter will focus on evidence for the initial expansion and intensification of activity within the Homs NSA during the 4th-3rd millennia BC [for further discussion of post-3rd millennium BC activity within this region the reader is referred to (Newson *et al.*, 2008-9, Philip *et al.*, in press)]. The cairn monuments discussed throughout this thesis are an important part of this. However, they represent just one fragment of the archaeological universe. Moreover, without understanding the broader context in which cairn monuments were constructed, it will be impossible to answer questions concerning their use, conceptualisation and importance within 4th-3rd millennia BC society.

7.1. The archaeology of the Homs Basalt in the 4th-3rd millennia BC

The Homs Basalt or '*Wa'ar*' supported both lowland valley based tell sites, in addition to 'upland' irregular clustered structures (henceforth referred to as enclosure sites) [(see Chapter 5-6 (Philip and Bradbury, 2010)]. Unlike the mud-brick tells known from across much of the Levantine region, (including the Homs Marls), tells within the *Wa'ar* are mounds derived from the build up of basalt architecture. These features are substantially smaller in area (ha) than their counterparts in the Marl and alluvial landscapes of the SHR project [see (Philip, 2007) and references therein for further details concerning the nature of tell settlement in the Marl]. Moreover, whilst a number of tells within the NSA show evidence for 4th-3rd millennia BC activity, the exact nature of this occupation is unknown. Indeed, it may be that 'tell' is a misnomer during this period (see Chapter 5 and below for further discussion). The 'upland' enclosures within the region are composed of adjoining units of built stone structures, located at some distance from the seasonal *wadi* valleys and in many cases associated with cairns (see Figure 5.1 and Figures 6.4-7 and Appendix 5.1). Using traditional approaches, it would be easy to assume the existence of two distinct settlement systems and social groups. The first based around lowland 'tell' settlement and agriculture, the second focused on a system of upland enclosures and nomadic pastoralism. The evidence from the Homs Basalt, however, does not suggest this opposing pattern of subsistence/settlement. Moreover, it is clear that in order to begin to understand how these settlements may have been utilised and understood throughout the 4th-3rd millennia BC the pre-existing models need to be rejected (see Chapter 9). How then, were these differing settlements being employed by populations living and dying in the *Wa'ar*?

7.1.1. 'Tells' and 'lowland settlement'

Tells, or rather lowland settlements with later tell activity associated with them within this landscape, are few and spatially concentrated along the main *wadi*s of the region (see chapter 6.1). The density of tells in the NSA can in no way be seen akin in terms of scale or density to the Marl to the east and south of the NSA (see Table 7.1. and Figure 7.1). Having said this, satellite image analysis and ethnographic sources such as Na'aman (1951) indicate the possible extension of this system to the North, beyond the Homs NSA (see figure 7.2). If we include all probable tells (i.e. those which were either identified from satellite imagery, or from maps and then partly corroborated by satellite imagery) identified by the Vanishing Landscape survey which can be found associated with Basalt geology the density of occupation becomes comparable to the figures from the Marls (see Table 7.1). However, given our current lack of knowledge concerning the date of occupation on these sites, further interpretation is limited. Moreover, possible clusters of tell sites can be seen across the Vanishing Landscape region (Figure 7.2) and it would be premature to associate occupation in the region of the Homs NSA with other potential settlement clusters. Surface collection from tells in the NSA, as recorded in Chapter 5, has revealed evidence for Chalcolithic-EBA material and where such material has not been recorded, it has been argued that later material and indeed modern occupation has obscured earlier remains. As such, it appears that within the Chalcolithic-EBA period in the *Wa'ar* we are dealing with a system of 'lowland' valley based settlement centred along the main *wadi* systems of the region. Several points emerge from this conclusion: firstly, how did such settlements interact with each other, as well as the wider region; secondly, what subsistence activities were taking place at and around these sites and thirdly, how were these settlements conceptualised and utilised by local populations?

	Number of Tells	Total (Sq Kms)	Total Area of Zone (sq Kms)	Number of tells per square Km	Number of tells per 100 square Km	% of overall zone composed of Tells (Total area occupied/total area of zone x 100)
Basalt (NSA)	6	0.06	149.83	0.04	4.00	0.04
Marl/Lake	26	0.94	443.62	0.06	5.86	0.21
Vanishing Landscape Basalt	62	4.10	1709.86	0.04	3.63	0.24

Table 7.1. Site numbers and total areas across the NSA, Marls and Vanishing Landscape Region.

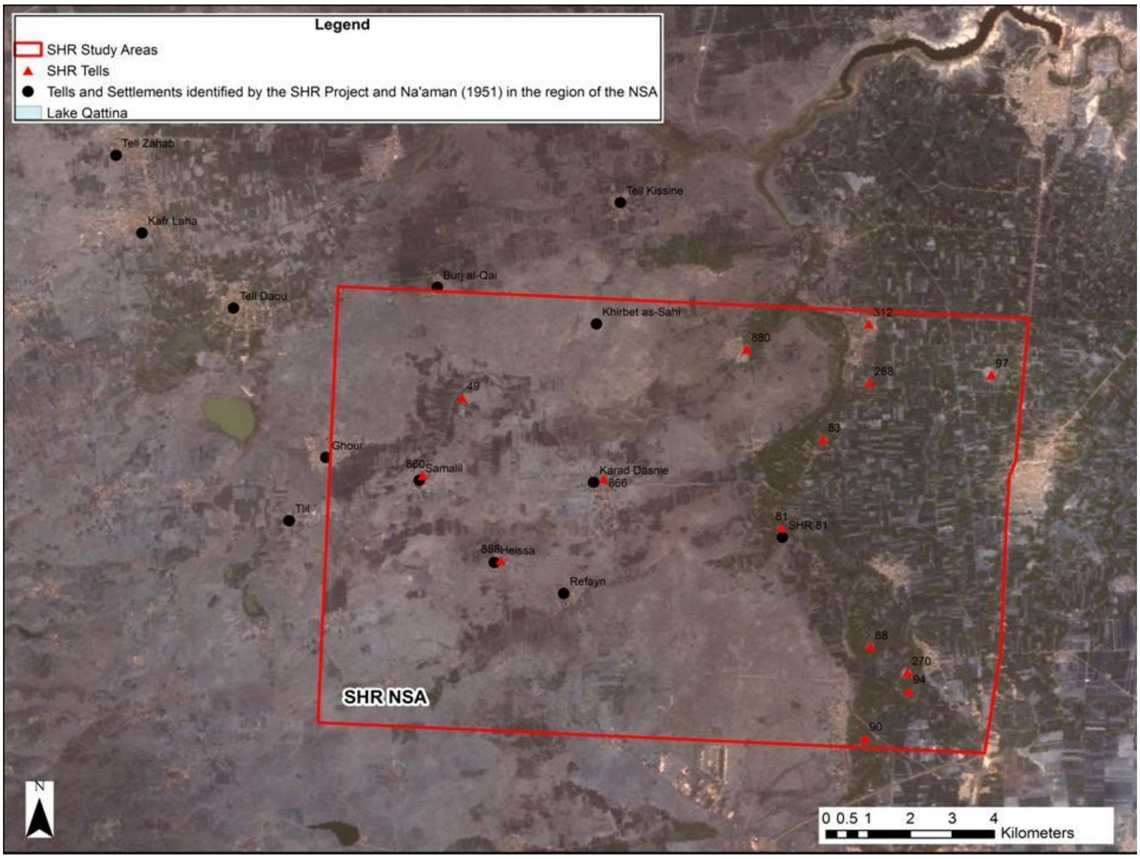


Figure 7.1. Location of SHR tells and settlements and possible tells identified by Na'aman (1951)

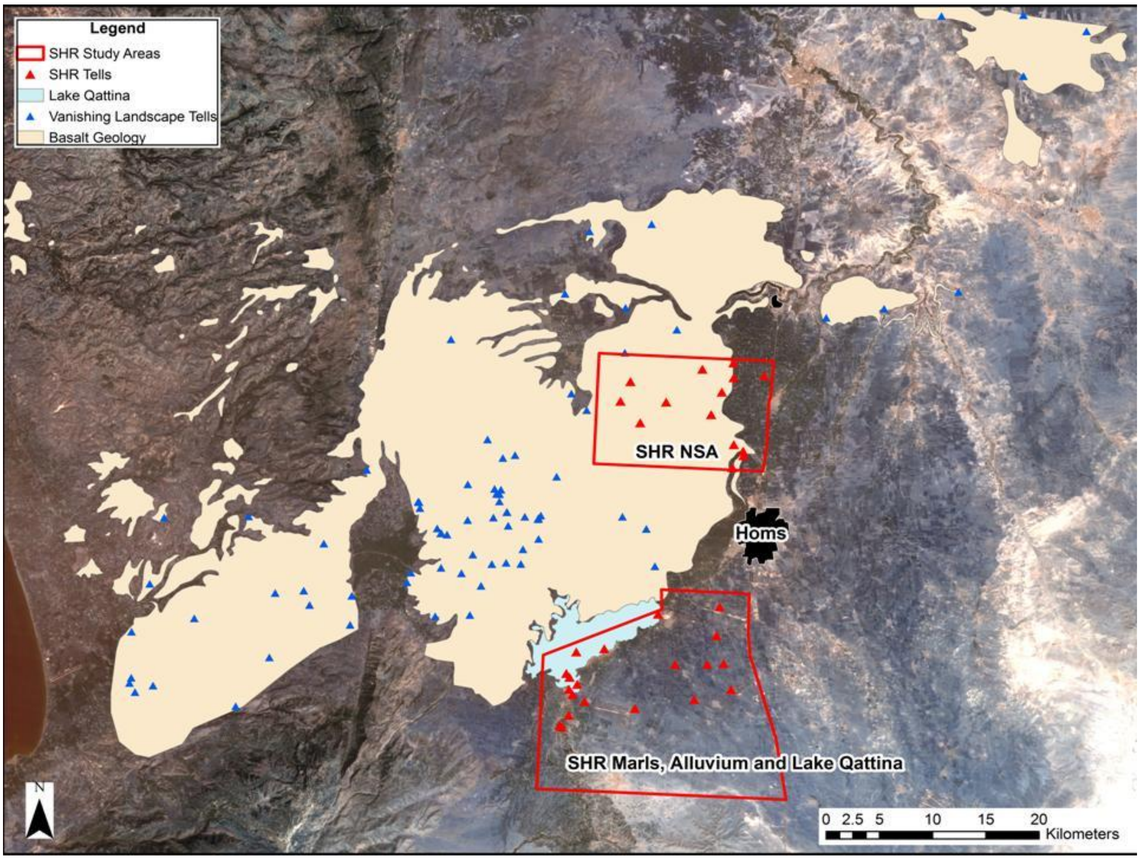


Figure 7.2. Tells across the SHR study region and the tells found in association with basalt geology in the wider Vanishing Landscape area

7.1.1.1. *Interactions and connectivity*

The ‘tell’ settlements in this landscape are just a fragment of a wider settlement universe within the region known as the *Wa’ar* (see Chapter 2 for further discussion). Further to the north and west, Na’aman (1951: 55) mentions the importance of sites clustered around the Houleh depression in the 20th century. However, research in the NSA would suggest that multiple foci of settlement existed during the 4th-3rd millennia BC. Thus, whilst the sites mentioned by Na’aman (1951) may have been important, their role did not necessarily overshadow the networks of settlement visible in the Homs NSA. The Houleh depression was highly fertile in the 19th-20th centuries (ibid: 55). Despite this, the seasonably variable nature of resources throughout sub-optimal regions (see chapter 2) would have necessitated or at least encouraged populations to exploit different areas and resources at different times of year. Moreover, the possibility of slightly wetter conditions at the beginning of the Chalcolithic and into the EB I period [see chapter 2 and (e.g. Bar-Matthews *et al.*, 1998, Bar-Matthews *et al.*, 1999, Baruch, 1990: 283, Hole, 1997: 39, 48, Horowitz, 1974: 413, Riehl, 2008a: 44, Riehl, 2008b: 2)], may have created a situation whereby areas, such as the Huleh depression, were too marshy for exploitation. The Hula Valley of Palestine during the 20th century was malarial (Marinov and Ragen, 1978: 487), and given the depiction of swamps on early 20th century maps of the *Wa’ar* we cannot overlook this possibility in relation to the Huleh depression. As such, it may be that this area was, at different points in history, a rich and easily exploitable resource and at others a malarial swamp. Fieldwork in the Houleh depression has not been carried out and thus we do not have corresponding material and chronological data to back up these hypotheses. However, based on current evidence the multiplicity of utilisation and settlement interaction within this landscape seems likely.

While ‘tells’ and ‘enclosures’ in the NSA appear to share many elements of material culture, at present there is little evidence to suggest anything but a highly limited connection between settlements within the *Wa’ar* and those in the Marl. The possible reasons for this lack of connectivity will be discussed shortly; however, at present it should be noted that despite broadly chronologically comparable assemblages from sites, such as SHR 49 and 94 there appears to be few obvious material connections (Figure 7.3). Whilst it may be possible to suggest that interaction between these settlements was occurring in the form of perishable goods i.e. wool, food-stuffs [e.g. see chapter 9.5. and (Crawford, 1978: 130) for discussion of the archaeological invisibility of such connections], the lack of similar material would suggest the presence of some type of barrier, preventing or at least rendering the transmission of material aspects of society between these two regions irrelevant. Key to understanding these differences may be a consideration of contrasting forms of identity (see chapters 9.1 and 9.2.).

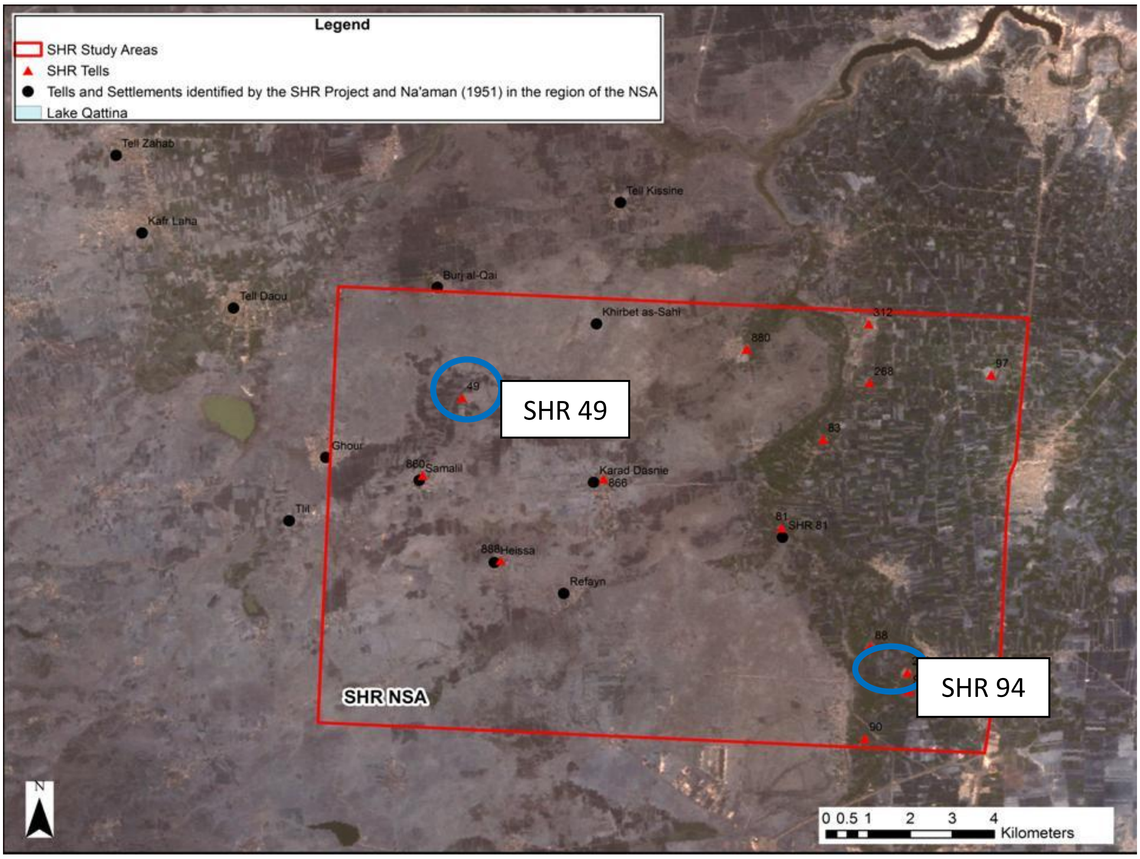


Figure 7.3. The location of tells SHR 49 and 94

7.1.1.2. Subsistence and patterns of settlement

Investigations at SHR 49 have emphasized the presence of Chalcolithic-EB I material in the areas surrounding the central mound. This may suggest that lowland settlement preceding the foundation of the tells was fairly dispersed (although see below for further discussion). Whilst the check-dams along the *wadi* in the region of SHR 49 cannot be dated (Figure 7.4.), given the evidence for complex hydraulic management systems at sites such as Umbashi in the 3rd millennium BC [see chapter 8 and (Braemer *et al.,* 2004: 248-258)], the presence of simple water management techniques within the Homs NSA is possible. Na'aman's (1951: 23) study of this region highlighted the wide range of different crops being grown within the area, with seasonal depressions and *wadis* being used for the cultivation of melons and gourds. In addition, cereal crops such as wheat and barley would presumably have been grown in these well watered regions, with many of the *wadi* systems retaining at least a minimal flow of water well into spring. The lack of cairn monuments in valley bottoms may suggest that the land available for the cultivation of cereals and other seasonal crops was being maximised. Such crops would have only provided resources for part of the year and Na'aman (1951: 53) notes that, at least during the early 20th century, crop yields were fairly low. It is possible that grain may have been stored for lean months, with the predominance and variety in sizes of holemouths at sites suggesting their function as both cooking, consumption and storage vessels. Given the low yields suggested by Na'aman, the seasonal and yearly variability of climate, as well as the possible concentration of agriculture within relatively small areas (e.g. centred on the main seasonal *wadi*s and lakes) it is possible to argue that this subsistence would have had to have been supplemented in some way. As suggested for the Hauran and Jaulan during the 4th-3rd millennia BC (see chapters 8.2-3 and 9.4 for further discussion), it may be that we are dealing with a multi-focal subsistence strategy in the *Wa'ar* during this period, relying solely on neither agriculture nor pastoralism. If this is the case, animals may have been removed from areas surrounding the valley bottoms during plant germination and growth being allowed to return to pasture on the stubble in fields following the harvest (see below).

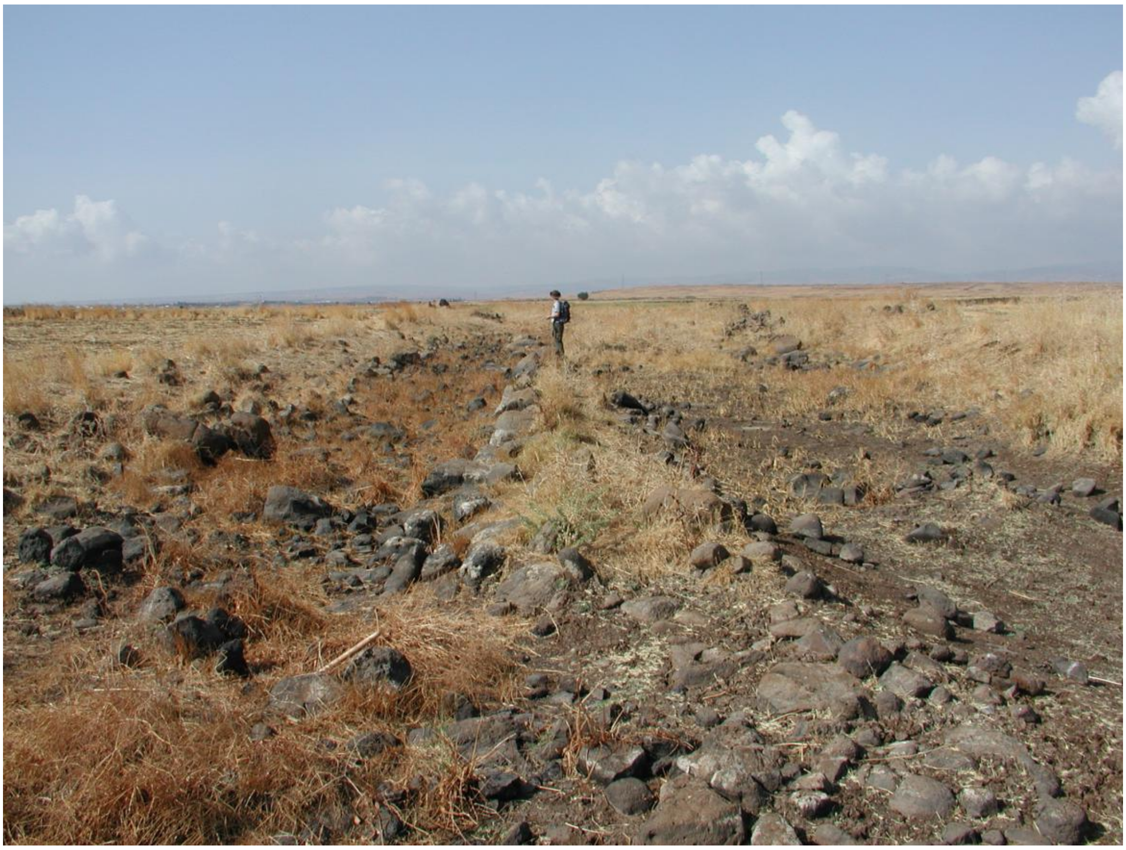


Figure 7.4. Check dams in the area of SHR 49. The wadi course can be seen via the darker colour of the basalt rocks and vegetation

7.1.1.3. Conceptualisation and interpretation

As will be discussed further in Chapter 9 the conceptualisation of sedentary/temporary settlements may have varied throughout history. Moreover, it is clear that without detailed evidence and analysis, a tell should not be considered as an implicitly 'stable' settlement form [(e.g. Boivin, 2000, Joffe, 1993: 70-3, Wilkinson, 2003: 126, Wossink, 2009: 54-5) and see chapter 9.3]. Not only does this observation apply to mud-brick sites but, despite their different occupational formation processes, also to basalt tells. The picture of tell settlement within the *Wa'ar* is broadly shaped by Hellenistic and later occupations. Indeed, the majority are still occupied. Features such as walls and ramparts [e.g. SHR 49 (see figure 7.5.)] are probably late in date and influence our impressions of these structures as a dominant and highly visible settlement form. These central mounds are highly conspicuous even across the stony landscape of the Basalt. However, this was not necessarily the case in the 4th-3rd millennia BC. Whilst it is clear that tells within this region support long sequences of occupation, with activity dating to the Chalco-EB I period being found in association with the majority, the exact nature and original visual impression of these sites cannot be ascertained on the sole basis of survey work. Thus without excavation of sites, such as SHR 49, we cannot be sure that activity during the Chalco-EB I period would have even been associated with a mound. Indeed, the density of material deriving from transects completed around this site would suggest that this is not the case. This has implications for tell based settlement across large parts of the Levant. Tells make an important visual statement, however, a more dispersed settlement pattern, albeit perhaps maintaining a focus around a central area, would have had less of a visual impact. Having said this, it is possible that some form of mound/monumental structure may have existed prior to the foundations and ramparts at sites such as SHR 49. Walled enclosures and monumental architecture is known from other regions during this period [e.g. Umbashi (Braemer *et al.*, 2004: 39) and Tell Afis (Gianessi, 1998)] and thus the presence of such features within the Homs region cannot be ruled out.

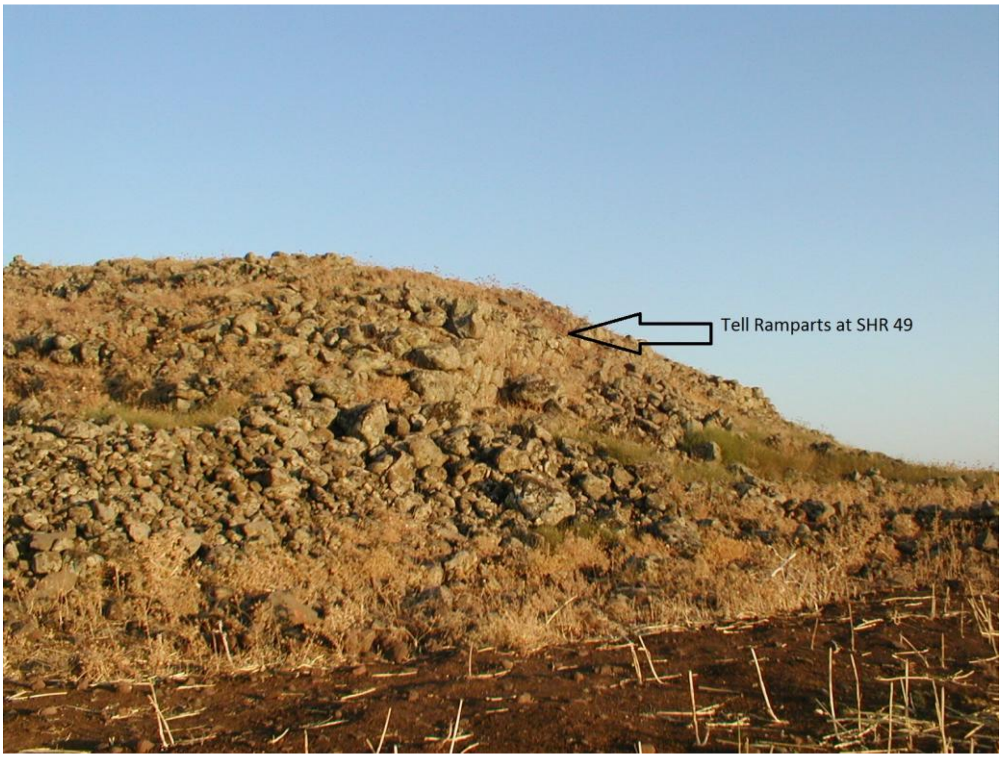


Figure 7.5. The 'Ramparts' at SHR 49. These features cannot be dated on survey data alone, yet they strongly influence interpretations of settlement visibility

Given the continuity in occupation at these locales, the impetus for settlement and activity in these areas has to be discussed. Clearly, as outlined in Chapter 6, these sites appear to be located along important *wadi* systems and in some cases, pivotal points at the junctions of *wadi*s and routes [Figure 7.6. (e.g. SHR 81 and Tell Kissine)]. In other cases their location, on the edge of resource rich areas, can be suggested (e.g. Tell Daou). Despite these influences, the reasons for the specific placement of these sites i.e. not a few hundred metres further upstream/downstream, on one spur of land rather than another can be debated. One possibility may be that pre-existing topographical features, such as existing low plateaus or mounds lent themselves to occupation, although given the lack of excavation; this has to remain conjecture rather than proven fact. Alternatively their placement may be linked to the proximity to easy access routes or the best agricultural land. Finally, it may be that the location of these settlements was never intended to make concrete statements or impressions within the landscape. Instead settlement, during the 4^{th}-3^{rd} millennia BC, was perhaps more transitory and as in the case of SHR 49, dispersed across a larger area than that now represented by the tell. If this was the case we would perhaps expect a broader background of 4^{th}-3^{rd} millennia BC material across the landscape. This cannot be seen within the Homs NSA and clear locales of settlement exist. Bearing this in mind, it is possible to suggest a tentative hypothesis which highlights the importance of the location of these 'tells'. Whilst perhaps not originally marked by mounds these locales had clear importance for the local population, with settlement, retaining its focus on these areas for thousands of years. Thus, whilst during the 4th-3rd millennia BC, the importance of these areas may have not been structurally or monumentally represented, it may have been embedded within the way in which people conceptualised occupation and movement through this region. Cultivation and occupation in these lowland areas may have been tangible evidence for activity and control, negating the need for cairn construction (see below for further discussion). With this in mind, I will now turn to a consideration of the 'upland settlements' within this landscape. As will be argued below these demonstrate that the lowland settlements discussed here cannot be viewed as separate entities but instead as just one fragment of a multi-focal co-existing strategy of settlement.

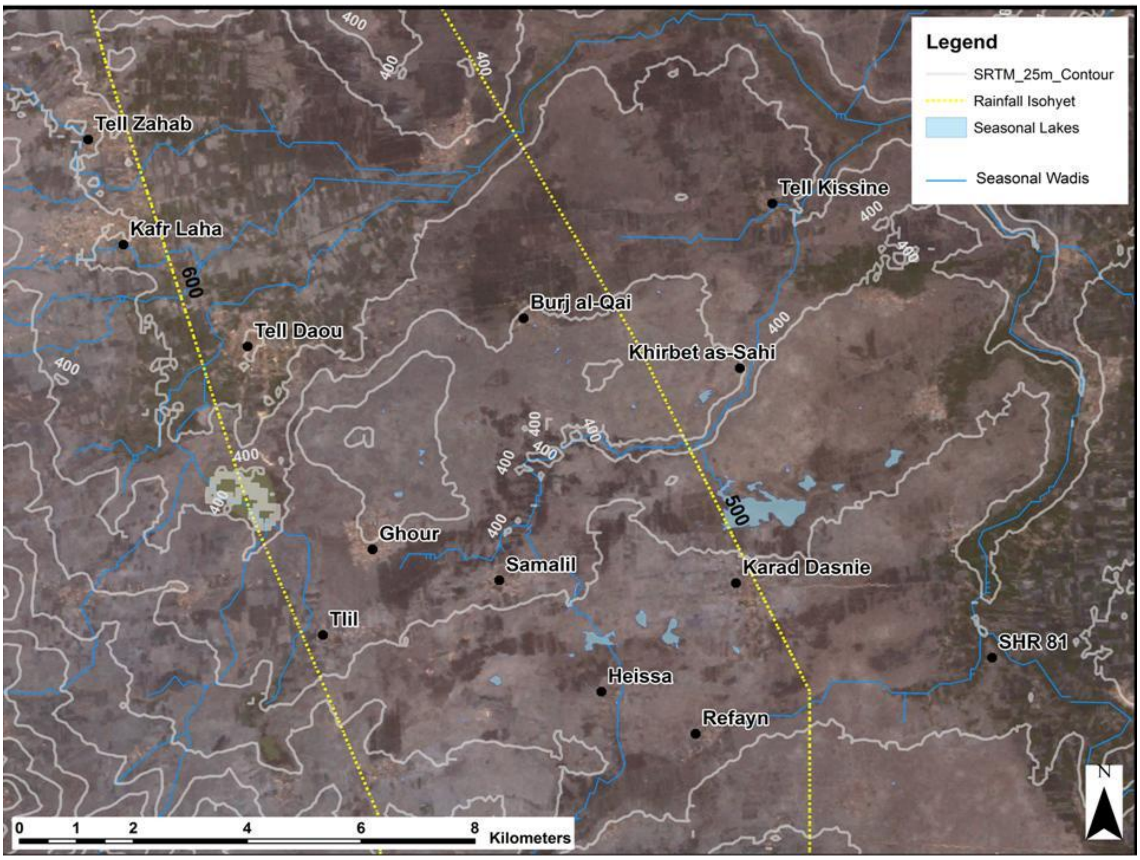


Figure 7.6. Showing the location of Tell Kissine and SHR 81 at the junction of wadi systems

7.1.2. Enclosures and 'upland settlement'

As discussed in Chapter 5-6 a large number of 'enclosures' (75) have been discovered via field-survey and satellite image analysis within the Homs NSA. These structures vary in both size and layout and akin to the cairn monuments within the region appear to show some evidence for a wider distribution outside the NSA (although see Chapter 6 for further discussion of this). Field collection at these sites has revealed the presence of assemblages similar to those from lowland sites. Thus, they appear to be contemporary and part of a single settlement system. As such, whilst these settlement forms are being discussed separately here, we can suggest that these two forms of structures/areas are being used by the same population group, possibly at different times of year.

7.1.2.1. *Interactions and connectivity*

As will be illustrated in Chapter 8, structures similar to those from the NSA have been found in regions such as the Negev, Jaulan and Hauran (Braemer *et al.*, 2004: 111-117, Cohen and Dever, 1978: 35, Epstein, 1998: 9). Interpretations of the nature of activity at these sites, across these different regions, vary greatly, from settlements being seen as permanent roofed structures to those which were only transiently occupied (see chapter 8.2-4 for further discussion). The number and scale of structures within the enclosure sites of the *Wa'ar* vary. On average, clusters vary from between 30-40 individual units with the diameter of these units ranging between 5 and 20m (Philip and Bradbury, 2010). The structures appear to be tightly packed and in contrast to settlement in areas such as the Negev [(Rosen, 2002: 28; Avner, 1990a: 154-7), although see Chapter 8.4 for further discussion] and Hauran (Braemer *et al.*, 2004: 87) show little evidence for arrangement around a central open area. The complex development of these sites can be suggested on the basis of the palimpsest of wall lines, enclosures and associated features overlying, abutting and adjoining structures. However, their general layout suggests two possibilities: construction occurred within a relatively short-time span, with clustered adjoining units being a specific intention of the builders. Alternatively, whilst having an organic development with multiple phases of construction and reconstruction, those involved in this process may have maintained the general layout present at these sites, adding new structures or re-building already extant units. Debates concerning the roofing of structures in areas such as the Jaulan and Negev [see chapter 8 for further discussion (e.g. Braemer *et al.,* 2004: 111-117; Cohen and Dever 1978: 35; Epstein 1998: 9)] are numerous. Whilst no clear evidence exists within the Homs region for the use of central pillars or supports, roofing, using perishable materials such as reeds and grasses, at least of the smaller units is possible. The presence of grasses and associated plant species in swampy areas, *wadi* bottoms and seasonal lakes can still be seen in some areas today. If such structures were roofed, these enclosures may have been used for a variety of functions such as human and animal shelter, storage, food preparation, cooking and artefact manufacture throughout the year.

Evidence for the interaction between different enclosures is also apparent. As discussed in Chapter 6.3B clusters of enclosure settlements can be seen centred around locales such as seasonal lakes. In a number of cases the individual clusters appear to be less than 1km apart suggesting a spatial relationship (and see Figure

6.16). Moreover, homogeneity of material across the different sites points to a broad cultural and chronological relationship. It may be that these settlements represent the horizontal displacement of activity over several hundreds of years, (see chapter 8 and 9.5 for similar arguments for the Hauran). Thus, whilst not occupied concurrently, these enclosure settlements may represent continuity across a fairly well defined region, with new clusters being constructed as older units decayed or went out of use. Given the easy accessibility of stone within this landscape it may have been easier to construct new units and clusters, rather than re-assembling and re-constructing decaying remains, which may have been filled with occupational debris (also see section 7.3 for a discussion of the role of burials within these structures). Alternatively, as suggested for the Chalcolithic Jaulan [see chapter 8.3.1.1. (Epstein, 1998: 6-7)], these enclosures may represent the presence of small family units dispersed across a relatively small area. Such groups may have interacted on a daily/weekly basis. This would have facilitated the sharing of produce or tending of herds/crops, whilst still retaining a broader familial base unit within their different clusters. Thirdly, these different enclosures may have been used at different times throughout the year or possibly for different functions, with mobility occurring between these units due to subtle changes in local resources from season to season. Given Na'aman's (1951: 21, 25) emphasis on the highly variable nature of resource availability across this landscape the placement of enclosures in different locales in order to take advantage of/mediate this differentiation of resources, is quite possible. Rather than dealing with a system of settlement, we then appear to be dealing with a system of inhabitation. Populations would have shifted between different locales throughout the year as the availability of resources and local opportunities altered.

7.1.2.2. *Subsistence and patterns of settlement*

The question of how, when and why these enclosures were utilised and inhabited emerges from the above discussion. Today the basalt landscape is fairly inhospitable at certain times of year. In particular during the winter months the climate is cold and wet. In contrast, during the summer months conditions are characterised by high temperatures and a very windy climate with limited access to water sources (see chapter 2.2.1. for further discussion). Occupation of enclosure sites during either of these seasons would suggest the possible need for roofing or at least wind breaks/shelters of some type (see above). Despite these difficulties the rich pasture surrounding areas of seasonal lakes, as well as across plateaus and peaks of higher ground are visible even today, with vegetation within these areas during the late winter and spring being lush and plentiful (see figure 7.7). The use of these enclosures for the sheltering and grazing of animal herds is highly probable. Their association, in some cases (see Chapter 6.3.2.), with small seasonal pools/lakes, would have facilitated the watering of animals. In addition, their distance from seasonal *wadis* and valley bottoms, presumably being used for agriculture, would have prevented herds from damaging and destroying crops during periods of sowing and germination. As such, we can suggest a multi-focal subsistence strategy which was designed to exploit every advantage offered by this landscape. Across the basalt different potentials for both agricultural and pastoral production are present. In order to fully exploit these opportunities groups would have had to adapt to a variety of subsistence strategies involving animal herding, as well as cereal and possibly even tree crop cultivation. The ability to remove grazing animal herds from areas of cultivation during the months in which crops were being sown and germinating (late winter and spring) would have been very important. Indeed, these phases would have corresponded with the months of lush vegetation in areas of pasture. It is thus possible to suggest a strategy whereby animal herds were removed from lowland valley areas during the winter-spring months, returning following the harvest to exploit the stubble and fodder crops during the Late Summer-Autumn. Storage of fodder for animals would have mediated against the decline in grazing land during the early summer, possibly allowing animals to stay within the areas of enclosures for a few weeks longer, until crops were fully harvested and stored for the following year. Evidence from other regions for the domestication of the donkey (see chapter 9.4.), as well as the use of such animals as beasts of burden, would have greatly facilitated the movement of goods such as food, water, tools, building materials, fodder and of course ceramic jars to provide dry-storage for those members of the community who were using the grouped enclosure sites as part of a seasonal herding strategy. Moreover by the 4th millennium BC we can also envisage a system whereby animal products, such as wool and milk products [both un-processed and processed (cheese, yoghurt) milk products are referred to in texts dating to the 3rd millennium BC (Szarzyńska, 2002: 25) and see chapter 9.4. for further references and discussion] may have been periodically transported to sites within the valley bottoms, with groups on the return journey bringing additional cereal provisions to enclosures if necessary. Given the lack of evidence for storage facilities at enclosures sites, as well as difficulties of digging features such as silos within the hard basalt soils, it is possible that, akin to sites within the Jaulan (see chapter 8.3.2.), ceramic vessels (i.e. holemouths) were being used. The predominance of holemouths at both tell and enclosure sites, as well as the range in size of vessels (see Appendix 5.5-7) would indicate their use for a wider range of tasks including cooking, consumption and storage.

Figure 7.7. 'Lush' vegetation in the Homs Basalt during Spring 2007

Modern pastoralists and shepherds in areas such as the Levant and India shear sheep flocks twice a year (Kavoori, 1999: 116-7, Ryder, 1983: 165, 220, 226, 275); once in the early spring/summer to remove the white soft textured coat developed during the winter and once in late summer/autumn to remove the discoloured summer grown wool (Ryder, 1983: 275). This sequence of seasonal shearing would fit well with patterns of mobility between the enclosure sites. The first shearing, to remove the winter grown wool, could have been carried out during the late spring, prior to the herding of animals into the lowland valleys. The second shearing would then have taken place at the lowland sites in the late autumn, prior to the flocks once again being taken to winter pasture. This is just one scenario, however, and as the ethnographic data suggests subtle variations can exist with some members of the flock not being sheared at all whilst others, dependent on their age i.e. sheep or lambs, may have be shorn either later or earlier in the seasonal cycle (Ryder, 1983: 220, 316).

Demographically stable herd sizes are above that which can be supported by a single family group (e.g. Robb, 2007: 40). Moreover, given the difficulties and challenges presented by exploiting this region, it could be suggested that full scale investment only becomes viable once cultivation and grazing practices are occurring at a community level. This approach would have facilitated the demographic stability of herds, whilst also facilitating flexibility. As will be discussed in Chapter 9 the ability to be flexible within subsistence practices is pivotal for the successful exploitation of sub-optimal regions. Thus, whilst conditions in one year may lead to a particularly productive harvest or an increased milk yield requiring more people to be involved in these activities, other years may lead to a much smaller harvest requiring less human input. With this in mind I would argue that groups engaged in subsistence strategies in the *Wa'ar* during the 4th-3rd millennia BC can be seen neither as pastoralist or agriculturalists. Instead, society would have had the flexibility to exploit different opportunities as they arose. This flexibility would have operated at the communal level. Whilst individual groups may have been involved in specific practices season to season, the ability for larger conglomerations of population to aid in certain events, such as harvests, would have been facilitated by a communal approach towards subsistence.

7.1.2.3. Conceptualisation and interpretation

How then were these enclosures conceptualised by the populations using them? One of the key issues is clearly not whether we, as archaeologists, view these settlements as permanent/seasonal, but is instead how the populations dwelling within these structures viewed them (see chapter 9 for further discussion). If the above hypotheses are correct, the seasonal use of these enclosure sites is indicated. However, the occupation by certain members of the population on a year round basis, either through choice, the need to maintain structures or in order to maintain access/control to areas of pasture is possible. Furthermore, even if these sites are only being used seasonally concepts of permanency and history may still have existed (see chapters 8 and 9 for further discussion). Excavation, GPS survey and surface collection have, in some cases, suggested a chronological/spatial relationship between cairns and enclosures (Appendix 5.3 and chapter 6.3B). In the Jaulan, the construction of burial monuments within domestic buildings has been interpreted as a post-abandonment phase [e.g. Rasm Harbush (Figure 3.9) and see chapter 9.6]; however, this can be debated. A study of LBK houses by Bradley (1998: 46) has suggested that parallels can be seen between the abandonment of such buildings and the construction of long barrows within the region. Rather than distinguishing between domestic and ritual spheres, he suggests that structures changed their role within society i.e. from a lived in dwelling to a burial locale. As such, within a single settlement, structures may be used as living units in some cases, whilst acting as burial monuments in others. Thus, the line between the living and the deceased cannot be easily distinguished. Whilst we have to be careful not to apply theory and concepts developed within western prehistory directly to Near Eastern contexts, this example highlights the potential for structures across sites to be used for different functions and for burials to be integrated into buildings whilst they are still being used by the living. Traditions of under the floor burials, as well as the integration of the dead into monumental buildings can be seen widely within the Near East (see Chapter 9.6 for further discussion). This interpretation offers a way in which the longevity of occupation at enclosure sites could have been expressed. If these enclosures were only being used seasonally, the ability to materialise and embed a group's claims to such sites and landscapes may have been important. Such opportunities may have been especially important in years of drought and disease when the ability to express and demonstrate rights to resources may have been pivotal.

This section has attempted to illustrate the potential multiplicity of subsistence and dwelling strategies seen across the Homs Basalt during the 4th-3rd millennia BC. Rather than viewing these practices as discrete and dialectic oppositions I have argued that they can be seen as fragments of a communal approach towards subsistence, aimed at fully exploiting the diverse and seasonal nature of resources across this landscape. Prior to turning to a wider discussion of monumental architecture and cairn structures in this landscape, I wish to briefly turn to notions of material representation and the expression of identity that can be seen within this region.

7.2. Identity and Materiality: Practices of dwelling in a sub-optimal landscape

As outlined in chapter 5.2 the material culture of the NSA is limited in both size and variety. The below represents an analysis of data presented in this chapter. The majority can also be found in a recent Levant publication (Philip and Bradbury, 2010).

The Homs NSA chipped stone assemblage is in the process of being published and material collected by this author has received only preliminary study. As such, no definitive or detailed remarks will be made here. However, several findings should be noted. Firstly, the chipped stone assemblages in the NSA, similarly to other material do not represent a general 'background noise'. One of the largest assemblages (PPNA/PPNB) from this area has been found in association with the large seasonal lake of Ram Shaykh Hanifa. In addition, the discovery of PPNB/PN lithics at a number of 'enclosure' sites such as SHR 666 (see 6.3B for further examples) suggests that several of these locales may have been occupied and re-occupied over a long period of time. Due to the absence of naturally outcropping flint in the basalt, raw materials/blanks or finished artefacts would have had to have been brought into this region. This may have occurred either via the erosion of nearby sedimentary terraces, with material being washed into the area via wadis, or by anthropogenic means. The lower proportion of cortex found in the chipped stone assemblages of the North, in comparison with those of the SHR southern study region (Pirie, 2008), may suggest the latter, with partially worked or finished artefacts/cores being brought into this region. Several fragments of obsidian have also been found within the NSA (Figure 5.58) and indicate the connection of this area into wider material networks (see chapter 9.5.).

Basalt-tempered pottery is predominant in the NSA and is most probably a local product. Given the ubiquity of holemouth jar forms (see chapter 5.2 and Appendix 5.7), it is arguable that these vessels were being used for a wide variety of functions, including storage, consumption, as well as cooking. The use of globular holemouths as cooking vessels has been suggested across many regions (e.g. Greenberg, 2006). The lack of bases from the Homs NSA, suggests that rather than flat based examples, round based/globular forms were predominant. In addition, there does appear to be a preliminary correspondence between holemouth vessels and Fabric 1 types (see Chapter 5.2 and Figure 5.57). The specific attributes of the different basalt fabrics for cooking are not apparent and larger assemblages and experiments would be required before any full interpretations could be made. However, the rough tempering and often thick walled forms seen in association with Fabric 1 would potentially be conducive to long-term use for cooking. Fabric 5 [see chapter 5.2; Figure 5.56 and (Philip and Bradbury 2010: 155), closely resembles Fabric C in the Trench VIII sequence at Tell Nebi Mend (Mathias, 2000: 419) and is associated with a range of different forms (see Figure 5.57). In contrast to the southern orientation of the holemouth tradition of the NSA, the presence of this fabric appears to represent a local manifestation of the chaff-tempered tradition characteristic of Amuq F (Philip and Bradbury 2010), linking the Homs Basalt into wider material networks dating to the 5th-4th millennia BC.

No published Chalco-EB ceramic assemblages exist from areas immediately to the north, west and south of the NSA. The closest excavated comparison comes from Trench VIII at Tell Nebi Mend (Mathias 2000). However, the holemouth form is not seen at this site (Campbell *et al.*, 2003; pers comm. Campbell 2010; pers comm. Kennedy 2010, Mathias, 2000, Mathias and Parr, 1989), nor have examples been identified from surface collections undertaken by the SHR project at sites in the marl zone to the east of the Orontes. Northern analogies for this form can be found from the Amuq (Braidwood and Braidwood, 1960: 235-6, Figure 176, 1-4), where they are noted as being infrequent. Phase K at Hama has also yielded a number of examples [Shape VI (Thuesen, 1988: 118, Figure 59)], although here they are “uncharacteristic”. Holemouth cooking pots, in this case with a ridged rim, are documented at Tell Afis, where they are believed to be of EB IV date (Mazzoni and Gianessi, 1998: 31, Figure 16.7-8). Holemouth jars, in contrast, are one of the most distinctive features of 4th and 3rd millennia BC ceramic assemblages from the southern Levant. In this region holemouth vessels are found in Late Neolithic and early Chalcolithic deposits (e.g. Lovell, 2001: 112, 115, 132-7, Figures 4.4-5, 4.14-16). They are also found in substantial quantities in EBA contexts [see chapter 9.5 for further discussion of this form: EB I and II Jordan Valley (Fischer, 2008: 281-4); EB III in west-central Jordan (Harrison, 2000: 355, Figure 19.6) and EBA southern Syria (Braemer *et al.,* 2004, 298, Figures 546-550) and the Beq’a Valley (Marfoe, 1995: Figure 45, 46.4, 6)]. Jars with a simple everted rim have also been found within the NSA and have parallels from Trench VIII at Tell Nebi Mend (e.g. Mathias, 2000: 419, Figure 23.2. 1-8). Everted-rim jars are also well-documented in Late Chalcolithic Level 18 at Tell Afis (Mazzoni and Giannessi 1998: 17, Figures 4-5), which they view as broadly equivalent to Amuq F (Mazzoni and Giannessi 1998: 23-25, Table 19). Perhaps the two most striking findings from this region are the limited range of vessel-forms and apparent lack of material contact with the neighbouring marls. This might suggest that the vessel forms present in the NSA were being used for a wide range of functions.

Various researchers have stressed the role of material culture and food products in shaping and marking socio-cultural identity and societal groupings [(e.g. Whincop, 2010) and further references therein]. Jurney and Perttula (1995) argue that whilst vessels used within specialised consumptive practices (see chapter 9.5 for further discussion) may indicate certain traditions of society and identity, it is everyday vessels utilised for cooking and food preparation rather than consumption activities that hold a particular role in the marking out of specific socio-cultural groupings. The latter are embedded within traditional processes of food preparation, which is in turn linked with gender and societal roles (e.g. Jurney and Perttula, 1995, Killebrew, 1998: 164-5). As such, we can perhaps suggest a situation whereby certain elements of material culture known from neighbouring regions i.e. Fabric 5 wares, were being used for consumption or storage practices. In contrast, vessels involved in cooking traditions (e.g. basalt tempered holemouths) were locally derived. Whether these practices represent a distinctive choice involving the material representation of socio-cultural identity can be debated. Indeed, it may be that rather than a conscious choice, the use of holemouths and particular fabrics for cooking and other practices represents a long-lived social tradition centred on practicality. Indeed, if occupation of this landscape involved, at least some aspect of seasonal movement, the ability to utilise ceramic vessels for a variety of functions would have greatly reduced the volume of vessels which had to be transported. Potentially, due to the very rough hand-made nature of some of the sherds, it may also be that these vessels were being produced on a site-based scale, as and when they were needed.

Bearing this in mind, why and via what mechanisms were chaff tempered fabrics adopted by groups within the *Wa'ar*? It is clear, that either the materials to manufacture these vessels or the vessels themselves would have to be brought into this region. It may be that Fabric 5 vessels were used for specific functions or possibly for the exchange of specific goods. Having said this, preliminary analysis, albeit of a small number of sherds, indicates that this fabric was being used for a range of different vessel forms (see Figure 5.57), possibly negating its use for a specific function. Furthermore, given the lack of other material connections between the *Wa'ar* and Marl the nature of the transmission of this material is difficult to ascertain. One possibility may be associated with the use of the *Wa'ar* for grazing of animals. The exploitation of this landscape during the 20th century by groups from further east, as grazing land, was noted by Na'aman (1951: 46-7). If this was the main utilisation of the landscape during the 4th-3rd millennia BC, with flocks being brought across the river for pasture, a greater material affinity between the Marl and the Basalt would be expected. However, the potential for groups within the *Wa'ar* during good years to have taken extra animals from areas to the east of the Orontes or the Hama region further North is possible (Philip and Bradbury, 2010: 161). As such, it may have been that the chaff tempered wares (or the goods they contained) were offered as payment or possibly exchanged when groups from areas to the south and east of the *Wa'ar* used the area as seasonal grazing land. Whether the relationship between these different areas would have been friendly and reciprocal is difficult to know. Indeed, it may be that one factor involved in the construction of cairns across this landscape can be linked to pressures caused by the utilisation of this region by groups from the Marls, necessitating the demonstration of rights to resources and pasture.

Given the lack of material connections between the basalt and marl regions, into what general network sphere can the *Wa'ar be placed*? The presence of holemouth jars in this region represents one of the most northerly distributions of this form [see Chapter 9.5 and (Philip and Bradbury, 2010) for further discussion]. Possible regional contacts between the *Wa'ar* and areas further south, via the Beqa'a Valley, can be suggested. Indeed, recent investigations at sites in the inland valleys of Northern Palestine (Greenberg, 2006) and the position of these two regions, at opposite ends of the Beqa'a Valley, may indicate possible links between these different areas (Philip and Bradbury, 2010: 161). The Beqa'a Valley was exploited for pastoral migrations during the 20th century (Marfoe, 1998: 146). In addition to the small scale transhumant pastoralism occurring within the *Wa'ar*, larger scale transhumance was possibly occurring to/from this area to regions further south. At present no clear evidence for such practices can be offered. Moreover, local trajectories and patterns of development can be seen in the Homs NSA. As such, whilst the Homs area shows elements of traditions deriving from both north (i.e. chaff tempered fabrics) and south (i.e. holemouths) the way in which these traditions were conceptualised and embedded within everyday society can only be approached through a contextual and localised understanding of the *Wa'ar* landscape and culture.

7.3. Burial, Memorialisation and the role of cairns

As outlined in chapters 3 and 4, the role of cairns within aspects of territory, social appropriation, burial practice and monumentality have been widely discussed within both Near Eastern and European archaeology. However, detailed discussions considering the ways in which their construction and use was shaped by their social context and landscapes have been relatively limited. Furthermore, despite assumptions concerning the predominately 4^{th}-3^{rd} millennia BC dating of the monuments, evidence from the Homs region (Chapter 5), as well as other areas (Chapter 4), suggests that these structures, at least within certain areas, can be seen to have been used over millennia. As such, their utilisation and importance goes beyond the current focus upon the 4^{th}-3^{rd} millennia BC within the *Wa'ar*.

7.3.1. Cairns and monuments as arenas for social negotiation: The case of SHR 362

The Homs cairns (chapter 5) are associated with a variety of features, such as enclosures, wall lines and monoliths (Bradbury, 2010, Bradbury and Philip, in press). Moreover, as the overview of SHR 362 demonstrates (Chapter 6.3A) these monuments are merely one fragment of larger monumental complexes. Similar structures and features have been noted elsewhere in the Levant [(e.g. Conder, 1889: 134, Prag, 1995: 80-1) and further references therein] and despite debates concerning their chronological attribution it is clear that such sites would have acted as important locales for populations dwelling within these regions. This importance is not only centred within the 'ritual' sphere but can also be argued to have had importance within the 'habitual', with structures being used for the creation of social and shared experiences (Bradbury, 2010). The theoretical implications and importance of the presence of adjoining features, such as enclosures where extra-funerary activities may have taken place, have been discussed in various publications (e.g. Chesson, 1999, Chesson, 2003, Schaub and Rast, 1989) as well as in detail in Chapter 9.7. However, in relation to SHR 362, it is worth emphasising several possibilities. The construction of this monument did not occur in a single phase and as such it is clear that each phase would have had the ability to add a new layer of meaning to the structure. Architecture is imbued with the same instabilities as oral history (e.g. Bradbury, 2010, Bradley, 2003: 222-3). SHR 362 would have offered an important locale and structure through which social bonds, traditions and cohesion could be expressed, materialised and even challenged. As researchers have argued, the construction process is an important part in the demonstration and conceptualisation of monumentality or structural practice [(e.g. McFayden, 2005) see section 9.6]. It allows groups to co-operate as well as express differences. Perhaps the differential building techniques that we see throughout the structure were a way of demonstrating such different traditions. Structures also, as discussed in Chapter 4, have the ability to be altered, re-conceptualised and re-built. The presence of cairns built into the wall line, set apart from it in sections and constructed underneath it demonstrates the importance of challenging the static nature of structures. As such, these different phases perhaps offered the opportunity for the representation of new social bonds. Such scenarios are also applicable to the wider distribution of cairns across the *Wa'ar* with the possibly regular appearance of new monuments serving, *inter alia* to alter and reposition existing structures within this landscape. The use of structures to screen, emphasize or alter access to certain vistas is also important and may have played a role within group/social differentiation (ibid.).

Finally, it is important to emphasize the location of SHR 362 (Philip and Bradbury, 2010: 148-150). Rather than considering this monument as placed upon the landscape it instead should be viewed as part of the landscape (see below for further discussion). 362 is located on a plateau, overlooking a major valley system and areas of important resources [see Chapter 6.3.1. (ibid.) for further details]. This monument was embedded within the landscape and vice versa, with elements of its construction being designed to enhance specific vistas at various points around its circumference (Chapter 6.3A). Bearing in mind the multi-focal settlement and subsistence strategies suggested to have been occurring within this region, we can tentatively suggest that this structure played an important role in the articulation of social relations between different groups within society. Such relations would have been expressed, not only through collective gatherings, but also through processes of construction, re-construction and maintenance, as well as through the materiality and monumentality of the structure and landscape itself.

7.3.2. Memorialisation and grounding the past

Evidence from the Homs region suggests that, at least in some cases, cairns may have supported a burial function (see chapter 5.1). This function does not preclude them from having other meanings at the same time. We can suggest that the presence of these monuments, adjoining structures at enclosure sites, represents a practice akin to below floor burials (e.g. Haiman, 1992a: 30), a way of grounding the past, but also memorialising those interred within. Due to the lack of excavation from this region we cannot be sure whether internment involved single inhumations, secondary multiple internments, or complex strategies of both. It would thus be misleading to suggest anything concerning the nature of burial associated with these structures, especially considering their varied associations throughout the Levant (see Chapter 9.6.). Having said this, whether this practice involves an individual, a whole community or dividuals (e.g. Fowler, 2004), the fact that burial and monumentalisation is a tradition available to society suggests the importance of marking out and memorialising either specific individuals, groups or the events themselves. Moreover, the integration of these structures into sites, potentially still occupied by the living, suggests the importance of these practices within daily life. Furthermore, they highlight the fact that death needs to be considered, rather than as a finite event, as one element within the lifecycle of a society.

7.3.3. Territoriality, clearance and non-burial functions

Evidence from the Homs region, as well as ethnographic and historical research (see Chapter 4) indicates that cairns are not only indicative of burial practice, but instead may have a complex role within society, embedded within local traditions and mythologies. Is it possible that many cairns within the Homs region may never have been intended to contain burials? The role of structures for clearance, agricultural practices and route markings is well known throughout the Near East (see chapter 4), although it should be noted that this does not necessarily preclude their use in burial. Indeed, considering the effort which would have been involved in clearing stone from even small fields within the *Wa'ar* the multiple utilisations and meanings of these structures is important to emphasise. Therefore, acts of clearance and construction should perhaps be viewed as part of the same process, with the cairns marking and memorialising the considerable input of labour and/or time which may have been involved in the clearance process. Having said this, no cairns have been found within the valley bottom lands, which presumably represented the best agricultural areas (see chapter 6.1.2.). Limited agriculture may have been practised in the 'upland' regions and would have necessitated some clearance activity. Alongside this such structures may also have been employed as burials, with groups demonstrating claims to tracts of land through both the process of clearance, construction and burial. Such claims should not be viewed as static as clearly it would have been possible for new structures to be built or extant structures to be re-interpreted and re-integrated into different social practices.

The appearance of these structures, concomitant with the first large scale exploitation of the *Wa'ar,* suggests that within this region they may have played a role in territoriality and the need to express control and connections with specific tracts of land in a material way (Philip and Bradbury, 2010: 160). The absence of burial cairns within the lowland valley systems is not necessarily indicative of the fact that such structures were only associated with pastoralism. Instead, it may be that within these regions, maximisation of the land available for cultivation was a prime concern and thus the construction of monuments was not undertaken. Settlements such as SHR 49 and cultivation may have been more relevant and appropriate demonstrations of access and ownership (ibid.). In contrast, in areas of seasonally grazed land, which were possibly un-used for part of the year and had previously been of relatively little resource importance, these structures may have been pivotal demonstrations of rights of access and utilisation.

7.4. Connectivity and Mobility: Why the 4th millennium BC?

Why is it within the 4th-3rd millennia BC that we see these developments occurring within the *Wa'ar*? One way to understand these processes may be through Horden and Purcell's (2000) theories concerning phases of connectivity within the Mediterranean region [(Philip and Bradbury, 2010: 158) and see Chapter 1 for an outline of this theory]. In other words, it is only by considering the *Wa'ar* in relation to the broader socio-cultural/political and economic developments which were taking place during this 4th-3rd millennia BC period that we can fully understand and conceptualise the processes occurring within this region.

Evidence for pre-4th millennium BC activity and occupation within the Homs Basalt is limited and focused around the seasonal lakes and main *wadi* systems (see Chapter 6.3.2.). This suggests that the populations utilising this region had a clear understanding of these seasonal resources and recognised the potential benefits and limitations of such an environment. The nature, scale and intensity of pre-4th millennium BC occupation and activity within the NSA are largely unknown. It is possible that some locales of early activity are obscured by later occupation. However, the evidence appears to indicate a tradition based around the hunting/trapping of animals around the seasonal lakes. The small scale planting/tending of crops and herding of animals is also a possibility (e.g. Avner, 1990a: 128). Moreover, there does appear to be some continuity of occupation in certain areas with sites and locales such as SHR 666 and the seasonal lakes in the region of SHR 63 having been utilised from at least the ceramic Neolithic (see Chapter 6.3.2 and Figure 6.26-8). This evidence appears to indicate that rather than a total departure from earlier land use systems this pulse of development, which can be dated to the 4th-3rd millennia BC, represented an intensification and expansion of activity, possibly facilitated by knowledge already embedded within society. This parallels evidence from regions, such as the Jaulan, Hauran and Negev, which also appear to show an intensification and expansion of activity during these phases (see Chapter 8.1).

What then were the specific developments and factors which enabled this intensification and expansion in the *Wa'ar* during the 4th-3rd millennia BC? It is likely to have been a broad culmination of factors. These will be discussed in more detail at a Levant scale in Chapter 9. Two however, are particularly relevant for this region (Philip and Bradbury, 2010: 160). Firstly, we can suggest that the increasing importance of wool bearing sheep within society and the broader political context of the 4th-3rd millennia BC [see Chapter 9.4 for further discussion and (Breniquet, 2008: 208-219) and further references therein] would have had a profound impact upon this region. This is not to suggest that the *Wa'ar* played a role in the 4th millennium BC 'Uruk' style production of woollen textiles, suggested from iconographic and archaeological evidence during this period (e.g. McCorriston, 1997, Stein, 2002: 152, Figure 15, Vila, 1998: 111-2). Instead, the emergence of wool bearing sheep within areas such as Mesopotamia, illustrated the potential of such developments. It is this potential which was recognised by groups in the Homs Basalts. As indicated by the lithic material, it is clear that this region was already linked into broader networks of contact. We can suggest that an awareness of the potential routes towards to power, status or even economic stability offered by these new developments and practices would have reached this area. This awareness would have encouraged the development of increased herd sizes as well as the maximised utilisation of pasture lands. Given the seasonal variability in the Homs region, it is possible that such practices were not economically viable or sustainable without the cultivation of crops for both human consumption as well as animal fodder. The multi-focal nature of subsistence within the Homs region may have developed in order to mediate this difficulty. Whilst the *Wa'ar* is, in some respects resource rich, these resources are spatially constrained. Thus, the successful cultivation of crops would have necessitated the removal of animal herds from areas under cultivation at certain times in the growing/sowing cycle.

It is in association with this practice that the second key factor, the use of animals as beasts of burden, may have played a pivotal role (Philip and Bradbury, 2010: 160). Evidence for the domestication and use of the donkey and other equids by at least the 4th millennium BC is known from iconographic and archaeological evidence [see chapter 9.4 and (Grigson, 2006: 224, 233, Vila, 1998: 46) both with further references]. The necessity of removing herds to seasonal pastures at certain points during the year would have been greatly facilitated by the ability to transport goods, such as fodder, water and ceramic vessels for cooking, dry-storage and consumption. Given the stony nature of this landscape, movement of such items without the use of animals would have extremely time consuming and labour intensive. Moreover, the ability to store goods for use by groups tending/herding animals within ceramic vessels would have increased the length of time and number of individuals (both human and animal) who could have remained within areas of pasture. Such abilities would have enabled demographically stable herds to be maintained within these regions, reducing the potential risks of drought, famine and years of disease. Such a strategy would have been an altogether more economically viable situation than previously available to groups within the *Wa'ar*.

A final factor is the role of human labour and societal organisation. Arguments concerning the nature of social organisation during the 4th-3rd millennia BC period will be outlined in more detail in chapter 9.2. Based on the material assemblages from surface collection, which show remarkable homogeneity across sites, there appears to be little evidence for social differentiation and status during the Chalcolithic-EB in this area. This, of course, may suggest that status was merely being articulated through elements which cannot be seen archaeologically or at least without excavation i.e. via animal herds. Indeed, given the above discussions concerning the ability for herds to be used as routes to power and status this is a likely scenario. However, equally possible is that social order during this period was heterachically organised [see chapter 9.2. for further discussion (e.g. Chesson and Philip, 2003)]. This is not to say that differentiation and social status were not present, but instead that they were largely embedded within a communal/group identity. Herds may have been communally held and grazed, with different segments of the same population being involved in different subsistence practices at different times of year. Such a system would have facilitated the full exploitation of the *Wa'ar,* allowing populations to alter and focus on different subsistence strands based on the seasonality or yearly cycles present within the region. Moreover, the ability for part of the population to be a 'floating' component at different times of years would have allowed certain activities, which needed more or less labour, to have taken place. In particular, the construction of cairn monuments and sites, such as SHR 362, would have been facilitated by such a 'floating' population. This scenario might suggest that communities had a group character, with individual identities associated with specific occupations being less apparent. For example, a person who at one point during the year may have been involved in the transport of animal herds to pasture may have, at another stage, been involved in cairn construction whilst aiding in the harvest at another time. If such a society was present the utilisation of sites, such as SHR 362, for communal gathering practices would have been of particular relevance.

7.5. Beyond the 4th-3rd millennia BC

There is no unequivocal evidence from this region to suggest widespread occupation in the latter half of the 3rd millennium BC. Sherds dating to this period have been identified from SHR 49 (see Appendix 5.5-6). However, at present the evidence would suggest that occupation during this period declined substantially and does not bear any similarity to the intensity and variability of activity in the 4th-early 3rd millennia BC. Two possibilities exist. Firstly, it may be that the nature of raw materials in this region prevented easily recognisable and chronologically diagnostic pottery from being manufactured. As such, perhaps we are dealing with a period when large scale continuity in material practice can be seen. Having said this, given the presence of EB IV-MBA material from the tells to the east of the Orontes and eastern steppe, it might be expected that akin to the presence of chaff tempered material known in the *Wa'ar*, during the 4th-early 3rd millennia BC, some material parallels or connections might be present. This brings us to an alternative hypothesis, one whereby this region was either abandoned or suffered from a significant decline in occupation and utilisation during the late 3rd millennium BC. This latter hypothesis perhaps fits with evidence from the wider region. During EB IV expansion into the eastern steppe is clear via the presence of sites such as Al-Rawda [see chapter 9.3.3.3. for further discussion (e.g. Castel, 2007, Castel *et al.*, 2005, Castel *et al.*, 2004, Castel and Peltenburg, 2007, Geyer *et al.*, 2007). Textual evidence from the 3rd-2nd millennia BC emphasizes the role of such regions in long-distance pastoralism (e.g. Matthews, 2002: 43-4). Moreover, it is apparent that the growth of early states such as, Mari (e.g. Anbar, 1991, Charpin and Durand, 1986, Matthews, 2002) and Ebla (e.g. Archi, 1991, Mazzoni, 1991) would have had a potentially profound impact on earlier material networks and patterns of subsistence. As such, Horden and Purcell's (2000) arguments concerning 'connectivity' can be seen as equally relevant for a consideration of why settlement and activity within the Homs Basalt appears to have declined during the late 3rd-2nd millennia BC. The subsistence practices developing within this period appear to be of a completely different nature and scale to those indicated by the evidence from the 4th-3rd millennia BC *Wa'ar* [(e.g. Sallaberger, 2007, Wossink, 2009: 10) and see chapter 9.4. for further details]. Rather than encouraging a communally organised multi-resource subsistence strategy, this period appears to have emphasized a movement towards status, power and individualisation. Thus, it may have been that the strategies which had previously been employed within the *Wa'ar* were no longer economically viable when compared with the large-scale movement of herds across the eastern steppe edges. Moreover, wider socio-cultural developments, emphasizing the role and centrality of the individual, may have rendered the communal strategies developed in relation to the *Wa'ar* redundant and unviable. The abandonment or decline of activity within the Homs Basalt during this phase is perhaps part of wider social changes which were occurring across the Levant during this period. Such changes may have led to an increasing focus upon a hierarchically organised society of aggrandising individuals, as opposed to the heterarchical flexibility of community suggested for this region during the 4th-3rd millennia BC (see Chapter 9 for further discussion).

A footnote to this discussion should add that the next 'pulse' of activity within the Homs NSA appeared within the Roman-Byzantine period (Newson *et al.*, 2008-9) and was characterised by stone-built villages, cereal-based economies, as well as the tending and cultivation of cash crops, such as olives. This 'pulse' is clearly very different from the first peak of activity identified in this region during the 4th-3rd millennia BC. However, it again can be found to have its basis within the context of wider Graeco-Roman socio-political and economic developments (Philip and Bradbury, 2010: 141). This process, however, is a story for another thesis at another time.

7.6. Summary and Conclusions

This chapter has outlined one way in which to interpret the 4th-3rd millennia BC within the Homs Basalt. It does not claim to be the definitive statement. It has argued that regions, such as the *Wa'ar*, can only be understood in broader reference to wider social/political/economic contexts. It has also highlighted the need for a detailed understanding of the study area in question, in order to facilitate the interpretation of developments within their broader regional context. Before turning to a broader Levant wide discussion of the themes outlined in this chapter, I will review current evidence from the three other main case study areas; the Hauran, Jaulan and Negev. The areas will help to illustrate that, whilst the Homs NSA is not unique, it does represent a localised and distinct region of study. As such, whilst the broad themes, methods of analysis and interpretations are applicable across a much wider area, the details are not. The possible theoretical and social implications of this will be presented in Chapter 9.

VOLUME TWO

SECTION 4: INTERPRETING THE SUB-OPTIMAL: THE HOMS NSA AS A MODEL FOR THE 4TH-3RD MILLENNIA BC LEVANT

CHAPTER 8: CHRONOLOGY, MORPHOLOGY AND INTERPRETATION: THE HAURAN, JAULAN AND NEGEV IN THE 4TH-3RD MILLENNIUM BC

CHAPTER 10: 'LANDSCAPES OF BURIAL?' FUTURE RESEARCH IN SUB-OPTIMAL LANDSCAPES

CHAPTER 8: CHRONOLOGY, MORPHOLOGY AND INTERPRETATION: THE HAURAN, JAULAN AND NEGEV IN THE 4TH-3RD MILLENNIUM BC

Introduction

The aim of this chapter is the production of a synthesis, examining the nature of settlement, architecture and material culture during the 4th-3rd millennia BC in the chosen case study areas of the Hauran, Jaulan and Negev (see chapter 2 for discussion of geology, environment and climate). Evidence from the main study area of Homs, Syria has already been presented in chapters 5-7. This chapter is primarily descriptive in nature and is designed to familiarise the reader with current evidence and interpretations of other 'sub-optimal' zones (see chapter 1 for definitions) within the Levant. It should also be noted that a general discussion of the stone burial monuments found in these three regions can be found in Chapter 3.1-2. These chapters shall be used alongside the discussions in chapters 5-7 in order to produce a contextual overview of evidence for societies within sub-optimal zones of the Levant during the 4th-3rd millennia BC in Chapter 9. As with any attempt at the formulation of a synthesis, this chapter's success is closely dependent upon the variety of approaches, as well as differential levels of investigation which have taken place in the three study areas. For example, whilst some studies have used a variety of absolute dating methods to suggest detailed chronological attributions for the material being discussed (i.e. EB I, c.3500-3000 cal BC), others have been more restrained in their chronological interpretation and thus, discussion has had to remain more generalised (i.e. 4th-3rd millennia BC).

An additional challenge is the contrasting dating methods that have been used, both absolute and relative, as well as the different terminologies used for the same absolute time period. This is particularly the case when dealing with the period designated, in different regions, as Early Bronze Age IV and Intermediate Bronze Age/Middle Bronze I period [(Braemer, 2002 (EB IV), Finkelstein, 1995 (IBA)) c.2500-1900 BC and see Table 8.1]. In order to reduce potential confusion, I will be employing the term Early Bronze IV (EB IV) to designate the period spanning c.2500-1900 BC. Where present, the absolute dates or date ranges for sites will be included alongside period attributions within the text. In addition, Appendix 8.1 presents a summary of the radiocarbon dates available for sites mentioned within the text. All of these dates are presented in their original BP format, their calibrated BC format (as presented by the original investigators, in addition to an Oxcal calibration [Oxcal 4.1, curve IntCal 04 (https://c14.arch.ox.ac.uk/oxcal/OxCal.html, Accessed July 2010)], run by the current author upon all of the original BP format dates where available.

<table>
<tr><th>Dates BC</th><th>Northern Syria</th><th>Central Syria</th><th>Southern Levant</th><th>Southern Deserts</th><th>Revised Desert Chronologies</th></tr>
<tr><td>4600</td><td rowspan="3">Terminal Late Ubaid</td><td rowspan="9">Chalcolithic (Syrian Terminal Ubaid)</td><td rowspan="10">Chalcolithic (Ghassulian and Beersheva pottery sequences)</td><td rowspan="3">Wadi Raba/Qatifian/ Timnian</td><td rowspan="5">Early Timnian</td></tr>
<tr><td>4500</td></tr>
<tr><td>4400</td></tr>
<tr><td>4300</td><td rowspan="4">Local Chalcolithic 1 (Hammam et Turkman VA)</td><td rowspan="8">Chalcolithic</td></tr>
<tr><td>4200</td></tr>
<tr><td>4100</td><td rowspan="10">Middle Timnian</td></tr>
<tr><td>4000</td></tr>
<tr><td>3900</td><td rowspan="3">Local Chalcolithic 3 (Hammam et Turkman VB)</td></tr>
<tr><td>3800</td></tr>
<tr><td>3700</td><td rowspan="7">EB I</td></tr>
<tr><td>3600</td><td rowspan="2">Local Chalcolithic 4 (Qraya)</td><td rowspan="6">EB I</td></tr>
<tr><td>3400</td><td rowspan="5">EB I</td></tr>
<tr><td>3300</td><td rowspan="5">Local Chalcolithic 5 (Habuba Kabira and Jebel Aruda)</td></tr>
<tr><td>3200</td></tr>
<tr><td>3100</td></tr>
<tr><td>3000</td><td rowspan="8">Late Timnian</td></tr>
<tr><td>2900</td><td rowspan="3">EB II</td><td rowspan="3">EB II</td><td rowspan="4">EB II</td></tr>
<tr><td>2800</td><td rowspan="4">Ninevite V</td></tr>
<tr><td>2700</td></tr>
<tr><td>2600</td><td rowspan="2">EB III</td><td rowspan="2">EB III</td></tr>
<tr><td>2500</td><td rowspan="3">EB III</td></tr>
<tr><td>2400</td><td rowspan="2">EB III</td><td rowspan="2">EB IVA</td><td rowspan="2">EB IV</td></tr>
<tr><td>2300</td></tr>
</table>

2200	*Akkad EB IV*				
2100	*Post-Akkad*	*EB IV B*		EB IV	
2000	*Ur III*				*Terminal Timnian*
1900	*Isin-Larsa*	*MB I*	*MB IIA*	*MB I*	

Table 8.1. Table based on comparative chronologies from the different regions (after Avner and Carmi, 2001, Braemer, 2002, Rosen, in press, Rosen, 2002a: 37, Rothman, 2001: Table 1.1., Rutter and Philip, 2008)

8.1. Settling Sub-optimal landscapes: Patterns of settlement distribution in the 4th-3rd millennia BC

Investigations over the past few decades within sub-optimal regions have revealed complex systems of ‘urban’, permanent and semi-permanent style occupations, dating to the Chalcolithic and Early Bronze Age (e.g. Braemer *et al.*, 2004, Cohen, 1999, Epstein, 1998, 2003, Rosen, 2002a). On the basis of this work Braemer (1997: 13) and others have suggested that there appear to be three main pulses of prehistoric sedentary occupation within regions such as the Hauran. These have been dated to the Chalcolithic, EB I-II and EB IV-MBA periods and are interpreted as representative of agglomerations of population into villages, a concept which is now beginning to be considered in relation to the Jaulan. In addition, whilst the occupation of areas further east by dry-land settlement systems, akin to those seen in the Roman and later periods (e.g. Newson, 2000: 88) cannot be ruled out, it does appear that the majority of permanent settlements within these regions focused around *wadis*, with early water management systems developing to facilitate access to this resource (Braemer *et al.*, 2004: 247-260, Newson, 2000: 88). In contrast to this, research within the Negev has emphasized the intensification of settlement during EB II and IV. Prior to EB II, settlement within this region is interpreted as sparse and ephemeral in nature (critiqued by Avner and Carmi, 2001: 1203). These theories are now beginning to be challenged (e.g. Avner and Carmi, 2001) and new patterns of settlement are emerging suggesting that this region was part of a complex network of interaction during the 4th-3rd millennia BC (e.g. Adams, 2002). Moreover, the continuity of occupation in areas such as the Hauran from the Neolithic to Classical periods (e.g. Newson, 2000: 88) may suggest that particular locales were being chosen for their economic, social and environmental opportunities.

8.1.1. Settlement densities and patterns of occupation within the Basalt landscapes of the Hauran and Jaulan

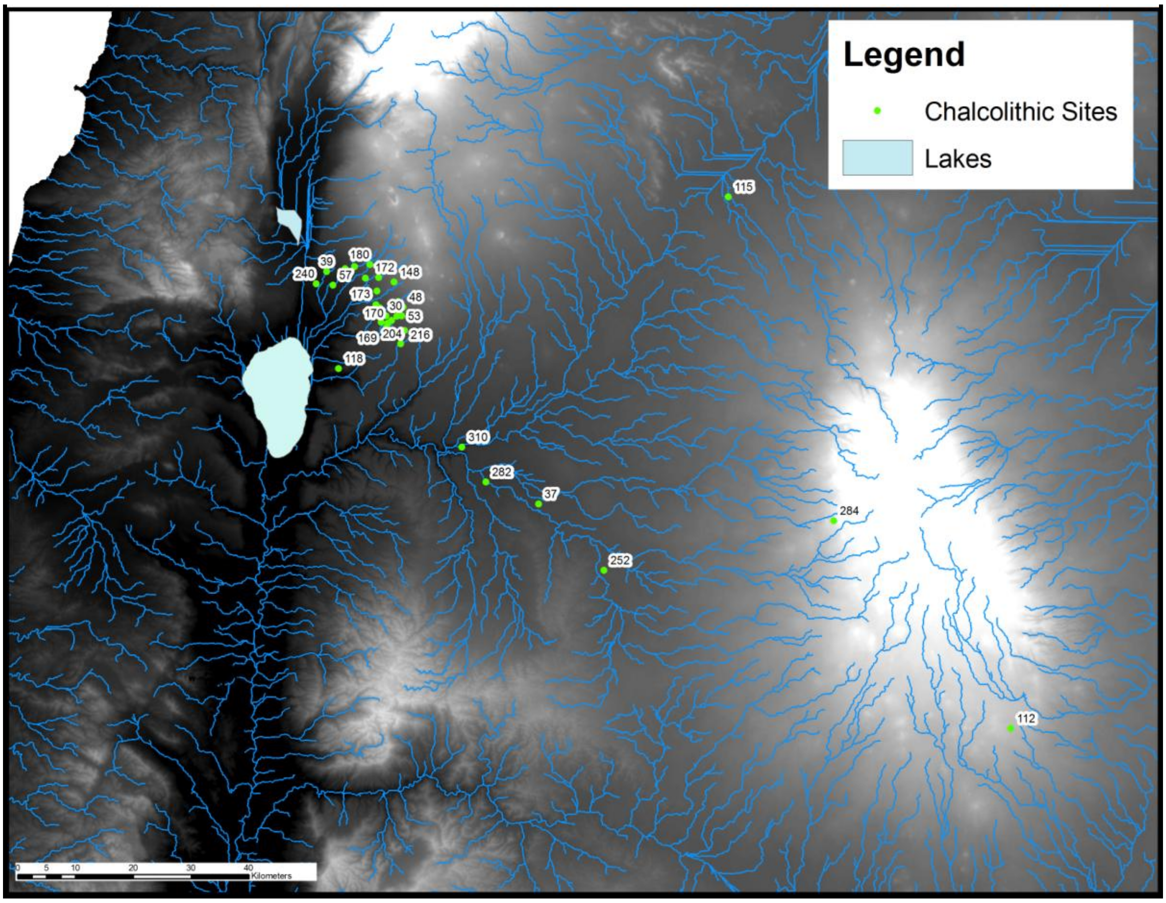


Figure 8.1. Distribution of Chalcolithic settlement/activity locales in the Jaulan and Hauran [(after Al-Maqdissi and Braemer, 2006, Braemer, 1984, 1988, 1993, Braemer et al., 2004, Dauphin and Gibson, 1992, Epstein, 1972, 1973, 1987, 1998, Epstein and Gutman, 1972, Gal, 1988, Mizrachi et al., 1996, Vinitzky, 1992) and see Appendix 8.1. for further details]

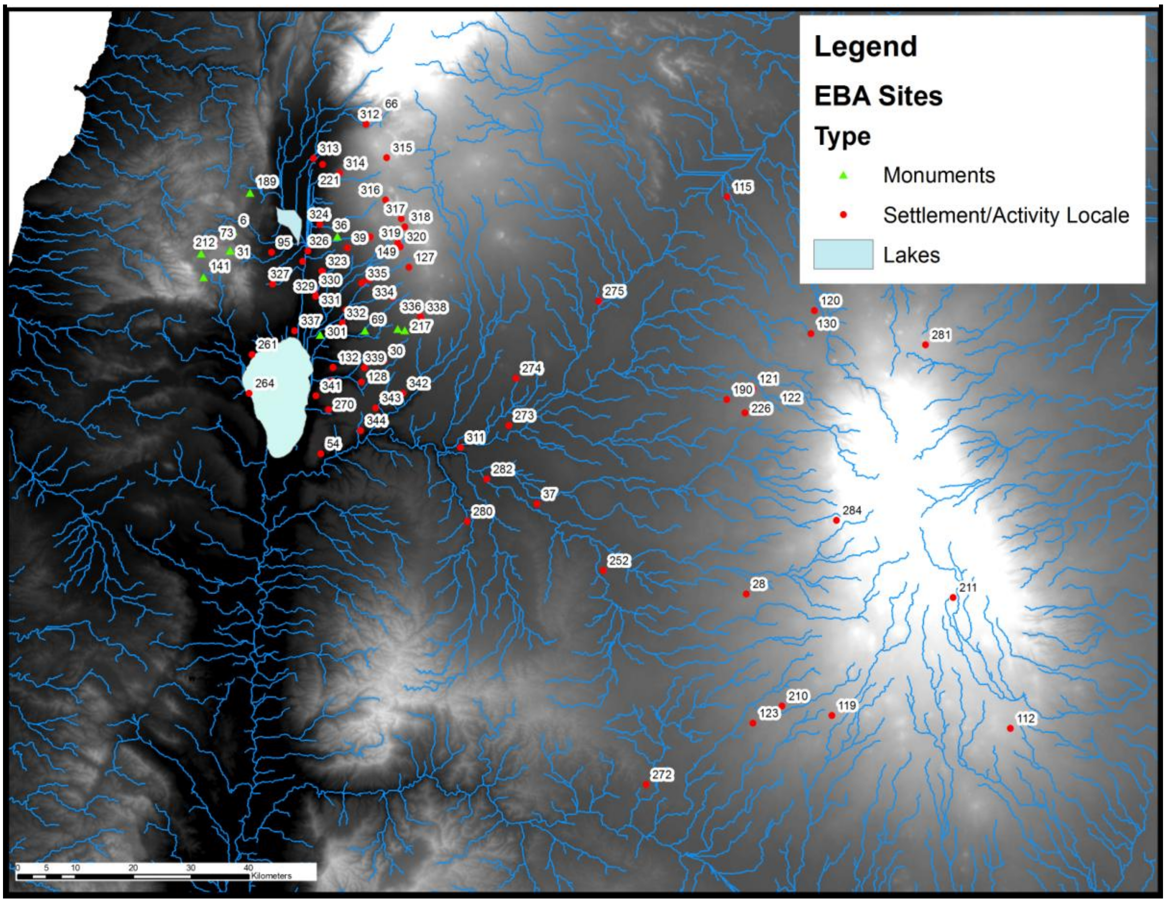


Figure 8.2. Distribution EBA (I-IV) settlement/activity locales in the Jaulan and Hauran [(after Al-Maqdissi and Braemer, 2006, Braemer, 1984, 1988, 1993, Braemer et al., 2004, Dauphin and Gibson, 1992, Epstein, 1972, 1973, 1987, 1998, Epstein and Gutman, 1972, Gal, 1988, Mizrachi et al., 1996, Vinitzky, 1992) and see Appendix 8.1. for further details]

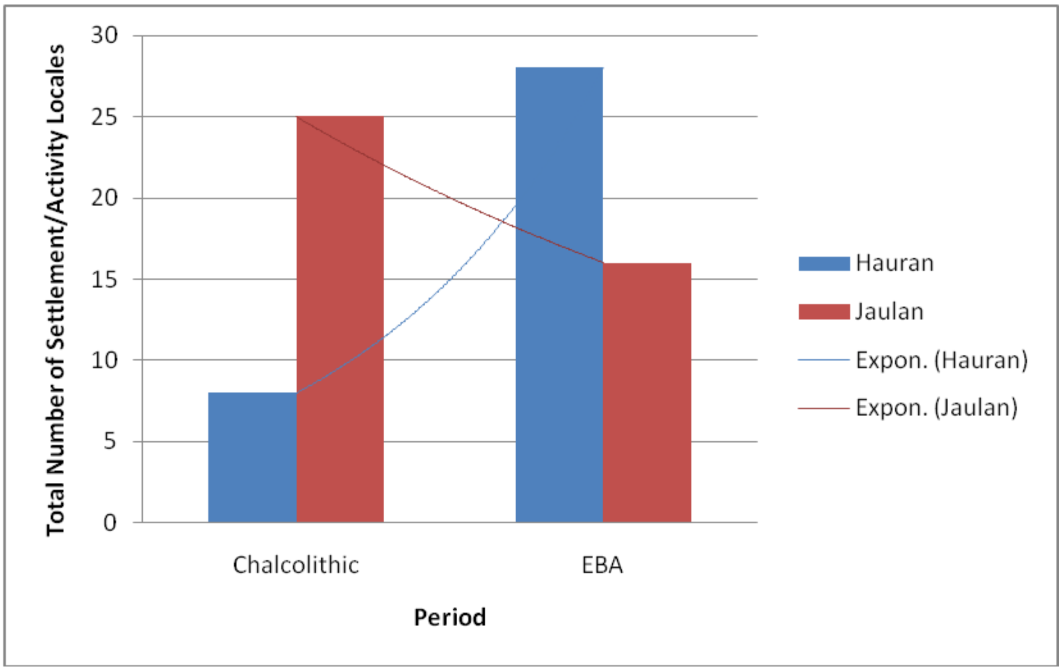


Figure 8.3. Graph of settlement densities in the Jaulan and Hauran from the Chalcolithic-EB IV (See Appendix 8.1 for calculations and references)

Over the past few decades the Hauran and Jaulan have benefited from research, facilitating the mapping and investigation of a broad range of sites dating to the 5th-3rd millennia BC [see Figures 8.1-3 (e.g. Al-Maqdissi and Braemer, 2006, Braemer, 1984, 1988, 1993, Braemer *et al.*, 2004, Dauphin and Gibson, 1992, Epstein, 1972, 1973, 1987, 1998, Epstein and Gutman, 1972, Gal, 1988, Mizrachi *et al.*, 1996, Vinitzky, 1992)]. However, despite this wealth of information, the majority of research has had clearly focused agendas in terms of either site or period investigation (e.g. Braemer *et al.*, 2004, Epstein, 1998). As such, there are gaps in our knowledge. Within the Jaulan, investigations of Chalcolithic activity has focused upon settlements (e.g. Epstein, 1998), whilst, consideration of Early Bronze Age (EBA) utilisation of the landscape has been dominated by dolmen studies [Figure 8.4 (e.g. Epstein, 1985a, Vinitzky, 1992)]. Many of these structures have been dated to the EBA solely via typological comparison with those few, which have been found to stratigraphically post-date Chalcolithic structures (see chapter 8.3.1.). Moreover, the nature i.e. settlement vs. dolmen cluster, of many sites dating to this period are currently un-recorded. As such, whilst maps of EBA sites can be produced the details often remain obscure [e.g. note the large number of un-named sites mapped by Vinitzky (1992: Figure 1) as EBA sites without further corresponding information

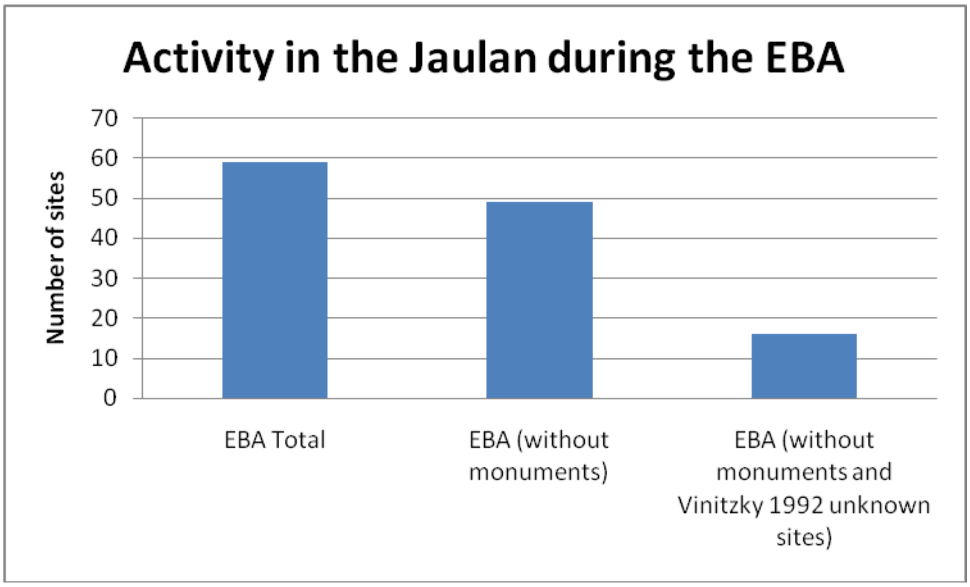


Figure 8.4. Site numbers in the Jaulan (Braemer, 1984, 2002, Braemer et al., 2004, Epstein, 1978, 1985a, 1998, Vinitzky, 1992: 103, Figure 1). EBA (Total) includes both dated dolmen clusters, Vinitzky's un-named EBA sites and dated and named settlement locales. As can be seen the dolmens and un-named sites substantially increase the evidence for activity within the region during this period.

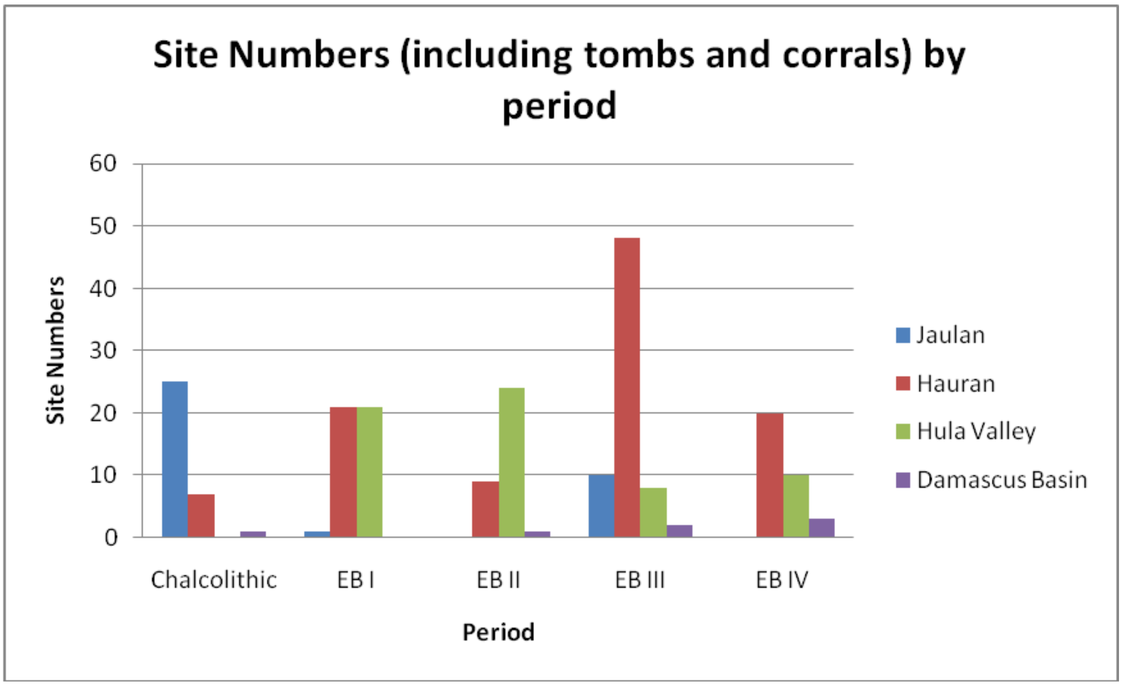


Figure 8.5. Site numbers in the Jaulan, Hauran, Damascus Basin and Hula Valley regions [(after Braemer, in press, Epstein, 1998, Greenberg, 2002) and see Appendix 8.1 for calculation tables and maps]

Comparisons against settlement patterns within the Hula Valley and Damascus Basin (Figures 8.5) further highlight this potential bias within our understanding of past densities of occupation within these regions. A full synthesis for Chalcolithic occupation within the Hula Valley does not currently exist; with Greenberg (2002) suggesting that the first major activity within this region can be dated to the EBA. Having said this, Greenberg (2002) does suggest that sedimentation may have led to the obscuring of earlier remains. Moreover, as the site of Tell Teo demonstrates, evidence for pre-EBA activity and occupation is present within the region (Eisenberg *et al.*, 2001). As Figure 8.5 shows, clear divergence can be seen between the numbers of sites within the Hauran, Jaulan, Damascus Basin and Hula Valley during EB I-IV. The trends shown by these patterns of settlement are also different. On the basis of this evidence it is important to question to what extent patterns are genuine, rather than the result of intense versus minimal survey. For example the Damascus Basin has benefited from relatively little survey and thus, as Figure 8.5 shows, has very few known and dated sites. Intensive survey is still needed across many areas of central and southern Syria. Work being carried out by researchers at CNRS is beginning to address these problems (pers comm. Braemer 2010), although the findings as yet remain unpublished. Moreover, it remains unclear how the differing research emphases (e.g. site and period vs. total survey) have influenced these patterns. Given their geographical proximity we also have to question the extent to which settlement densities within one region may have had an impact on the other. Bearing in mind arguments for the presence of mobile groups during the 4th-3rd millennia BC (e.g. Aveni and Mizrachi, 1998: 475, Braemer *et al.*, 2004: 282), mobility and interaction may have influenced densities of settlement in these different areas. Thus, one of the key questions to emerge from such analysis, is how we, as researchers, can define our units of settlement patterns and density reconstruction?

Current work being undertaken by Braemer (in press) is now beginning to address some of these issues, facilitating the discussion of patterns of settlement over the longue dureé across different environmental regions. Having said this, Braemer's approach is based on an analysis which takes a broad-scale view of settlement patterns, assuming that regions, such as the Hauran and Jaulan, were closely connected during the 4th-3rd millennia BC. In a geographical sense these regions can be seen as part of basalt flows stretching across southern Syria (Chorowicz *et al.*, 2005: Figure 1). However, as will be highlighted in sections 8.2-3, these two regions and others surrounding them cannot be seen as carbon copies of one another. Indeed, it is highly likely that the settlement patterns across these regions were influenced by different tempos of development and decline. In other words, whilst settlement in one region may have been booming, occupation within another may have been in decline. Such relationships should not be considered as showing evidence of direct causality, for example, as settlement in one region declined, another started to increase. Instead, both emic and etic factors of settlement decline and growth need to be considered. Whether this is even possible at this point, given the research and survey bias discussed above can be debated.

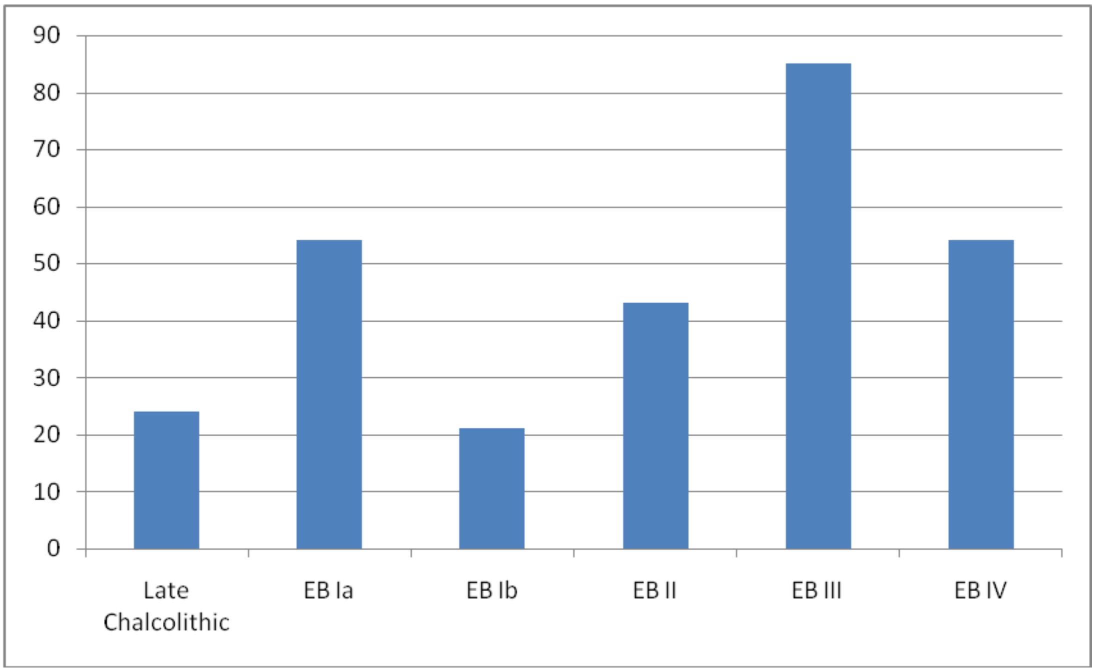


Figure 8.6. Site distributions by period across the Hauran, Ajlun, Jaulan and North Jordan Valley [(after Braemer in press) and see Appendix 8.1 for calculations)]. Values on the Y-axis represent the absolute number of sites

If we examine Figure 8.6, two main drops in absolute settlement are apparent, the first during EB Ib and the second during EB IV. Our knowledge of the transition between EB I a and b is highly limited, with few published sites existing where a clear distinction can be seen. As such, it is perhaps premature to divide EB I any further. If instead we map out settlement across southern Syria and northern Transjordan, without such a division, the EB I instead shows a peak in settlement, whilst EB II and IV now show a decline (Figure 8.7). This example emphasizes the different results which are possible when data is manipulated in a slightly different way. Another factor which requires consideration is the role of the length of periods. In others words, to what extent are the number of settlements within a period influenced by the length of this phase (e.g. EB I in central Syria suggested to run for around 750+ years, whilst EB II for little more than 500). Moreover, at present there is still some debate as to the different chronological phasing across these areas (see Table 8.1 for examples).

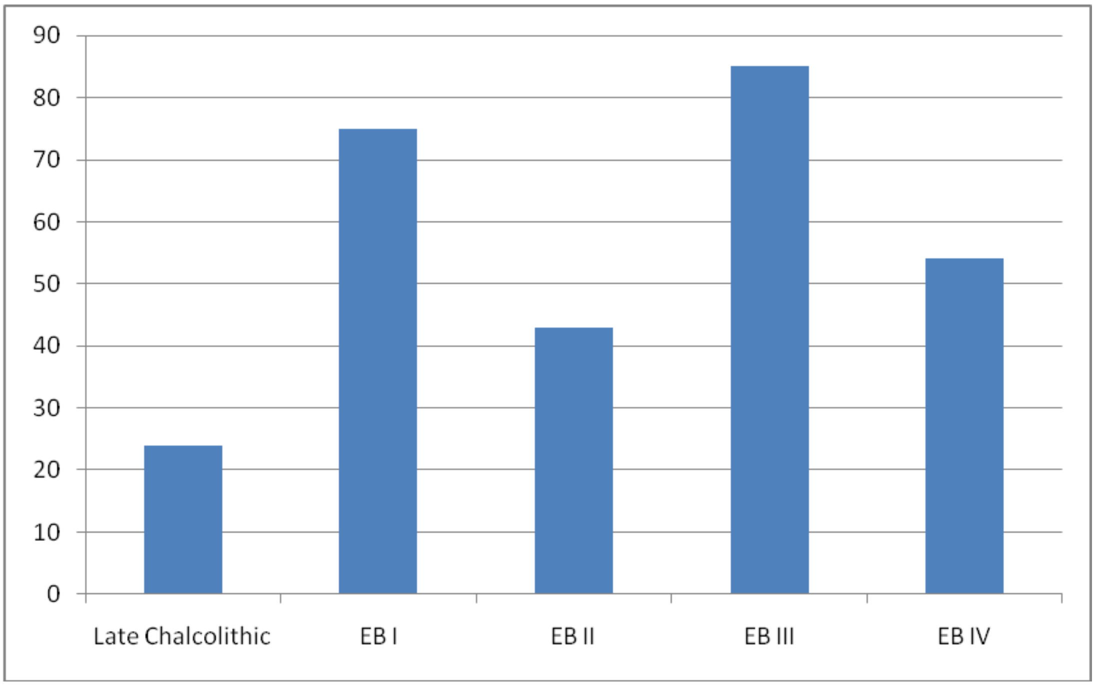


Figure 8.7. Site distributions by period across the Hauran, Ajlun, Jaulan and North Jordan Valley (after Braemer in press). Values on the Y-axis represent the absolute number of sites and in this example EB I is a combination of the numbers of sites from EB Ia and b in Figure 8.6.

Comparing Figures 8.6-7 against Figure 8.5 shows evidence of different peaks and troughs in settlement across the different regions. As such, it is clear that we may be dealing with different trajectories of settlement in lowland/upland and sub-optimal/fertile regions (e.g. Esse, 1991), the variability of which is masked by a regional analysis. Moreover, what is not apparent from these graphs are the implications of such troughs and sequential increases. Are such fluctuations indicative of declines in settlement density or are they associated with the conglomeration of population into larger settlement foci? It should be noted that the data discussed here derives from material which is currently in press or un-published. Site maps have been made available to this author by Professor Frank Braemer (see Appendix 8.1). The primary raw data (i.e. site names, sizes, references etc.) are not available. These are currently being analysed and are intended to be published by CNRS PhD students (pers comm. Braemer 2010). Until the full publication of this material takes place it is difficult to fully assess and critique the findings below. However, they are presented here in order to illustrate potential trends in settlement and activity which may be elucidated further with time.

8.1.1.1. The Late Chalcolithic: A pastoral subsistence system?

According to research by Braemer and others (Braemer, in press, Braemer *et al.*, 2004: 35), Chalcolithic period settlements, associated with pastoral subsistence systems, are concentrated in the temperate steppe zone around the Damascus oasis, with movement into more arid regions taking place during the transition between the 4th-3rd millennia BC. Only one site during this period, Jawa, is located beyond the 250mm rainfall isohyet and research has demonstrated the considerable manipulation of hydrological resources which was taking place during its occupation (Helms, 1981). The remaining sites within the Hauran/Ajlun/North Jordan Valley appear to be concentrated along *wadi* valleys, although at some distance from the actual valley bottoms and *wadis* (Figures 8.9-10). These transitional locations presumably allowed populations to take advantage of subsistence opportunities offered by both the valley bottoms for agriculture, as well as pasture on the higher valley slopes.

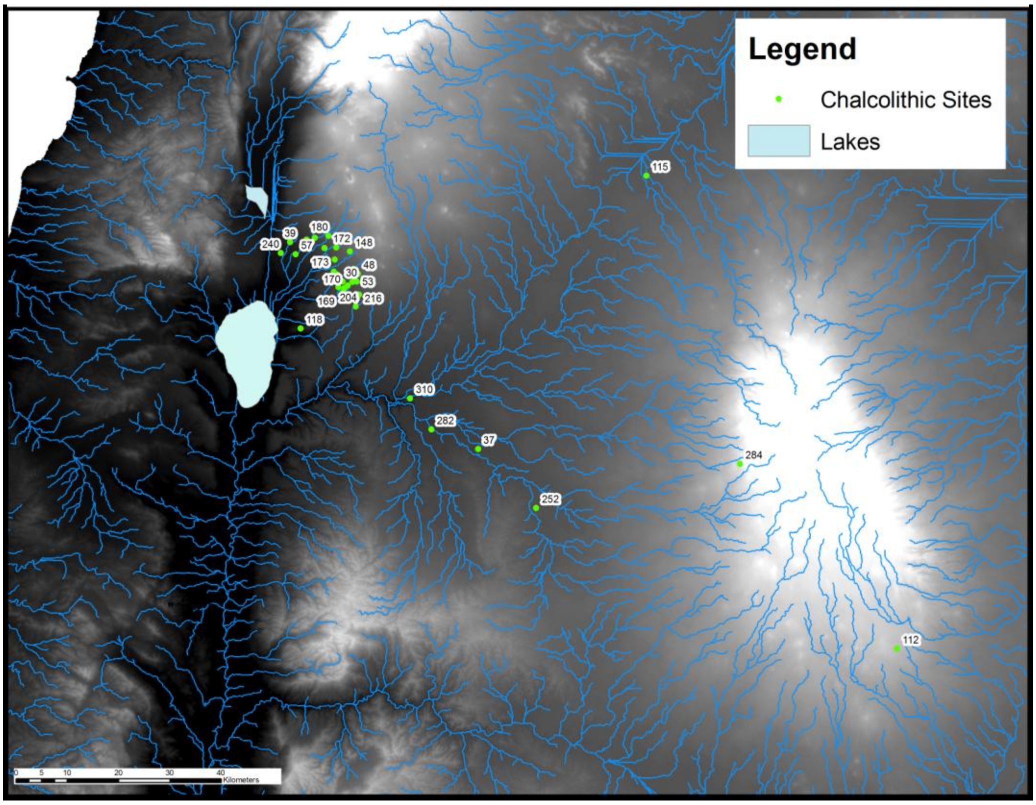


Figure 8.8. Distribution of Chalcolithic settlement/activity locales in the Jaulan and Hauran (see Appendix 8.1. for further details)

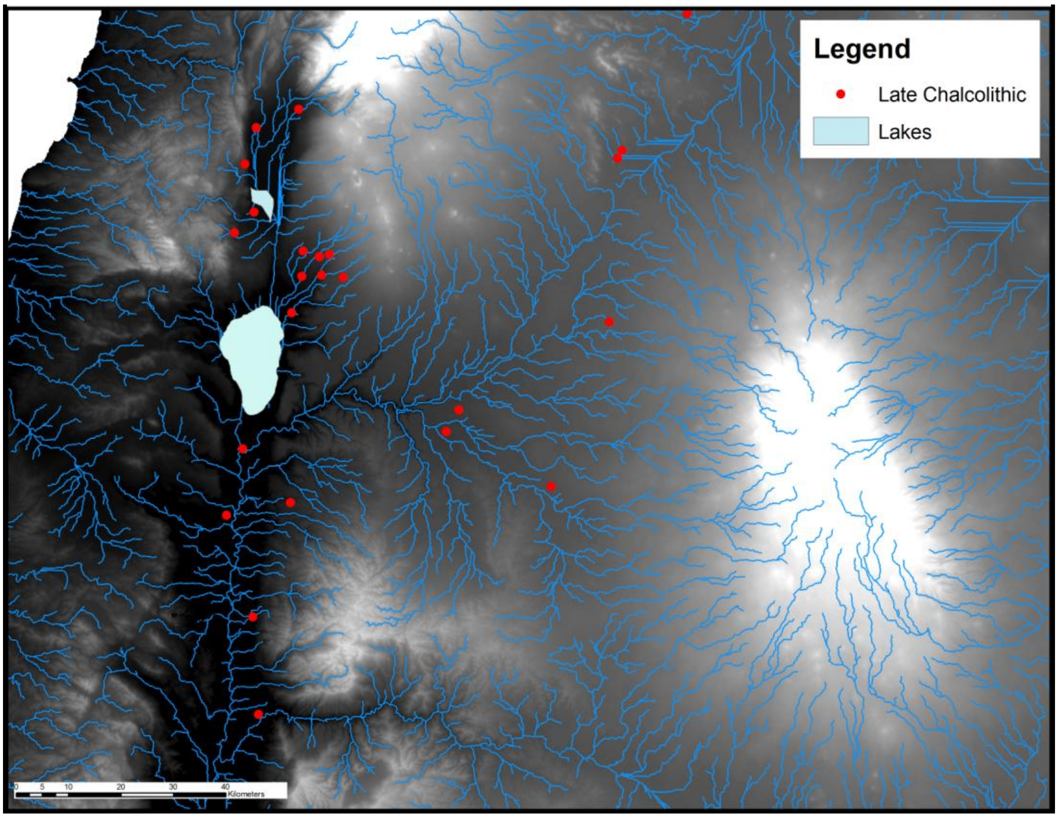


Figure 8.9. Map of Late Chalcolithic settlement (after Braemer in press)

Given the dispersed Chalcolithic settlement within southern Syria and Northern Transjordan, suggested by Braemer, [(in press) Figure 8.9], the possible reasons for the dense concentration of remains within the Jaulan, clustering to the west of Lake Tiberias, requires consideration. With this in mind, what may be of particular note is Epstein's (1998: 5) suggestion that the majority of these sites could be found in areas of stream networks and good grazing land. An examination of Figure 8.8 demonstrates the clustering of Chalcolithic sites within the western Jaulan, where the majority of seasonal *wadis* and springs, which flow into Lake Tiberias, can be found. Moreover, using rivers and lakes generated from a 90m SRTM, it can be seen that over 50% of the Chalcolithic sites identified within the Jaulan region are within 500m of a water source.

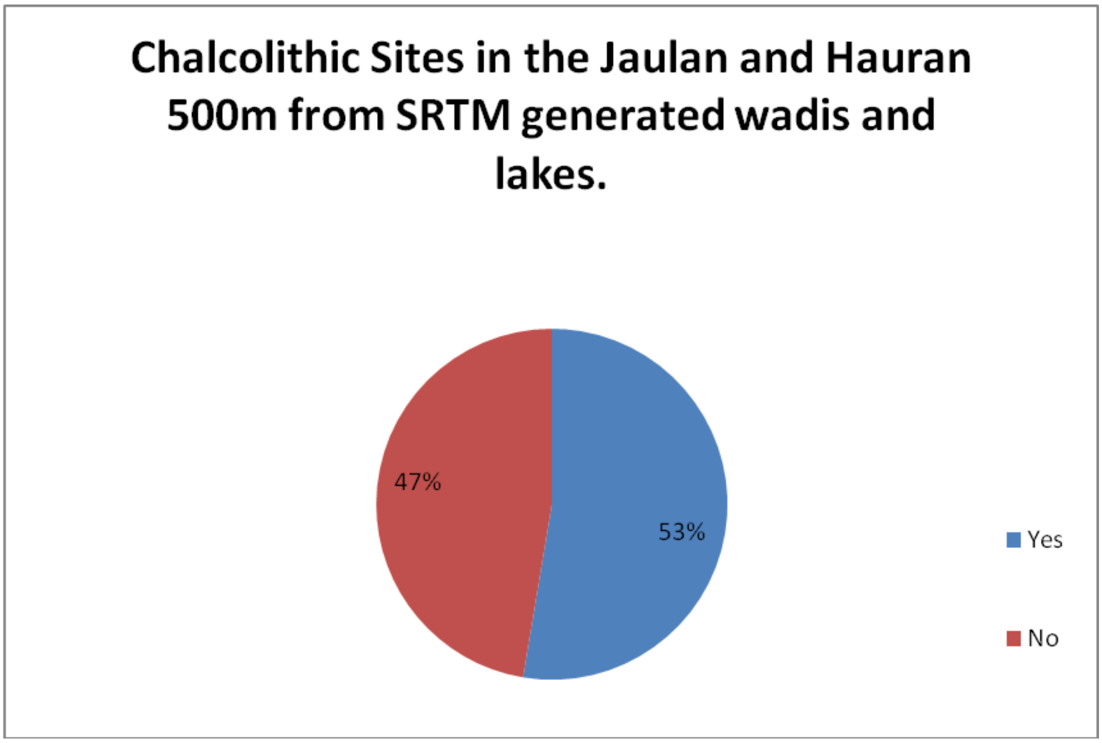


Figure 8.10. The relationship between wadis, lakes and Chalcolithic sites in the Jaulan region (based on Chalcolithic sites plotted by Epstein 1998).

500m may appear a fairly considerable distance. However, the placement of these sites perhaps makes sense in terms of the environment and soils of the Jaulan, which, especially during winter months, can become particularly waterlogged (Epstein, 1998: 4-5). Bearing this in mind we can argue that like settlements in the Hauran/Ajlun and North Jordan Valley regions, those within the Jaulan were located to take advantage of both agricultural and pastoral opportunities, whilst avoiding areas particularly prone to waterlogging during winter months.

8.1.1.2. Early Bronze Age expansion (EBIa-b)

The expansion of settlement during the late 4th millennium BC is clearly visible with the number of sites increasing from 24 to 54 between the Chalcolithic and EB Ia period (Braemer, in press). Similarly to the Chalcolithic, EB Ia settlement appears to be located within the 250mm rainfall isohyets, with Jawa being the only site beyond this. Despite this broad continuity in locales of occupation, the Early Bronze Age has been argued to show an increasing agglomeration of population and hierarchisation of settlement, with groups settling in new areas, as well as at new levels of population concentration (Al-Maqdissi and Braemer, 2006: 115, Braemer *et al.*, 2004: 35). Due to the limited excavation which has taken place at sites across this region we cannot make an assessment of evidence for population agglomeration based on sequences from just a handful of sites. However, settlement distributions as modelled by Braemer [(in press) and see Figure 8.11] during EB Ia appear to disperse, with new settlements appearing within the Damascus basin and western Hauran. In other words, it appears that whilst some degree of continuity is present, new areas are being occupied.

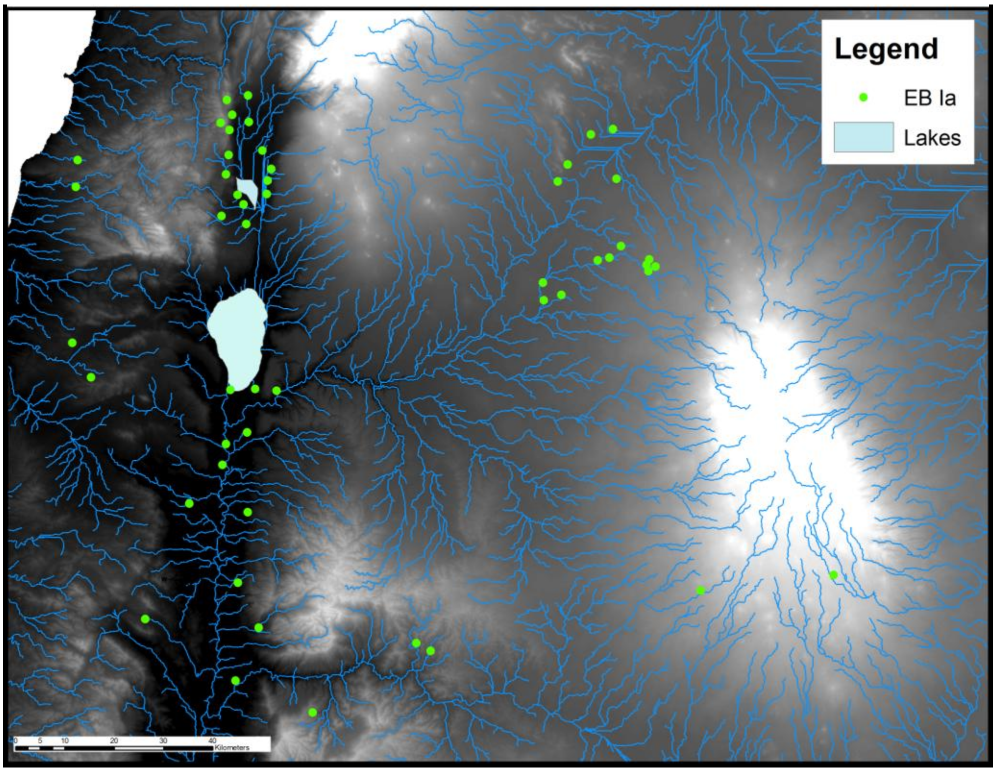


Figure 8.11. Map of EB Ia settlement distributions (after Braemer in press)

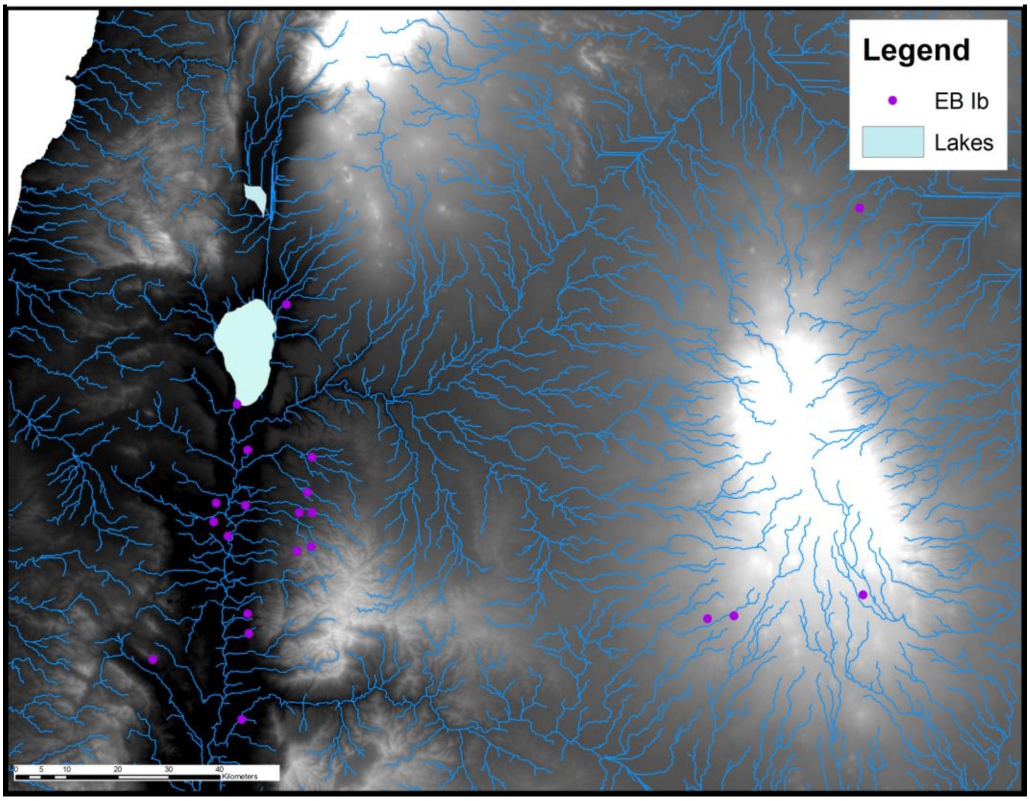


Figure 8.12. Map of EB Ib settlement distributions (after Braemer, in press)

The EBIb period in the Hauran-Jaulan-Ajlun apparently witnessed a phase of declining settlement intensity, with densities decreasing by over 50% from the preceding EBIa period (see Appendix 8.1 for tables). Braemer (in press) has suggested that the increased mobility of populations may explain this situation. If this is a genuine pattern it raises interesting questions about why it is, during this phase of increased mobility that we see Khirbet al-Umbashi develop into a monumental walled centre and thus, whether as Braemer suggests, it primarily functioned as a centre for predominantly mobile groups (Braemer *et al.*, 2004: 283, 370 and Braemer in press). Akin to suggestions of increased population agglomeration in EB I-III in the rest of the Levant (see Chapter 9.3.3.2.), it may be that this decrease in settlement is representative of the growth of larger settlements, as opposed to population decline [(e.g. Chesson and Philip, 2003: 12, Harrison and Savage, 2003: 36-7, Zertal, 2004: 28-50) although it should be noted that this evidence ranges in date from EB I-III]. In addition, as Figures 8.11-12 show, there seems to be a limited increase in settlement in the south-east of this region, perhaps representing the first expansion into new steppe landscapes during this period. Based on present dating evidence, all of the EB I sites known from the Hauran and Jaulan appear to be clustered around the basalt flows of Jebel el-Arab (Figure 8.13). A more robust series of radiometric dates are now being developed within these regions (see Appendix 8.1), however, our assessment of settlement patterns is still largely based on pottery typologies from surface collections. Plotting out all the EBA sites, from both the Jaulan and Hauran (Figure 8.14), shows that there are a substantial number of sites, particularly within the Jaulan, which at present are only broadly assigned to somewhere between 3500-1900 BC (EBA). Furthermore, the potential for large numbers of sites to remain un-recognised or obscured within various regions is possible.

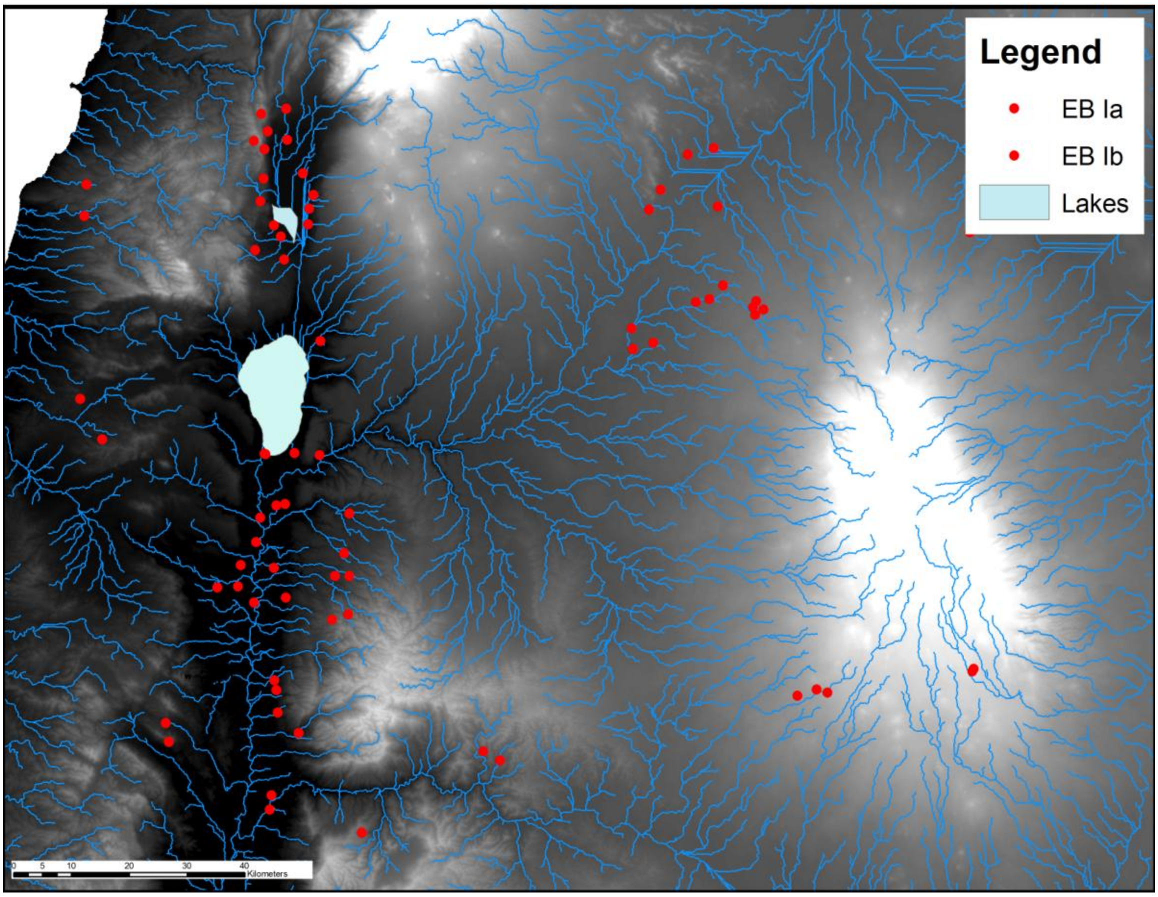


Figure 8.13. EB Ia-b sites in the regions of the Hauran, Jaulan, Ajlun, Damascus Basin, Hula Valley and North Jordan Valley (after Braemer in press)

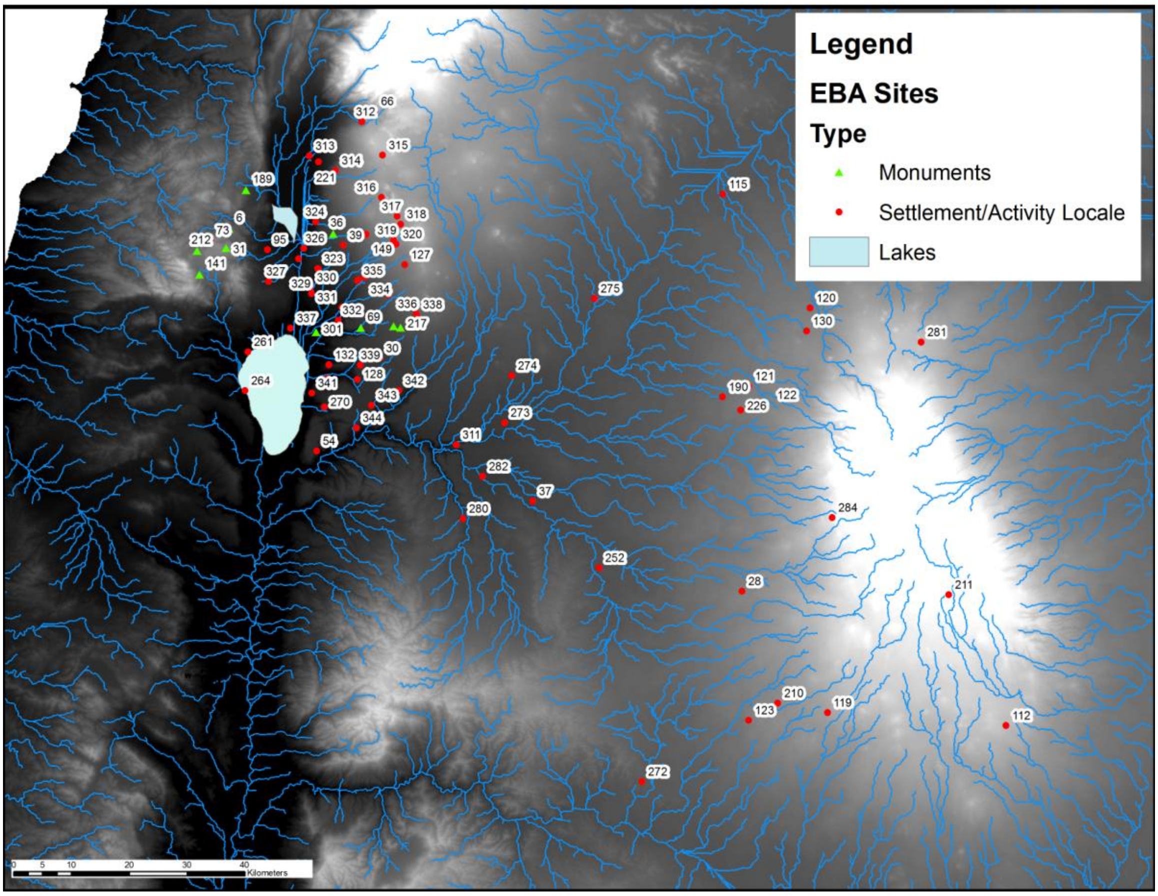


Figure 8.14. Distribution EBA (I-IV) settlement/activity locales in the Jaulan and Hauran [(Braemer, 1984, 2002, Braemer et al., 2004, Epstein, 1978, 1985a, 1998) and see Appendix 8.1 for further details)]

Despite these difficulties two broad patterns emerge. Firstly, the expansion east is still clearly visible, a process which requires further consideration (see Chapter 8.2.1. and Chapters 7.5 and 9). Secondly, the decline of settlement in the Jaulan is strongly visible. A preliminary examination of Google Earth imagery within this region has highlighted a large number of features hitherto un-recorded or published within this region. Whilst assessment on the basis of typological comparison alone is flawed, a large number of the potential sites identified in this region show considerable similarity to the 4th-3rd millennia BC structures identified within the Homs region (see Figure 8.45-6, Chapter 8.3 and Appendix 8.4). Given our current lack of knowledge concerning EBA settlement within this region their presence suggests that archaeological remains may remain un-recognised. As survey in the Homs NSA has shown, the majority of these structures are easily distinguishable from satellite imagery and aerial photography, however, their detection in the field is problematic. At present, the current author knows of no attempts to fully analyse imagery from the Jaulan having been carried out. Prior to more detailed excavation, survey work and satellite and aerial imagery consultation, as well as a more coherent body of radiometric date for sites within this region, analysis, which attempts to formalise Early Bronze Age patterns of settlement remains particularly difficult. Moreover, as suggested by the material cultural evidence distinctions between EB Ia and EB Ib are problematic and as such this chapter, from henceforth will make reference to a general EB I.

8.1.1.3. EB II-IV

From EB I-II there appears to be a general continuity in settlement location (compare Figures 8.13 and 15), although a decline in the northern Hauran, with a corresponding increase in occupation within the Ajlun and Yarmouk River Valley is visible. EB III in the wider Hauran-Jaulan-Ajlun region witnesses an efflorescence of sites, with settlement in locations along the main river valleys remaining stable, whilst expansion beyond these regions can also be seen. Based on the use of an SRTM and SRTM generated water flow (see chapter 1 and Appendix 1.2.), it is possible to recognise the expansion of settlement into upland areas beyond the main river valleys and their lesser tributaries during this phase (Figure 8.15). Braemer (in press) has also identified clusters of corrals within the eastern Ajlun highlands, a phenomenon which he links with the expansion and intensification of stock-breeding activity. Their dating, however, remains unclear and given the wide range of similar remains which are extant across much of the Jordan Plateau, Ajlun highlands and eastern Hauran/Black Desert region, should not be associated with a single period of activity (e.g. Kennedy and Bewley, 2004, Kennedy and MacAdam, 1987, Newson, 2000, Sapin, 1992). In particular, Kennedy and Bewley's (2004: 75) work within northern Jordan has shown that a complex palimpsest of activity exists within regions, such as the Black Desert and Hauran, much of which can only be seen via aerial reconnaissance. Similarly to the Jaulan, in areas where intensive aerial or satellite image analysis has not been undertaken, such features may have been missed. Moreover, considering the re-use of many structures even into the present day (ibid.) we have to be particularly wary of dating.

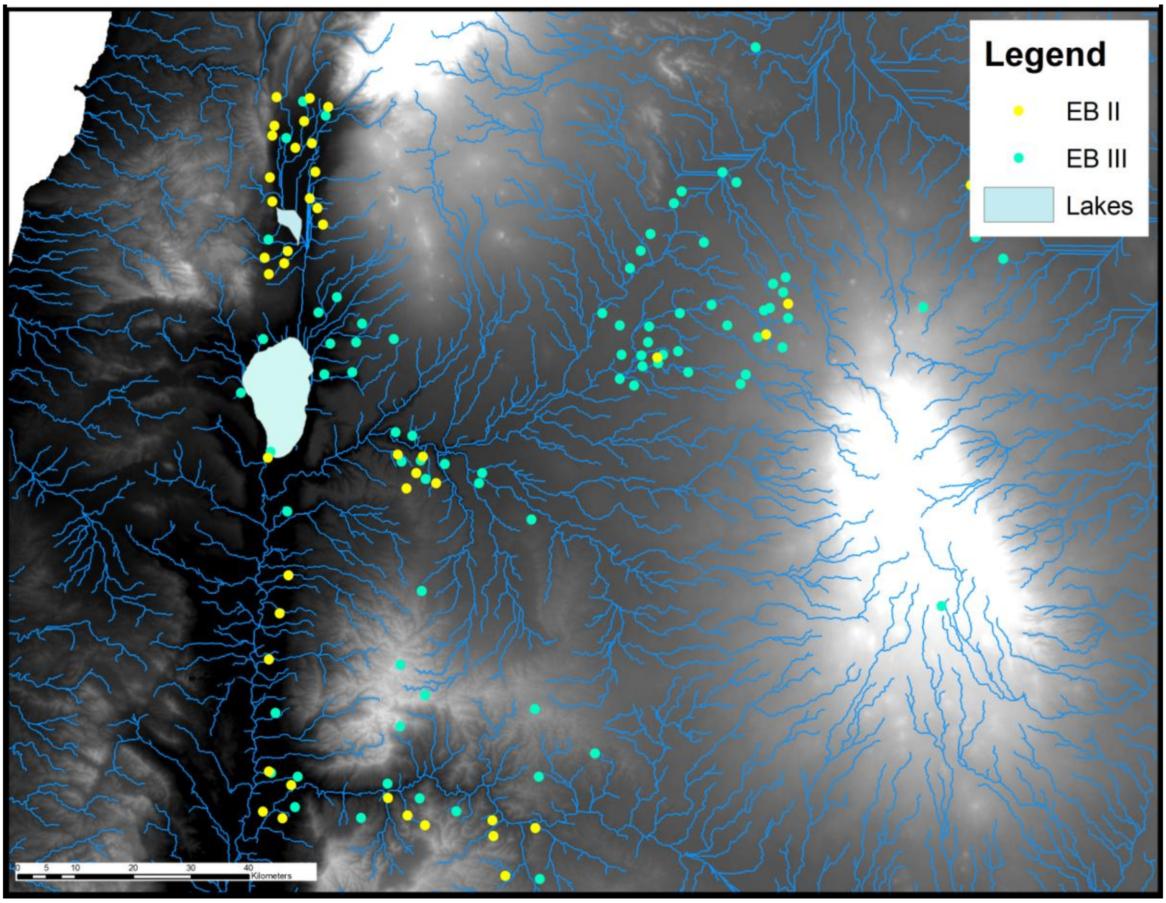


Figure 8.15. Settlements patterns during EB II-III (after Braemer in press)

EBIV, in comparison to EB III seems to witness a decline (Figure 8.16), with settlements significantly contracting to a distribution along the main river valleys and their tributaries. Settlements identified in the western Leja during EB III appear to have completely disappeared and Braemer (in press) characterises this phase as representative of a new system of settlement focused on stockbreeding. Expansion into new areas is also visible, with settlement beginning to fill up within areas of the southern Hauran and between the *Zarqa* and *Yarmouk Rivers*. However, the impetus behind the apparent abandonment of the western Leja needs to be examined in more detail. The establishment of new sites in areas such as the Syrian Badia during this period [e.g. Al-Rawda (Castel, 2007a,b, Castel *et al.*, 2005) may hint towards changing settlement trajectories. In particular, the link between expansion and changing patterns of subsistence and land utilisation at the end of the 3rd millennium BC requires examination (see Chapter 9.3-4. for further discussion).

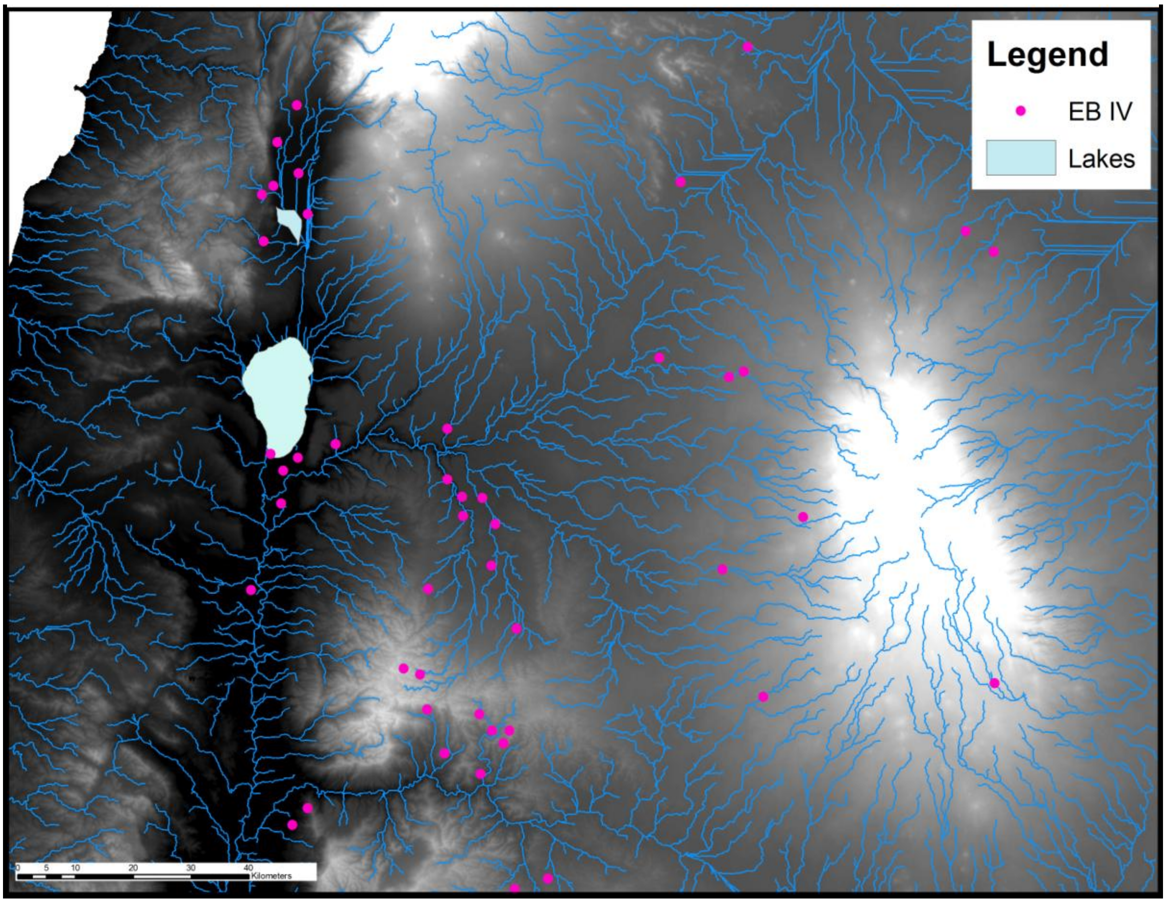


Figure 8.16. Settlements patterns during EB IV (after Braemer in press)

8.1.2. *Settlement densities and patterns of occupation in the Northern, Central and Southern Negev*

The reconstruction of past settlement within the Negev has been strongly influenced by theories concerning sites such as Tel Arad within the Northern Negev. Viewed as a settlement of major importance during EB II (Amiran *et al.*, 1973), it has been suggested that the growth of Tel Arad led to expansion into desert/highland areas (Southern Negev and Central Negev Highlands) for the exploitation of resources such as copper. In line with such evidence, the majority of sites from these regions based on relative dating were assigned to the EB II period. As shown by figures 8.17 and 8.18 these interpretations led to a number of hiatuses in occupation being identified.

Period	Number of Sites from relative age assessment
Late Neolithic	9
Chalcolithic	20
Early Bronze I	0
Early Bronze II	253
Early Bronze III	0
Early Bronze IV	232

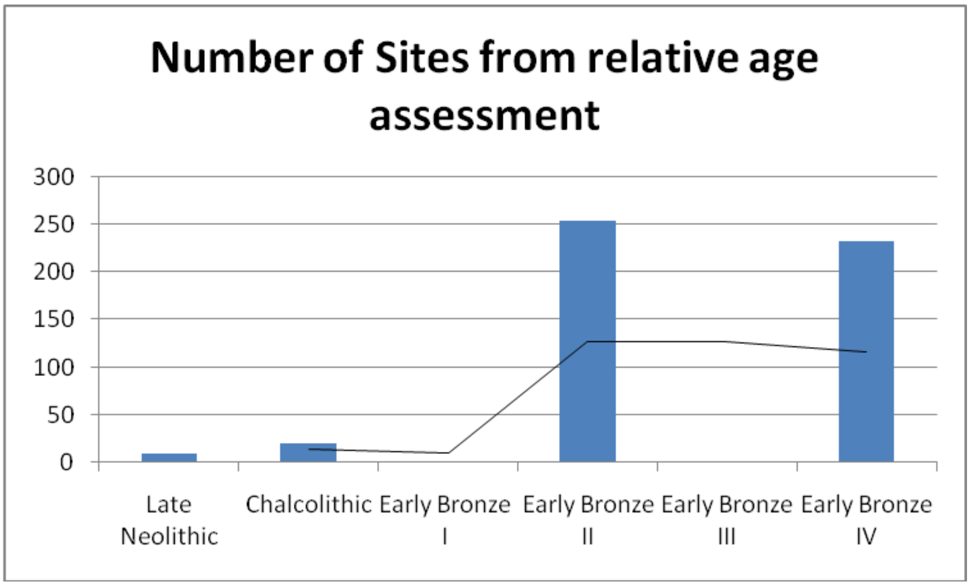


Figure 8.17. The number of sites by period based on relative dating in the Negev Highlands (after Avner and Carmi, 2001, Avni, 1992, Cohen, 1981, 1985, 1999, Haiman, 1986, 1991, 1993a, 1999, Lender, 1990, Rosen, 1994)

Debate exists concerning these apparent hiatuses in settlement, with some researchers suggesting that rather than an absence of settlement these apparent gaps in occupation represented a nomadisation or mobilisation of population, with groups becoming largely invisible within the archaeological record (Finkelstein, 1995: 67). More recently it has become apparent that large declines in settlement may not actually exist (Avner and Carmi, 2001). As Avner and Carmi (2001) have demonstrated (via a re-assessment of the radiometric dating evidence from sites within the Southern Negev, Sinai and Jordan), large numbers of sites previously suggested to date to EB II can now be assigned to both earlier and later horizons (Figures 8.18). This programme of absolute dating has led to an appearance of continuity, rather than a hiatus and whilst a limited decline in settlement during EB I can be suggested from the evidence, this can certainly not be seen as indicative of either an abandonment or total nomadization of the population. Moreover, given our limited ability to date many of the sites located within the Negev based on material culture assemblages, it appears that they have to be broadly assigned to the Early Bronze Age.

Period	Number of Sites with 14C dates
Late Neolithic	53
Chalcolithic	38
Early Bronze I	21
Early Bronze II	25
Early Bronze III	23
Early Bronze IV	11

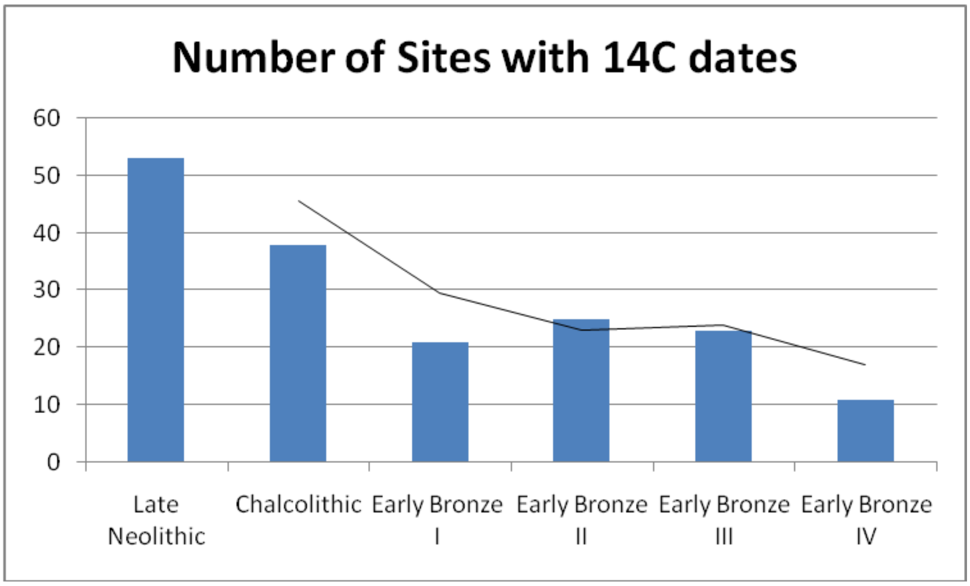


Figure 8.18. Site density reconstructions from the Southern Levantine deserts (Negev, Sinai and Jordan) (after Avner & Carmi 2001: 1205).

Reconstructions of past settlement patterns within the Negev have been strongly influenced by where survey and excavation has been carried out. The following figures represent sites dated using both relative and absolute techniques and as such show different trends to those suggested by Figure 8.18. At present, given the limited number of sites which have benefited from programmes of radiometric dating, as well as the uneven distribution of these sites (e.g. concentration in the 'Uvda Valley), distributions produced solely using this data would be misleading. For the present we have to reconstruct settlement patterns based on non-radiometrically dated sites. Due to this it is only possible to suggest broad trends of occupation. A very basic plot of the numbers of Chalcolithic and EBA sites would suggest considerable continuity in the level of occupation/activity in this region (Figure 8.19). However, as figures 8.20-23 demonstrates these figures obscure changing patterns in the intensity, location and nature of activity in this region. In addition, many of the sites discussed in this section are not fully published or excavated and thus relatively little is known concerning their size. As such, making any estimates concerning the intensity of activity or population is highly difficult and has not been attempted here. It is hoped that in the future such information will be more readily available, making a full assessment possible.

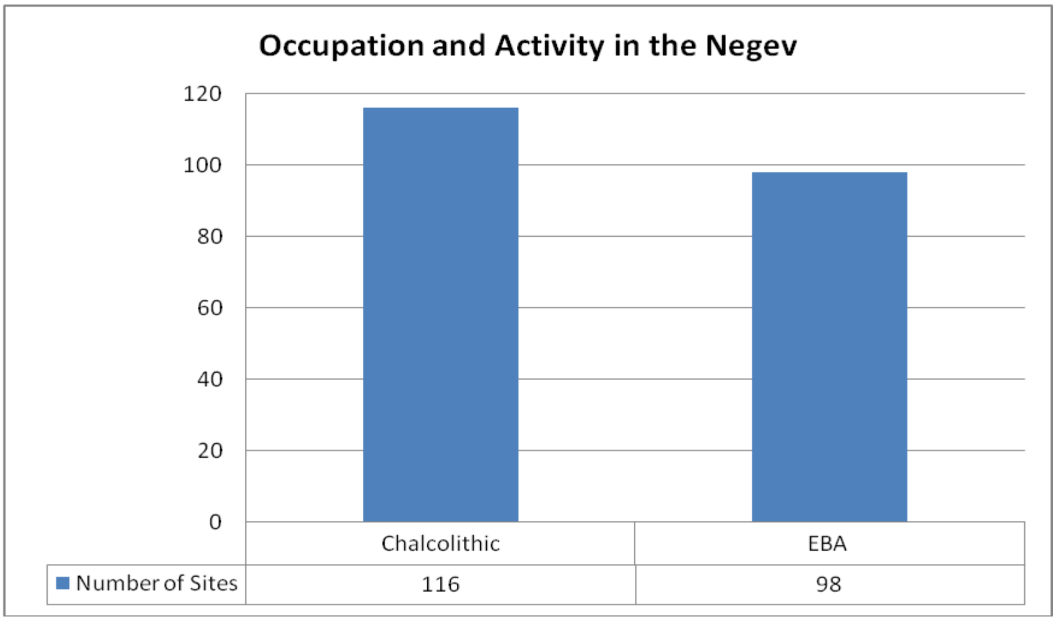


Figure 8.19. Chalcolithic and EBA activity/occupation in the Negev [(after Levy and Alon 1987; Haiman 1992a; Haiman 1996; Cohen 1999; Avner and Carmi 2001) and see Appendix 8.1 for further references and calculations]

Figure 8.20 demonstrates the strong focus of Chalcolithic settlement clustered along the main wadi systems of the Northern Negev. Having said this, Cohen's (1999) work has also revealed the presence of a considerable number of sites, ranging from large centres to temporary habitations in the central Negev highlands. Between the Chalcolithic and EB I-II there appears to be a striking drop in settlement intensity in the region. This seems to be in direct contrast with the traditional models of settlement patterns in this region (see Figures 8.16-17). EB I-II sites (Figure 8.21) appear to be clustered in the North along the Beersheva Valley or within the Southern 'Uvda Valley. Given the intensity of survey within these regions, as well as the new programmes of radiocarbon dating which has been carried out in the 'Uvda region, this patterning is not necessarily surprising. The presence of three sites within the Central Negev Highlands, is however, perhaps indicative of activity occurring within this central region, which at present remains largely un-recognised. Indeed, when Cohen's (1999) sites, which are dated broadly to the EBA are plotted alongside those dated to the EB I-II (Figure 8.21) a much denser system of settlement becomes apparent, although a slight decline in activity from the Chalcolithic-EBA is still visible (see Figure 8.19).

According to current interpretations the EB III in the Negev was characterised by a complete disjuncture in settlement. Based on the oxcal re-calibrations, only one site within the Central Highlands region falls within EB III [see Appendix 8.1 (Site 64, En Ziq/'En Zik) and note that this site also has EB IV dates]. A further seven sites in the 'Uvda Valley region show overlap between EB II-III and EB III-IV (see Appendix 8.1). Tel Arad, in the Beersheva Valley, is also still occupied, to some extent, during this period (although see below Chapter 8.4 for further discussion). It must be kept in mind that this paucity of EB III sites may be due to lack of diagnostic pottery. For example Cohen (1999: 51) notes that whilst he believes the majority of his EBA sites date to EB I-II (noted as such in Appendix 8.1) he cannot preclude the possibility that some may date to EB III. In contrast to this, EB IV appears to witness an expansion and efflorescence of settlement (Figure 8.22). However, a large proportion of the sites assigned to EB IV have been identified as temporary stations or habitations (Figure 8.23). Researchers, such as Finkelstein (1995: 67) suggest that the EB IV, akin to the EB I can be seen as a period of nomadisation of population (although see chapter 9.3.2. for a discussion of mobility and nomadism). Based on the plots of EB IV activity in the Negev (Figures 8.22-3) what instead becomes apparent is the co-existence of both large and complex sites [e.g. (Horbat) 'En Ziq/'En Zik (Site 64) suggested to contain up to circular 200 structures (Cohen, 1999: 52)], alongside those represented by just a few structures [Figure 8.23 Temporary habitations 1 and 2 (Haiman, 1996)]. This observation highlights the potential for a range of different intensities of activity, occupation and moreover, subsistence strategies to have been used within the same region. In addition, potential analogies for EB IV expansion can be found in the

Hauran, as well as areas further north, such as Al-Rawda (Castel, 2007a,b, Castel *et al.*, 2005). The implications of this will be discussed in more detail in Chapter 9.

Bearing in mind these limitations at present we can conclude that the expansion and dispersal of activity in the Negev appears to show a slightly different trajectory of development to that of the Hauran and Jaulan. Here activity appears to have been widespread during the Chalcolithic, although a strong focus in the region of the Beersheva Valley is visible. To what extent this is related to the level of intensive survey which has been carried out in this region can be debated. During the EBA and particularly in EB IV period there does appear to be some expansion. This development did not necessarily involve an increase in total occupation as appears to have occurred in the Hauran, but rather a dispersal of activity indicating that new areas were being exploited for a variety of different reasons.

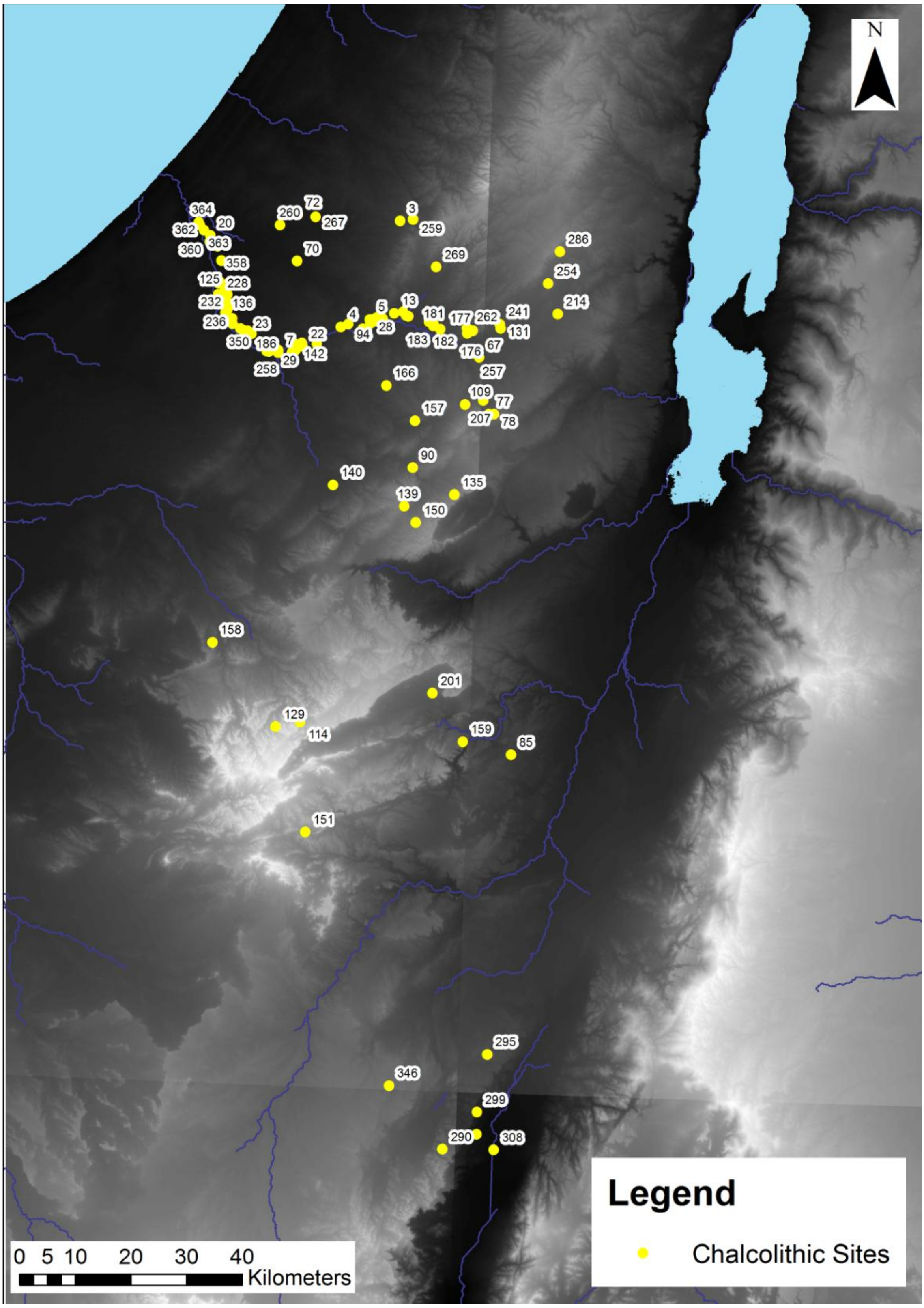


Figure 8.20. Distribution of activity/occupation locales in the Negev during the Chalcolithic [(e.g. Levy and Alon, 1980, 1982, 1987b) and see Appendix 8.1 and 8.5 for references and dating information concerning sites]

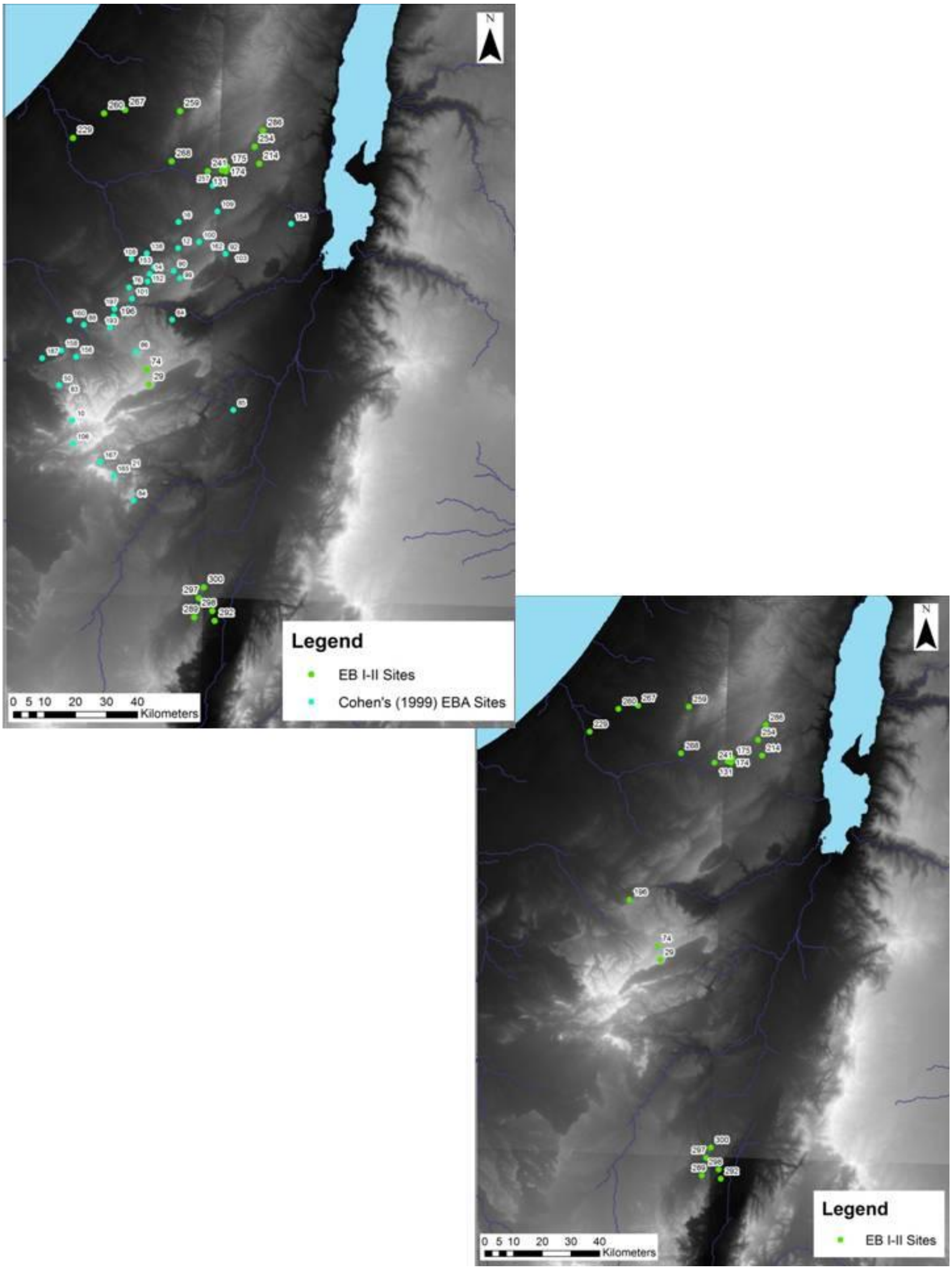


Figure 8.21. Distribution of activity/occupation locales across the Negev in EB I-II [(after Avner and Carmi, 2001, Cohen, 1999, Levy and Alon, 1987b) and see Appendix 8.1 and 8.5 for further references and details)]

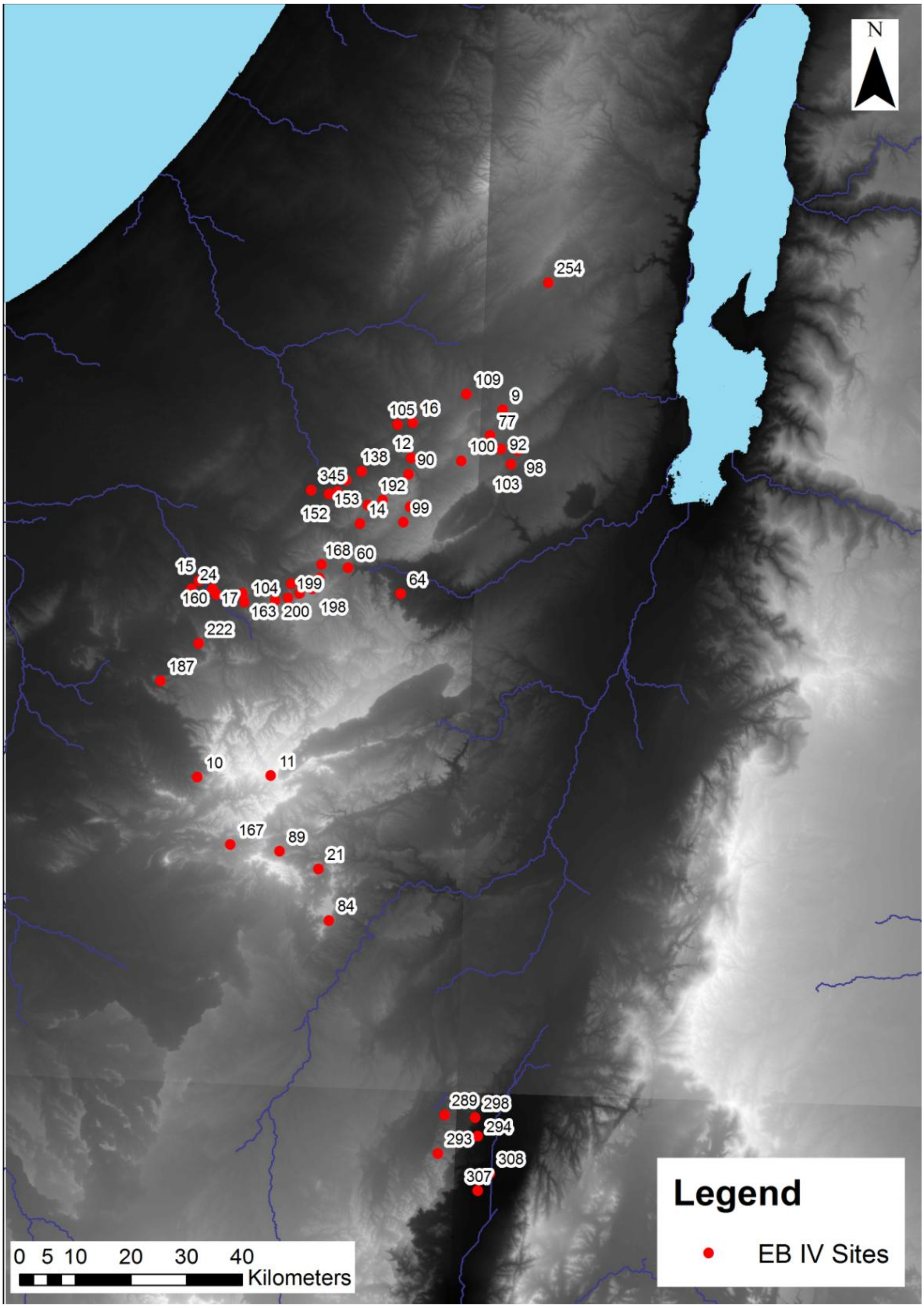


Figure 8.22. Distribution of activity/occupation locales in the Negev during EB IV [(after Avner and Carmi, 2001, Cohen, 1999, Levy and Alon, 1987b) and see Appendix 8.1 and 8.5 for further information]

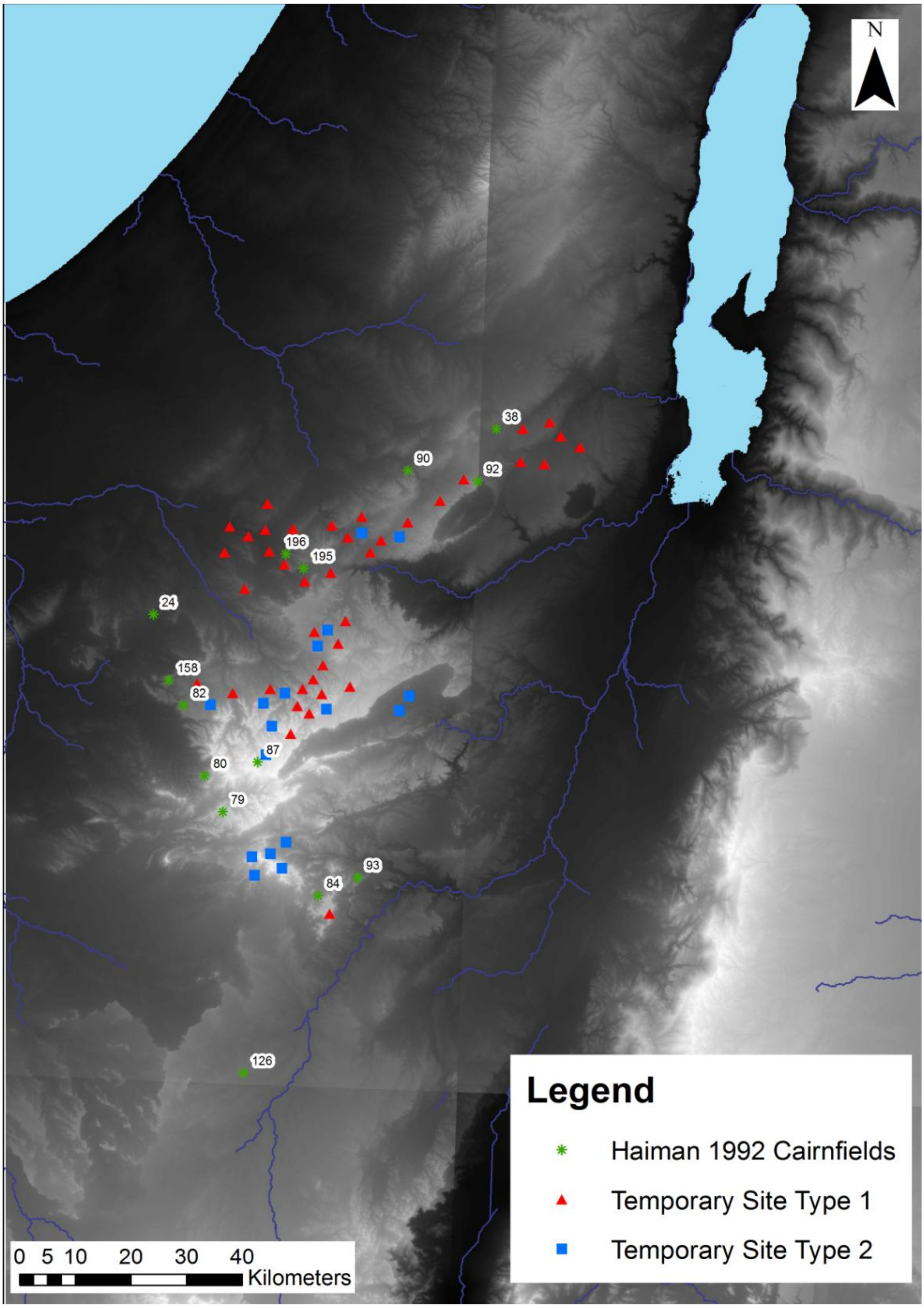


Figure 8.23. Temporary Settlements and Cairnfields dated to the EB IV period (after Avner and Carmi, 2001, Cohen, 1999, Haiman, 1992a, Haiman, 1996)

As has become apparent from this brief review of occupation/activity, occupation in the Hauran, Jaulan and Negev cannot be treated in isolation. Instead, it needs to be integrated into a broader understanding of the wider networks of population settlement and expansion from the Late Chalcolithic through to EB IV. At the same time, we have to be aware of the different tempos of settlement and cultural change, which may have been occurring at different times in different areas. For example, it has been argued that the Southern Negev, rather than following settlement patterns and phases seen across the rest of the Levant (e.g. EB I-IV) shows a different cultural trajectory [see Table 8.1 and (Rosen, in press)]. If this is the case, the extent to which these broad settlement patterns mask more localised changes is debatable. In order to facilitate a consideration of these issues the following sections will present and analyse the main characteristics of settlement architecture and material culture within the Hauran, Jaulan and Negev.

8.2. The Hauran

Investigations within the Hauran have revealed the presence of occupation traces dating from the 9th millennium BC to post-Classical periods (e.g. Beaulieu, 1943, Braemer, 1984, 1988, 1993, 1997, Braemer *et al.*, 2004, Nasrallah, 1948, 1950, 1963, Newson, 2000). Despite the wealth of material, the dating and interpretation of these features is difficult. At sites such as Khirbet al-Umbashi, where a scheme of radiocarbon dating has been carried out, the sheer complexity of the palimpsest of archaeology, as well as the density and spread of material means that many of the phases of settlement and occupation remain difficult to date with any precision. However, a number of trends in architecture and site layout are being revealed, which may aid in our understanding of the nature of human occupation in this region during the 4th-3rd millennia BC.

8.2.1. Architecture and Settlement

8.2.1.1. Chalcolithic-EB I

Occupation within the Hauran during the Chalcolithic period has been associated with mobile pastoralist activity (Betts, 1993, Betts *et al.*, 1990, Betts *et al.*, 1991, Braemer, in press). The site of Jawa, to the south of our main study area appears to have been first occupied during the mid-4th millennium BC and due to its location beyond the 250mm rainfall isohyet has been interpreted as a seasonally occupied locale, facilitating contact between mobile pastoralist groups exploiting this region (Helms, 1981). Several kilometres from the site of Umbashi, clusters of circular and sub-circular 'Jellyfish' constructions are apparent [Figure 8.24 (Braemer *et al.*, 2004: 266)]. These are composed of a series of connected cells and associated stone piles, with the majority of examples from the Umbashi region measuring around 100m in diameter. In contrast, recorded examples from the Black Desert measure up to 500m in diameter and are often composed of a central hub of enclosures around which, clusters of small circular huts around 4-5m in diameter can be found (Kennedy and Bewley, 2004: 75). The contrasting scale of these remains renders them difficult to interpret as a single 'class' of monument. However, they may suggest different levels of intensity of pastoralist activity, as well as potentially different functions being carried out at these sites.

Figure 8.24. Kites and Jellyfish structures near Umbashi

The precise dating of these monuments is difficult, especially considering evidence for their re-use in later periods. In addition, Braemer *et al.* (2004: 267) have suggested that much of the flint associated with these structures is un-diagnostic and thus, not datable. On the basis of the relationship between these structures and kites (see below for description), it has been suggested that ‘jellyfish’ pre-date the latter and thus, are potentially Chalcolithic or earlier (ibid.). Elsewhere evidence has been found to suggest that kite and ‘jellyfish’ structures may be contemporary, at least in some cases (Kennedy and Bewley, 2004: 75). It is also possible that the kites present within the Umbashi region have been used and re-used over the course of the Neolithic to Roman period (Braemer *et al.* 2004: 267). Thus, even if stratigraphical relationships suggest that ‘jellyfish’ pre-date kites, in many cases we cannot be sure whether they pre-date these structures by years or even millennia.

Kite monuments consist of a series of stone walls, with a ‘v’ entry at one end (Figure 8.25.) designed for hunting animals such as gazelle. Large numbers are present in the environs of Umbashi and cover hundreds of metres. In some cases these features are composed of several parallel walls which culminate in an enclosure, whereas in other cases their layout is more complex, possibly suggesting multiple periods of use and construction. They often appear to adapt and exploit the natural topography, being located along the edge of *wadis* as well as within natural basalt depressions (Braemer *et al.*, 2004: 267), locations which may attract grazing animals. Such structures extend across much of the region to the south and east of Umbashi and highlight the intensity of activity which was taking place within 'sub-optimal' landscapes during the past. Their considerable complexity and variability may represent the range of different organisational strategies associated with hunting (e.g. Betts, 1982, 1983, 1993, Betts *et al.*, 1990, Betts *et al.*, 1991, Braemer *et al.*, 2004: 268, Kennedy and Bewley, 2004: 72-3, Newson, 2000). Researchers have also suggested their use within domestic herding strategies (Barge and Moulin, 2008: 20-1). Whilst it is suggested that their foremost use within the Umbashi region can be associated with the Chalcolithic/EB I period their dating remains difficult (Braemer *et al.*, 2004: 268). Given the lack of remains of wild animals, particularly gazelle from the site of Khirbet al-Umbashi (ibid: 273-281), these structures might pre-date the main occupation of this site. Having said this, if some were being employed within herding strategies, their use may coincide with the main phases of occupation at Umbashi. At present, due to the lack of kites which have been excavated or examined in detail this hypothesis cannot be either proved or disproved.

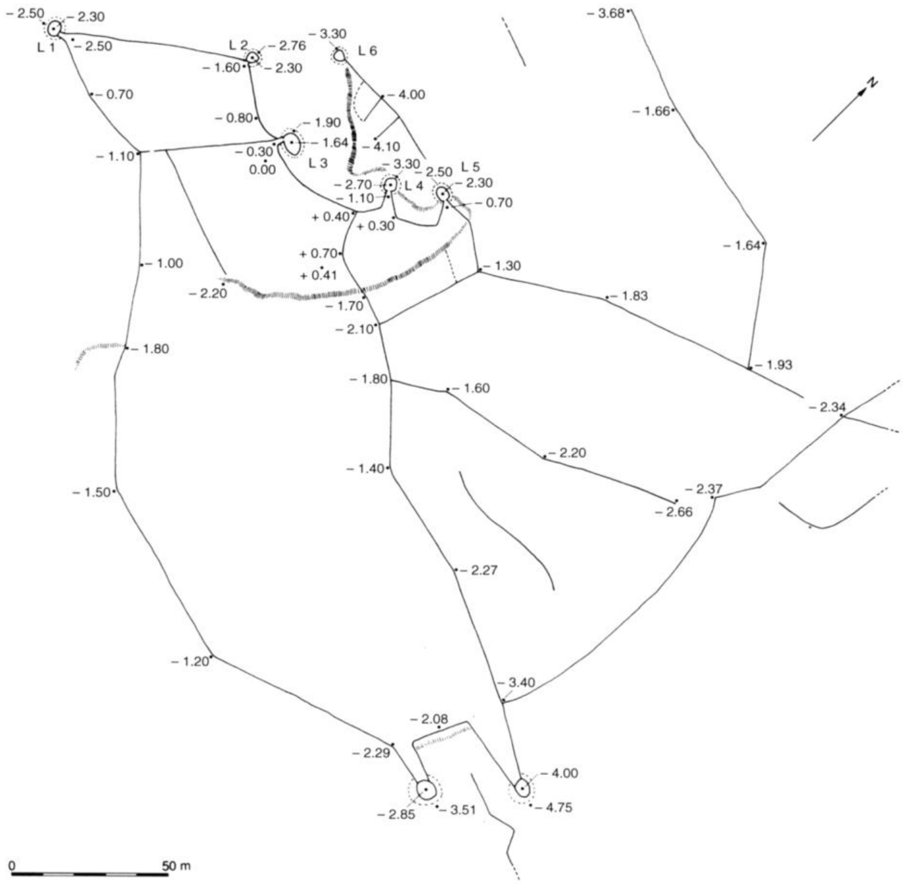


Figure 8.25. Image of Kite structure K64 near Umbashi (after Braemer et al., 2004: 268, Figure 510)

Discussions of similar contemporary or later features outside the Umbashi region remain limited, although work in the region of Labweh has revealed evidence for areas of dispersed settlement and activity (Al-Maqdissi and Braemer, 2006: 114). In addition, reference is made to evidence of 3rd millennium BC 'ephemeral structures' located outside the main settlement at Umbashi, possibly designed for the sheltering of tents. Their precise dating and relationship with surrounding enclosures and walls are difficult to determine (Braemer *et al.*, 2004: 82, 263). Investigators have highlighted the placement of many of these structures in areas where easy access to water and raw materials is possible, with the presence of basalt installations, such as grinders and re-use of tomb structures for building materials also being noted (ibid: 264-5).

In addition to enigmatic structures, such as kites and 'jellyfish', there exist a number of sites which have been interpreted as 'sedentary' Chalcolithic locales. Khirbet Charaya (Figure 8.26.), located within an area of cultivable soils, represents a complex series of occupational phases, which range in both location, as well as function (Al-Maqdissi and Nicolle, 2006: 131-5). In many cases, these different phases of occupation appear to have co-existed and as such, the interpretation of the settlement history of this area is highly complex (ibid.). The use of monumental walls to delimit an area of settlement and population agglomeration is clear (ibid: 129). In addition, there appears to be a number of surrounding tells and necropoli with Chalcolithic, EBA and potentially later activity upon them (ibid: 126-8). As such, this site is important for our understanding of the transition between the Chalcolithic and EB I periods within a region outside that of traditional tell settlement (ibid: 125). It also raises a number of questions concerning the re-use and understanding of earlier remains and structures by later populations, with earlier phases of occupation remaining visible within the landscape after their abandonment (ibid: 126-7).

Two zones, 4.3ha and 4.5ha respectively, have been interpreted as relating to Chalcolithic activity (Al-Maqdissi and Nicolle, 2006: 127). Chains of rectangular buildings have been identified and compared to architecture found at sites in the Chalcolithic Jaulan, such as Rasm Harbush [(Steimer-Herbet, 2006: 54-5) and see Figure 8.26 and chapter 8.3]. Composed of basalt corbelled walls, these buildings appear to enclose small rectangular areas, covered by basalt slabs measuring up to 1.2m (Al-Maqdissi and Nicolle, 2006: 127). The chain structures (Figure 8.26.) have been found to stratigraphically pre-date the necropolis at the site of Khirbet Charaya, the remains of which are attributed to EBI period [see chapter 3 and (Al-Maqdissi and Nicolle, 2006: 130, Steimer-Herbet, 2006: 54)]. However, whilst a stratigraphical relationship has in some cases been demonstrated between the rectangular chain buildings and necropolis, the dating of all of these phases remains largely hypothetical (Al-Maqdissi and Nicolle, 2006: 127). Given the presence of chain buildings at sites, attributed to later periods, such as Tell Zheir (see below), any chronological assessment based on typology has to remain purely hypothetical. Despite these issues what is of specific interest at this site is the continuity of settlement within one locale and the potentially long-time depth to occupation that can be seen at non-tell sites.

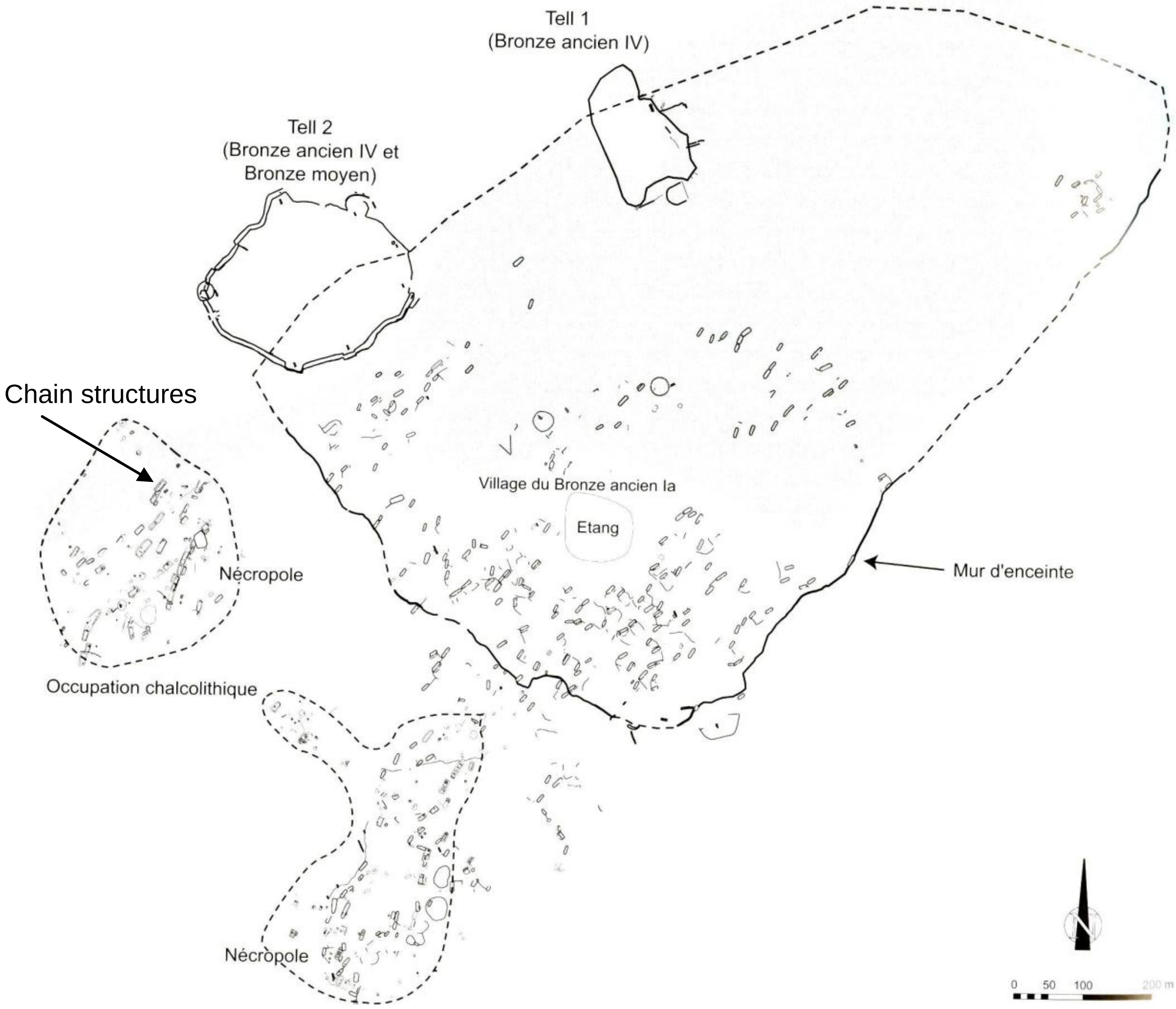


Figure 8.26. Khirbet Charaya (after Nicolle and Al-Maqdissi 2006: 128, figure 3)

8.2.1.2. EB I-III

Over the past decade excavation and survey of complex architecture, such as ramparts and enclosure walls with associated round towers, bastions and monumental entrances has taken place at a number of sites within the Hauran (Al-Maqdissi and Braemer, 2006: 123, Al-Maqdissi and Nicolle, 2006: 129, Braemer *et al.*, 2004: 42). The scale of activity in the Hauran also significantly increases during this period (see Chapter 8.1.1.). The first evidence for such structures appears at the end of the 4th millennium BC at the site of Khirbet al-Umbashi. The rampart at this site, dated to between c. 3328-2930 cal BC [re-calibrated to 3367-2905 cal BC (Appendix 8.1)] via nine C-14 samples from the rampart ditch, would have originally enclosed an area of 4ha, built up at the north and relying upon natural topography to the south (Braemer *et al.*, 2004: 39). Constructed using a system of faced blocks with an in-fill of smaller stones, this feature is associated with a dense system of habitation located within the enclosed rampart (ibid: 42, 62). Much of this appears to be fairly ephemeral in nature, leading the investigators to suggest that structures may have been used by the workforce or a largely mobile population, whilst constructing the rampart and associated 'citadel' area (ibid: 62). The impetus for these constructions has also been questioned, as such features would generally be associated with defence (Braemer *et al.*, 2004: 366). If we are, however, dealing with a partly mobile population during the 4th millennium BC, their very mobility would have been an important defensive strategy. Thus, the rampart at Umbashi, similar to that of Jawa, can perhaps be associated with a political or prestige function (Braemer *et al.*, 2004: 62, Helms, 1981). In this case, a partly mobile and sedentary society may have regrouped at certain times and engaged in important collective practices (ibid.). The decline of the site of Jawa, prior to the monumental developments at Umbashi, has been seen by Braemer (in press) as indicative of the latter taking over the role of a gateway agglomeration. Indeed, the location of Umbashi on the edge of both fertile agricultural lands and a sub-optimal zone would have played a major part in its social, economic and subsistence role at the end of the 4th millennium BC. However, as will be suggested in Chapter 9, a strict dichotomy between settled agriculturalists and nomadic pastoralists is possibly a misunderstanding of subsistence and social relations during this period.

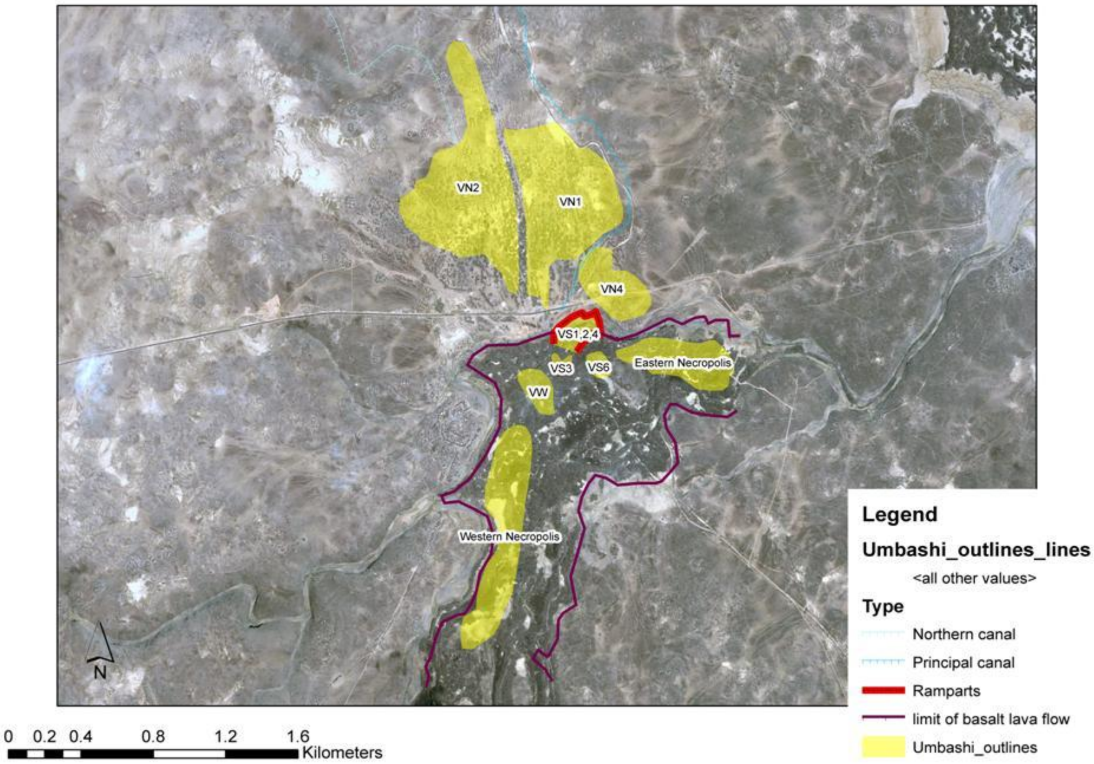


Figure 8.27. Plan of Umbashi (after Braemer et al. 2004: 38, figure 46)

Four main types of megalithic architecture can be seen at this site, dispersed throughout different sectors and in some cases co-existing in the same area, creating obvious problems for dating and interpretation (Braemer *et al.*, 2004: 82, 87-8). The earliest form of megalithic dwelling is a large quadrangular construction, located in the central ramparted sector (VS4.10). Rectangular in form, this building measured around 20m by 12m in area, with a number of internal partition walls dividing the edifice. No other similar structures have been found in this area. However, due to material similarities between artefacts found at VS4.10 and ossified deposits from the site, which have been radiocarbon dated (see Appendix 8.1.), these buildings have been assigned to the end of the 4th millennium BC. As the investigators suggest, such dates can only be approximate (Braemer *et al.*, 2004: 87-8, 121).

A second plan identified at Umbashi is characterised by a series of rectangular buildings measuring on average 13m by 6.5m. Internally divided by a series of pillars (VW.01) and covered by basalt slabs, these structures have been dated to the mid-late 3rd millennium BC based on radiocarbon samples (Appendix 8.1.). Seen within the south and western sections at Umbashi, these buildings are often associated with stone enclosures forming small settlement complexes [Figure 8.28]. They appear to represent the first large scale occupation of the south-western sector of the site (ibid: 122). Ten such structures have been studied in detail, with planning demonstrating the range of different phases involved in their construction. The nature of occupation at these so called 'pillar' houses appears to be fairly permanent, especially given the use of basalt slabs for roofing, a practice which is not seen in other areas, such as the Jaulan (Epstein, 1998: 9), Homs Basalt and Negev (Cohen and Dever, 1978: 35). These different traditions may partly relate to the geology and easily accessible nature of basalt slabs within the Hauran (Braemer *et al.*, 2004: 111-3). However, it may also be indicative of fully sedentary, long-term occupation and a desire/need to construct dwellings which are durable and require little maintenance. Having said this, such attributes would also have been practical if buildings were being left at different points during the year.

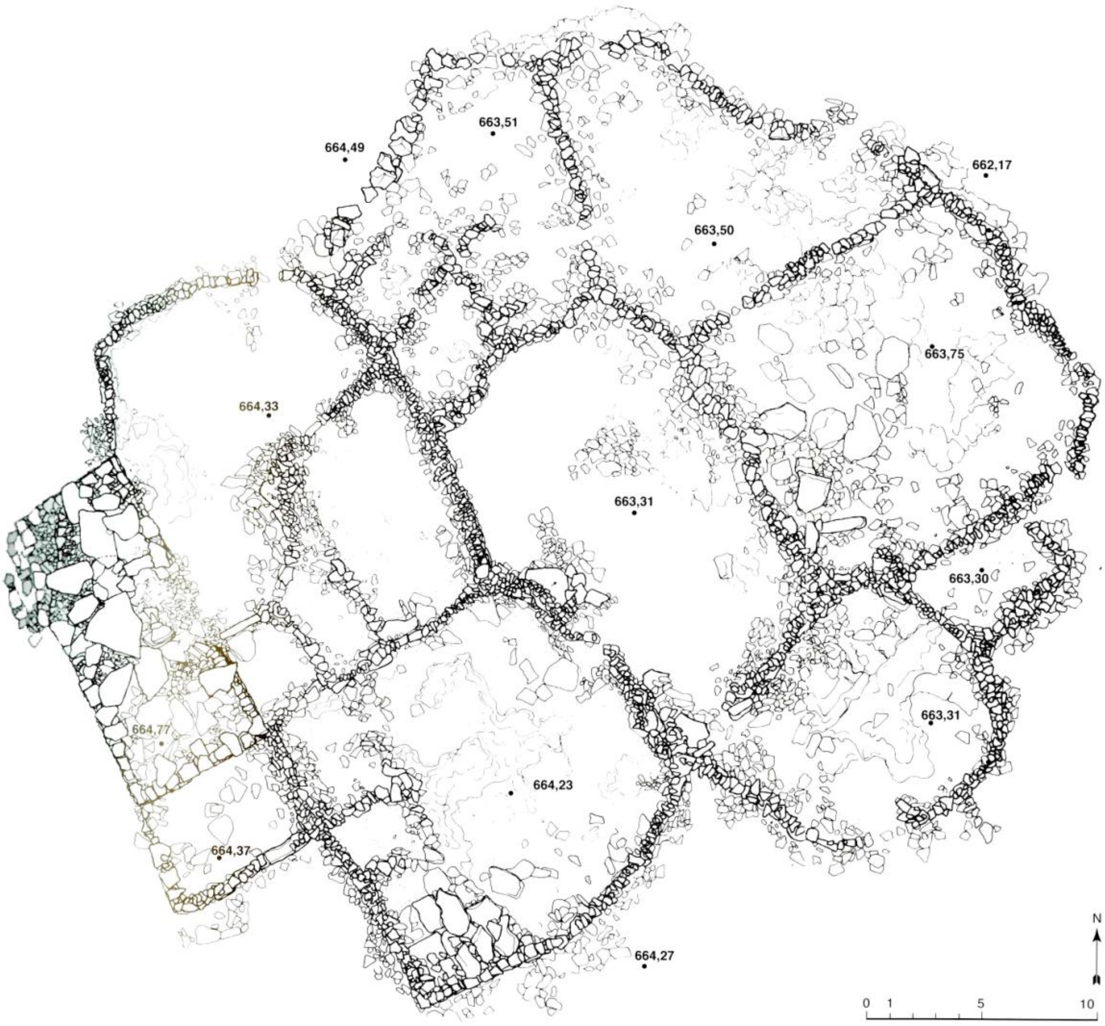


Figure 8.28. VW.01 (Braemer et al., 2004: Figure 168)

A number of smaller dwellings constructed using large basalt blocks and covering slabs have also been examined at Umbashi and Hebariyeh (Braemer *et al.*, 2004: 88). Their chronological attribution is problematic. However, Braemer *et al.* (2004: 121-2) have suggested that two phases can be seen; the first during the 3rd millennium BC (i.e. EB II-III) and the second during the Romano-Byzantine period. The difficulties in this case suggest that dating via a purely typological approach is unfeasible. Moreover, it emphasizes the importance of examining sites over the longue durée, considering the impetus behind later occupation and re-use of sites, whether it be merely functional or even ideological (see chapter 9.3.1. and 9.6 for further discussion).

The reconstruction of the rampart and associated structures at Umbashi during the 3rd millennium BC (Braemer *et al.*, 2004: 366) is paralleled at a number of other sites within the region, such as Labweh, Khirbet Charaya and Qarassa (Al-Maqdissi and Braemer, 2006: 116, Al-Maqdissi and Nicolle, 2006: 126-8). It possibly represents a phase of activity associated with the development of 'town-sites' within sub-optimal zones [(Braemer in press) and see Chapter 9.3.3.2.]. The site of Labweh is located on a basalt promontory, with a Middle Bronze Age (MBA) encampment located to the northeast of the main site. Substantial areas of pasture and agriculture exist in the surrounding environs (Al-Maqdissi and Braemer, 2006: 116), suggesting that the location of this site may be linked with the subsistence opportunities offered by this area. Indeed, the continued use of this region into the MBA, Roman and Medieval periods (ibid: 114) does suggest that favourable environmental conditions existed within this region during the past. The site has been dated, via a detailed analysis of ceramic material, to the EB II period, with a continuation of settlement into EB III. The ceramic assemblage is argued to show considerable similarity towards Palestinian repertoires, facilitating a fairly narrow dating (ibid.). Caution is needed when using such an approach. However, given the location of this site past the 250mm rainfall isohyet, these material links highlight the need to consider sub-optimal regions as part of wider regional networks throughout history (see chapter 9.5 and material culture section in this chapter).

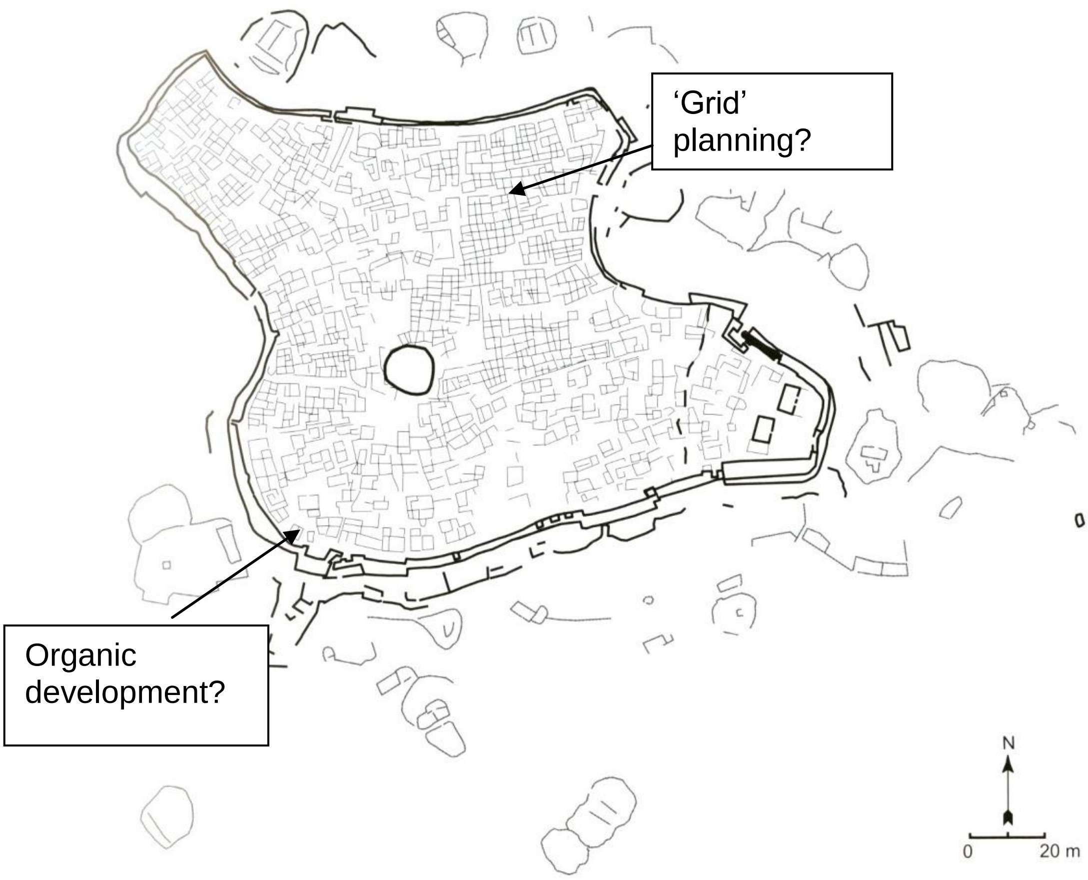


Figure 8.29. Labweh Site Plan (after Al-Maqdissi and Braemer 2006: 117, figure 3)

Investigations at Labweh have enabled researchers to highlight the urban character of the principal settlement, with evidence for monumental architecture and spatial planning being visible (ibid: 117-120). The settlement shows evidence of both sectoring and organic development [Figure 8.29 (ibid: 120)]. This observation fits well with the identification of two main phases of activity (EB II, EB III) at the site and may indicate a initial planned development, followed by a series of more organic growths. A monumental quarter is located to the southeast of the settlement and separated from the rest of the site. Two structures in this area with monumental doorways have been interpreted as temples, gathering places or possibly even palaces. Moreover, it has been suggested that due to the separation of this area from the rest of the settlement, access to this quarter may have been restricted (ibid: 121-2). An alternative interpretation could be related to the functioning of this area and the need to ideologically and spatially distinguish it from the rest of the settlement. Parallels for such architecture can be seen at EB III Khirbet es-Zeraqon, where a large building in the upper city containing a sizeable quantity of restorable vessels was interpreted as a 'public' structure (e.g. Genz, 2002b: 280). Whilst spatial differentiation of activities is important, we have to be careful when interpreting the function and meaning of remains merely on the basis of typology, a point which will be returned to below.

Within the southern and western sectors of Umbashi a number of monumental rectilinear buildings have been identified. These buildings are constructed in a very similar manner to the Type 2 houses, which have been suggested to be prototypes of the so called 'hypostles' rooms at Umbashi and Hebariyeh (Braemer *et al.*, 2004: 87-8, 122). These latter structures are suggested to date to the 2nd millennium BC, although a slightly earlier date is also possible. Composed of structures divided by a series of parallel pillars (Figure 8.30), these buildings at Umbashi overlie the rampart, thus dating to post-rampart construction i.e. later than the 4th millennium BC [see Appendix 8.1. for ^{14}C dates of rampart (ibid.)]. These changes suggest the emergence of new conceptions of architecture and sedentary settlement at the end of the 3rd-early 2nd millennia BC (Braemer, 1997: 16, Braemer *et al.*, 2004: 123). Similar features are also seen within building plans at sites in EB II Palestine (Kempinski, 1992: 54-6). In Palestine these sites have been interpreted as socio-religious structures. However, as Braemer *et al.* (2004: 87) suggest, the ubiquity of this form of structure at Umbashi would instead suggest a domestic function. Such divergences in functionality between buildings with apparently highly similar designs call into question our ability to interpret functionality, merely on the basis of typological assessment, such as at Labweh (Al-Maqdissi and Braemer, 2006: 121-2).

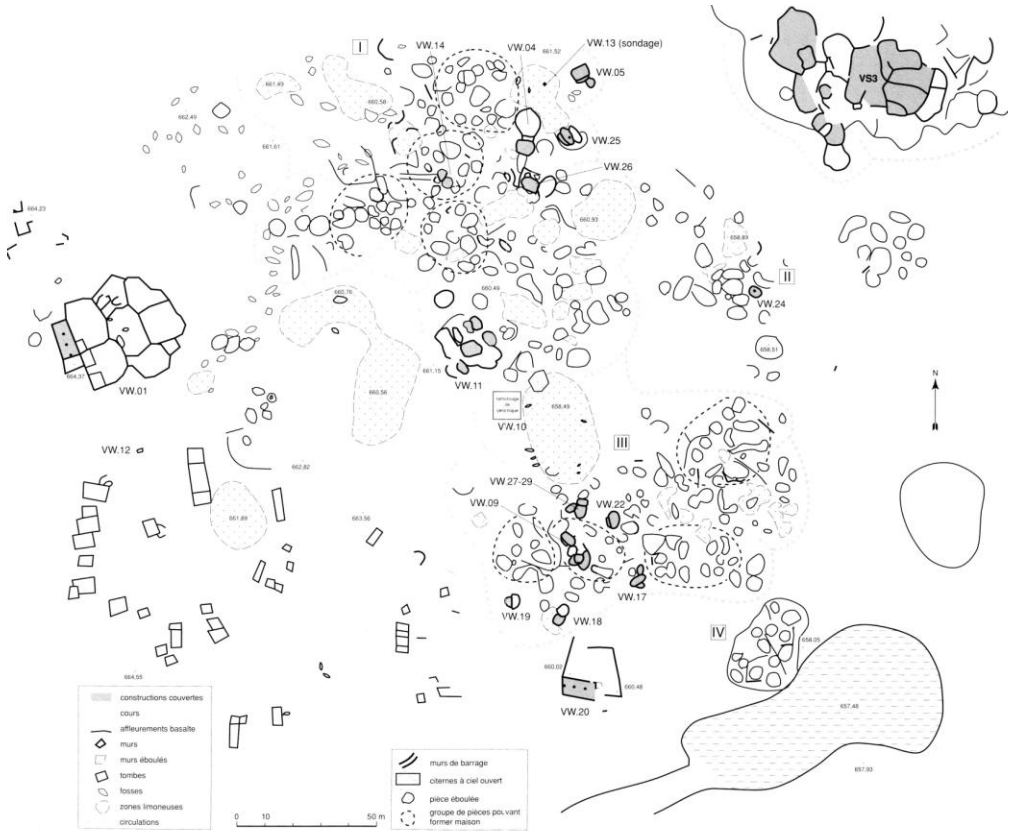


Figure 8.30. Pillar roomed buildings at Khirbet al Umbashi Type 2 pillar house VW.01 and VW. 20, showing the contrast between these rectilinear constructions and the EB IV clusters in areas I, III and IV

The nearby site of Tell Zheir (Figure 8.31) from which, eighty seven 'broadroom' structures have been discovered represents an interesting comparative site. The buildings identified here range between 10-23m in length and 3-3.5m in width and appear to have been divided into two or three distinct areas (Braemer, 1997: 14). This again suggests aspects of planning and organisation. However, unlike the 'pillar houses' and 'hypostle' buildings at Umbashi, there is no evidence for corbelling or slab roofs, suggesting that roofing was made from perishable materials (Braemer, 1991: 151, 1997: 14-15). Such evidence is in line with remains from the Jaulan where perishable roofs have been suggested (e.g. Epstein, 1998: 13) and may be associated with the local affordances offered by these areas. Broad parallels between these structures and those known from the Chalcolithic Jaulan can be suggested, although at Tell Zheir they appear substantially larger than the former examples. In contrast, those from Jawa, dated to EB IIA (Helms, 1989b: 144-6) appear broadly similar in size, although the use of basalt slab corbelling and roofing, similar to Umbashi, suggests that construction was significantly different to those from Tell Zheir (Braemer, 1991: 151). Unfortunately, no dating material was found from surface collection at Tell Zheir, leading the investigators to assign a broad date from the Chalcolithic to MBA to the remains. Moreover, due to the lack of surface material it was suggested that occupation must have been of a seasonal or temporary nature (Braemer, 1991: 152). As research in the Homs Basalt has shown this lack of material at Chalcolithic-EB sites, may not be solely associated with a more ephemeral dwelling pattern, but instead may relate to aspects of taphonomy (see chapter 6.3 for further discussion). Moreover, the lack/presence of basalt slabbed roofs cannot necessarily be taken as representative of permanency versus mobility. The replacement of perishable roofs on a seasonal basis would have acted as an important metaphor for the movement and re-occupation of seasonally occupied sites. However, absence from a site at certain times of the year may have equally encouraged the use of stone built roofs, which presumably would have provided better shelter for storage and have lasted for a longer period of time without maintenance. Indeed, rather than being seen as a metaphor for movement and re-occupation, the need to replace perishable roofs on a fairly regular basis could be interpreted as indicative of sedentary groups, maintaining and patching up structures at different cycles throughout the year, much as seen today with the re-plastering of floors within Turkey (e.g. Boivin, 2000).

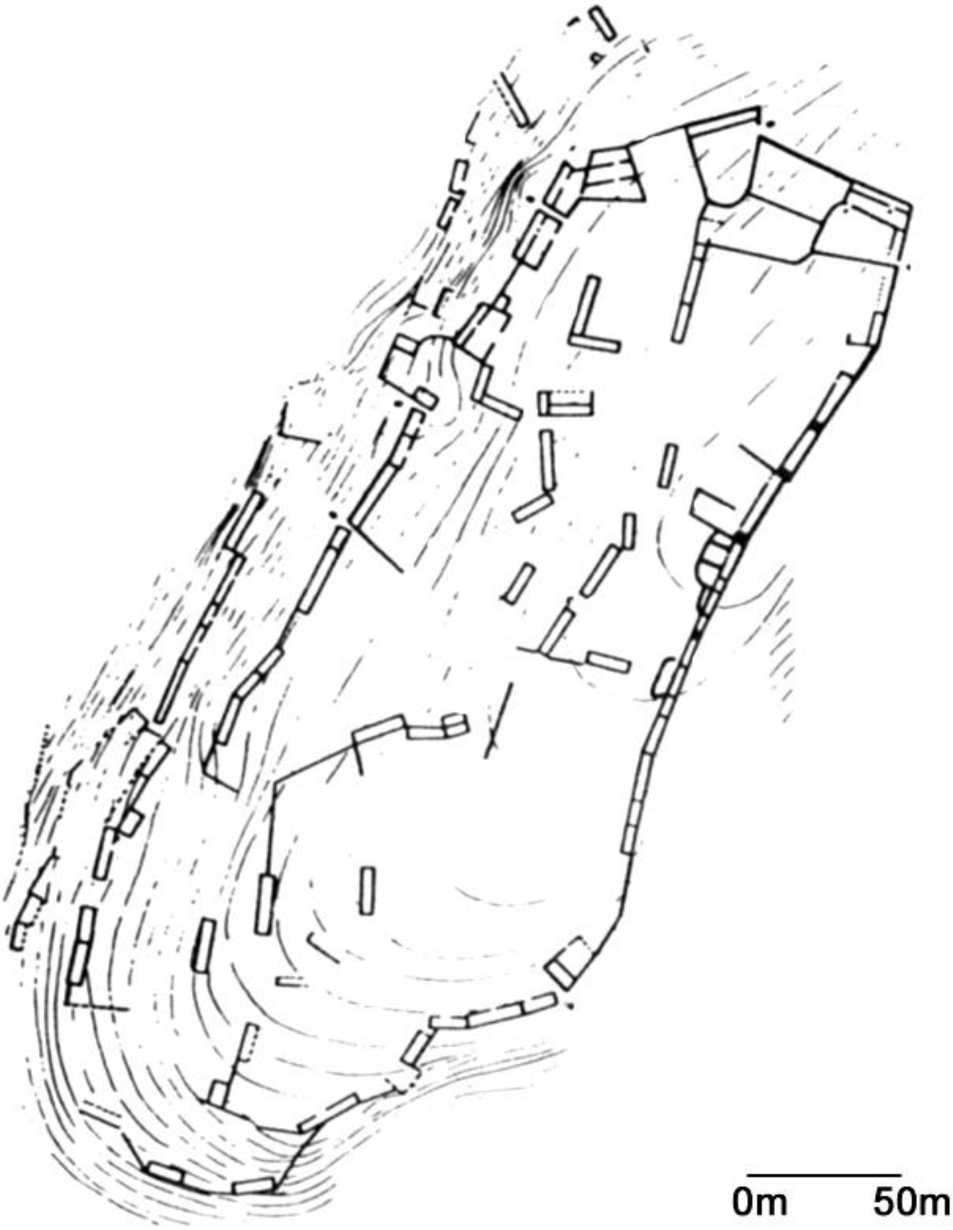


Figure 8.31. Chain dwellings at Tell Zheir (after Braemer 1991: figure 2)

8.2.2.3. EB IV

Braemer *et al.* (2004: 368-9) have suggested that the EB IV period at the site of Umbashi can be seen as one of growing impoverishment, although it should be emphasized that the scale and rapidity of this impoverishment over a roughly 500 year period is unknown. This process is attributed to an increased focus on pasturing activity, although growth in regional connections within the area of the Hauran, Leja and Damascus oasis region is also suggested (ibid.). During this period there appears to be the development of a series of agglomerated structures, which range from clusters of 5 to 13 cells (Figure 8.30). Two hundred such structures exist across the site and all have slightly different chronological attributions and a range of complex relationships with surrounding features and buildings (ibid: 124). What is apparent from an examination of their distribution is their dispersed arrangement and irregular organisation. No hierarchy appears to be present in terms of their distribution, with no central space being visible and circulation within and around this zone appearing to be largely confined to the periphery or reliant upon terraces and ramps linking areas. Despite the use of the latter, it appears that not every cell could have been easily accessed across a barrier of walls (ibid: 125). The circular clusters of cells in many cases seem to have shared a 'group' entrance with cell floors being paved with compacted lime over the top of the underlying basalt geology, creating an occupational layer (Braemer *et al.*, 2004: 125-7, 136). In addition, doors into these structures all appear to be fairly small in size, with the largest measuring less than one metre in height (ibid: 136). In several cases, windows have also been identified by investigators at the site (ibid.), although the basis for the differentiation between these and the small doorways is not made clear. Studies considering the roofing styles and materials used for these structures have suggested that two principal forms may have existed. Firstly, the use of corbelled slabs placed directly on top of the buildings walls and secondly, the use of pillars to support slabs, a technique used especially when roofing larger areas (ibid.). The dating of these structures has been based on a number of sondages, which have revealed evidence for EB IV material, as well as the presence and re-use of megaliths within a number of these structures (Braemer *et al.*, 2004: 138). In addition, it has been suggested that similar structures and techniques of construction can be seen at sites within the Leja region, such as Labweh and Khirbet Murasras, as well as at sites, such as Jawa (Braemer, 1997: 15).

What is of particular interest in regard to these buildings is the notion of access, with movement into and around these structures being limited in some way. Alongside this is the interpretation of this phase of activity at Umbashi representing a growing impoverishment, associated with increased pastoralism. A possible increase in mobility is interesting considering the wider developments taking place in EB IV (see chapter 9). However it need not be associated with impoverishment. As the maps of sites within the Hauran show, the EB IV within this region appears to have shown a population decline, interpreted by many across the Levant as indicative of a growth of nomadic activity. However, at the same point we have to consider the foundation of sites, such as Rawda (e.g. Castel and Archambault *et al.,* 2005; Castel 2007b) within the eastern Syrian steppe. Perhaps rather than viewing this period as an impoverishment, it should be seen as an expansion into new previously un-settled areas, with the beginning of increased specialisation in subsistence practices (see Chapter 9.4 for further discussion). Bearing this in mind, the use of architecture at Umbashi during EB IV, which limited access, perhaps makes sense. If EB IV is a phase of increased mobility the ability to safely store food and goods, whilst absent, would have been of great importance, with the small doorways and windows being easily sealed if necessary. Megaliths built/incorporated into these structures may have had an ideological function. An ability to reference the past through location of the deceased might have been particularly important, especially when absent from settlements for parts of the year. A certain degree of pragmatic re-utilisation of pre-existing building materials and hydraulic systems is also probable. We should begin to consider the possibility of groups occupying this site on a seasonal basis during EB IV, storing goods and making reference to the history and past occupation of the site through the incorporation of earlier monuments into their dwelling areas.

8.2.2. Portable Material Culture

Research concerning the material culture of Southern Syria remains limited, in part, due to the lack of excavation and survey of Chalcolithic-EBA sites within the region. Whilst the majority of surveys from the 1960s and earlier record finds of prehistoric pottery, lithic material and other forms of material culture (e.g. Nasrallah, 1948, 1950, 1963), few go into enough detail to warrant a synthesized discussion. In addition, the total ceramic assemblage known for the Early Bronze Age is composed of no more than a few thousand sherds and a dozen complete vessels (Braemer, 2002: 9, Braemer and Echallier, 2000: 403).

8.2.2.1. Pottery

Stratified ceramic material from sites such as Umbashi, Labweh and Der'a dating to a range of periods from EB I-IV, has recently undergone study (Braemer, 2002, Braemer and Echallier, 2000). However, the lack of corresponding chronostratigraphic data means that the chronological attribution of this material is strongly based upon current research on the pottery of Central Syria and the Jordanian-Palestinian region (Braemer, 2002: 9, Braemer and Echallier, 2000: 403). As demonstrated by Appendix 8.3 many of the forms, such as holemouth jars (henceforth just referred to as holemouths), show clear evidence of continuity and thus, can only be regarded as diagnostic of broad periods of use (e.g. Early Bronze Age). On the basis of cross comparisons and radiocarbon dating, it has been suggested that during the EBA Southern Syria was integrated into a ceramic culture ranging from the southern edge of the plain of Homs to the Northern Jordanian plateau and upper basins of the Jordan and Litani rivers [(Braemer, 2002: 9, Braemer and Echallier, 2000: 409) see Appendix 8.3 for examples of form/styles from this region]. Recent work within the Homs basalt seems to suggest that these connections may extend even further North (see chapters 7 and 9 for further discussion).

8.2.2.1.1. Chalcolithic-EB I

Holemouth jars found within contexts at Umbashi show clear similarities to those from transitional Chalcolithic-EB I contexts in the Beqa'a [Figure 8.33 (Marfoe, 1978: 202, 207, Marfoe, 1995: Figure 45)], as well as sites, such as Jawa (e.g. Helms 1981: 222). However, as Figure 8.33 shows, it is clear that similar forms range in date from the Late Neolithic to the later EBA.

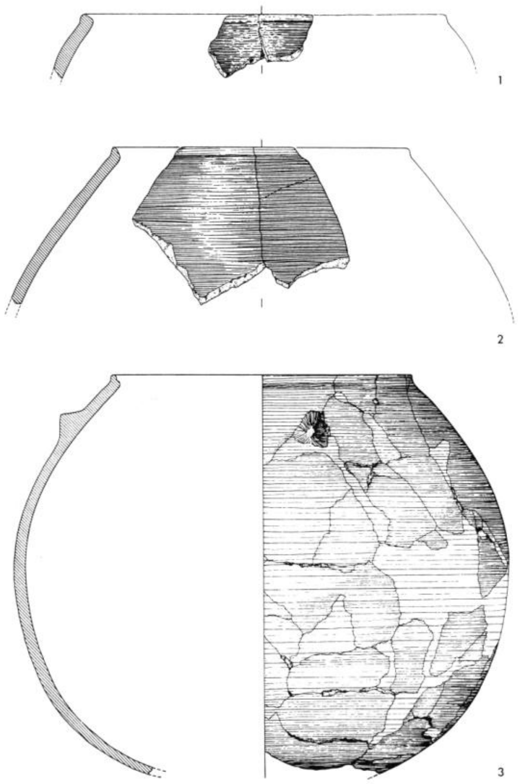


Figure 8.32. Holemouth Vessels from Kamid el-Loz Chalcolithic-EB I contexts (after Marfoe, 1995: Figure 45)

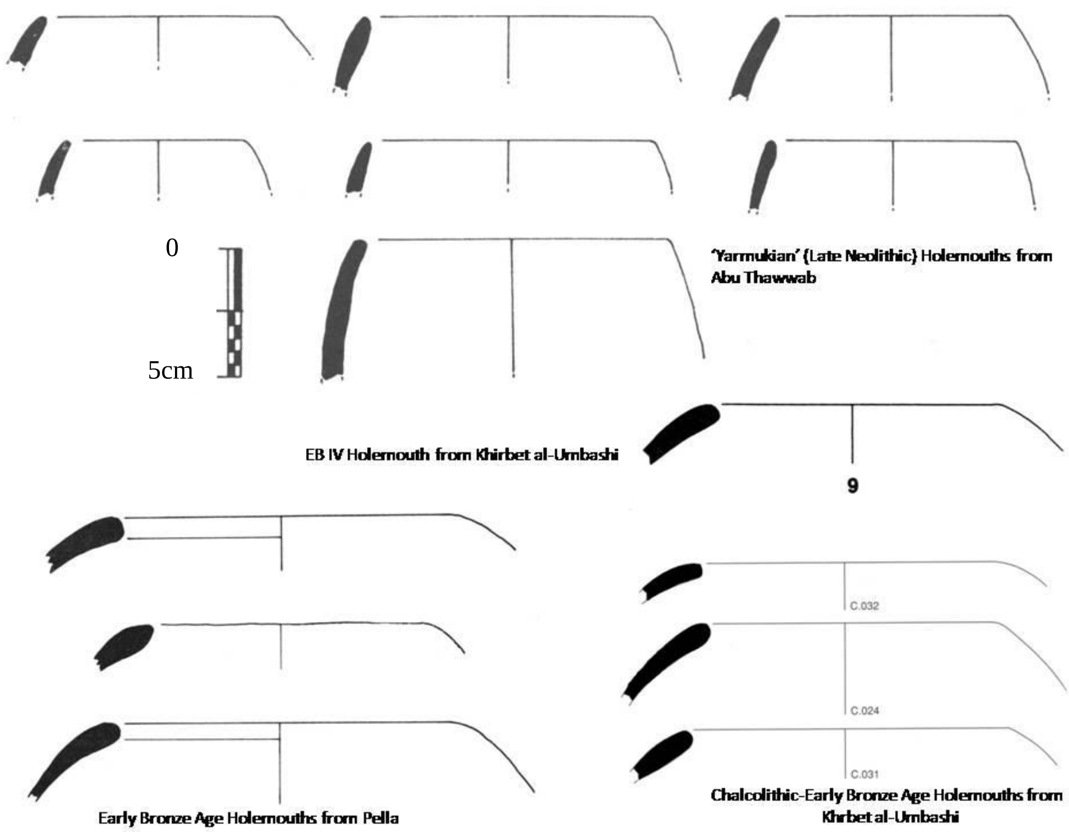


Figure 8.33. Late Neolithic-EBA Holemouth jar forms from Pella (after Bourke, 2000: 240, Figure 13.2), Abu Thawwab (after Obeidat, 1995: Figure 116) and Khirbet al-Umbashi (after Braemer and Echallier 2000: Figure 22.2 (9); Braemer et al., 2004: 301, Figure 548)

At the site of Kamid el-Loz these vessels are interpreted as having globular bases, which, within most contexts, would be indistinguishable from body sherds. Similar vessels from Umbashi have also been suggested to have globular forms (*'marmites globulaires')*. However, research at this site has also demonstrated the large percentage of flat bases within the archaeological material, although these are associated by the investigators with jars, rather than the globular holemouths already mentioned (Braemer *et al.*, 2004: 314, 320-1). The extent to which this differential use of base forms can be seen as indicative of social practice (e.g. Greenberg, 2006) or possibly even chronological variation is debateable. Whilst globular holemouths are mentioned from Hibarieyh (dated to EB IV), only two have been found at Khirbet ed-Dabab (Braemer *et al.,* 2004: 304-5). The two examples from Dabab are not necessarily vessels with globular bases and based on comparisons with vessels from Tel Dan (Biran, 1994: Figure 4, 10) and Tel Yarmouth (Miroschedji, 1988: Plate 26, 3) date to EB II-III. The differential size of assemblages and contrasting methods by which pottery from these three sites has been collected (Figure 8.34), renders any discussions concerning contrasting pottery densities at the different sites, over time, circumspect. However, given our current inability to distinguish specific forms relating to periods, such as the Chalcolithic and EB I in this region, the appearance of flat vs. globular bases is perhaps worth further consideration, especially considering debates concerning their differential use in Palestinian assemblages [see Chapter 9.5 and (Greenberg, 2006)].

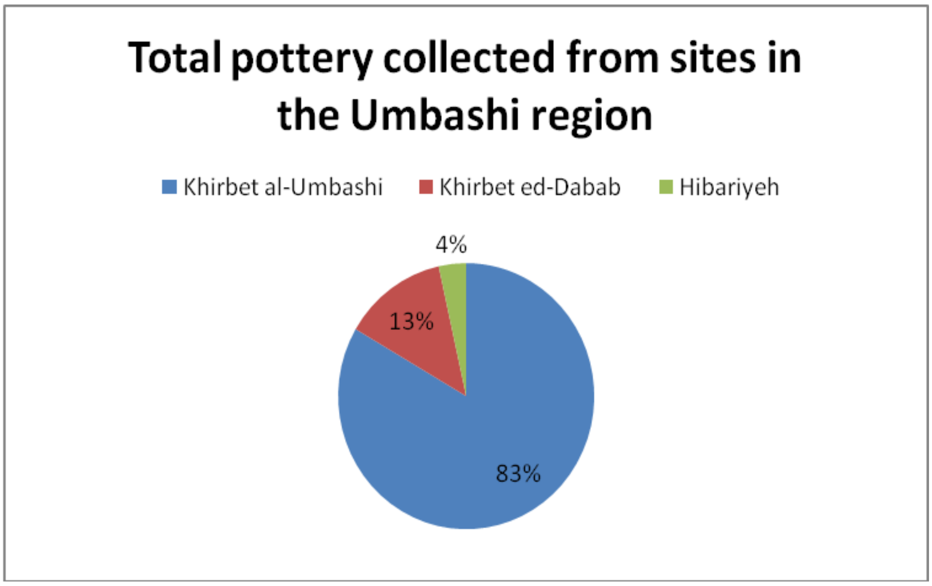


Figure 8.34. The totals of pottery collected by investigations within the Umbashi region. Collection was carried out using several different methods: Umbashi (systematic survey and excavation); Dabab (planned surface survey); Hibariyeh (opportunistic collection) (Braemer et al., 2004: 298)

The holemouths found at Umbashi and Hibariyeh show clear variation in size, ranging from less than 10cm (Braemer *et al.*, 2004: 302, Figure 550, C.189) to around 40cm in diameter (ibid: 300, Figure 547, C.038). Similar to evidence from the Negev (e.g. Contenson, 1956a) and NSA (Chapter 7.2), this variation in rim diameter and thus vessel size, is indicative of these vessels being used for a range of different functions, including both cooking and storage. Decorated examples of holemouths found at Umbashi appear to show considerable variation in terms of rim form, with examples of both internally (Figure 8.35: c.302) and externally (ibid: c. 679) thickened rims being present, alongside lipped vessels (ibid: c.305) and flaring rims (ibid: c.679). However, they appear to be more limited in terms of rim diameter, with the smallest vessel having a rim diameter of around 9cm, whilst the largest is around 21cm (Figure 8.36). Given the use of decoration on a range of 'utilitarian' vessels within the Chalcolithic Jaulan (Epstein, 1998: 160) the appearance of incised decoration on globular holemouths from Umbashi is worth highlighting and suggests, within both of these regions, the possible importance of activities such as storage and cooking within social practice.

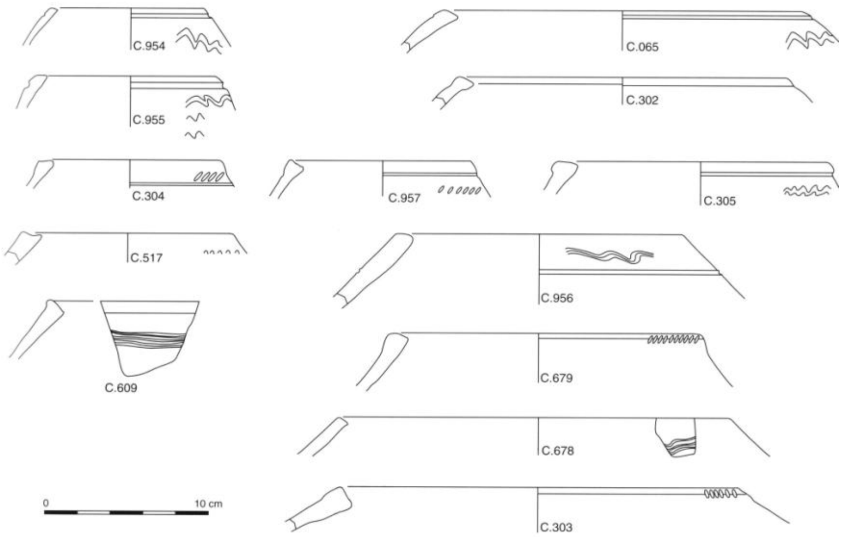


Figure 8.35. Decorated globular holemouths (Braemer et al., 2004: 303, Figure 522). Note the presence of a shelf-like rim on a number of these examples e.g. c.304.

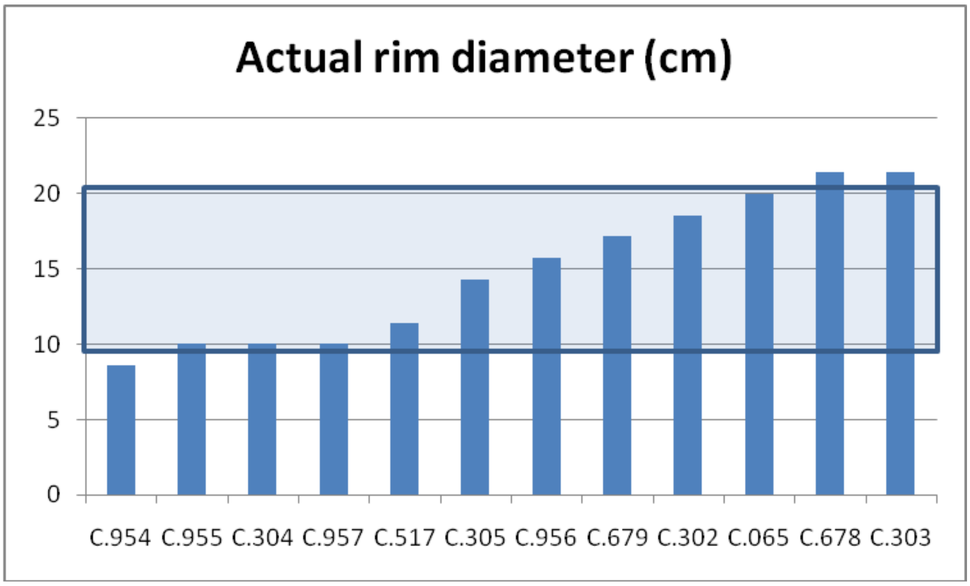


Figure 8.36. Showing the rim diameters of decorated globular holemouths (individual vessels) from the site of Umbashi. The average rim diameter is 15cm and the majority fall within 5cm either side of this average (highlighted blue box).

8.2.2.1.2. EB II-III

The EB II assemblages from the sites of Khirbet ed-Dabab and Labweh show clear parallels with Palestinian forms dating to the late EB II-III periods [e.g. Tel Te'o (Eisenberg, 1989: Figure 8.1: 14-16); Tel Megiddo and Beth Yerah (Amiran, 1970: Plate 15, 4-5) and further references within (Braemer and Echallier, 2000: 406)] and as such are indicative of these sites being integrated into networks of cultural exchange. Around one third of the material dated to EB I-II from these sites was composed of carinated platters, with triangular vertical rims, similar to those seen in Palestinian assemblages (Braemer, 2002: 11-12). These vessels appear to have been manufactured using a doleritic basalt, suggesting a unique origin for this group (Braemer and Echallier, 2000: 406). The predominant use of this material for this specific form of vessel suggests that clear choices were being made concerning fabric and vessel associations, although whether due to functional considerations or aesthetic ones can be debated.

In clear contrast to both earlier and later Early Bronze Age assemblages, the material collected from Dabab seems to have limited numbers of storage vessels and holemouths, with only body sherds of large storage jars being found at the site (Braemer and Echallier, 2000: 406). Systematic survey has been carried out at Dabab and thus these differences cannot merely be seen as the result of differing collection techniques or incomplete survey (Braemer and Echallier, 2000: 406, Braemer *et al.*, 2004: 298). The reasons for this limited representation of cooking and storage vessels may be related to non-ceramic vessels or containers being employed for such functions (Braemer and Echallier, 2000: 406). Excavation is required at Khirbet ed-Dabab, in order to identify potential storage facilities such as pits. Moreover, the lack of evidence for such features at Umbashi, which also has evidence for EB II-III occupation, may indicate that the limited numbers of storage and cooking vessels at Dabab instead relates to the function of this site during EB II-III. Comparison between the assemblage from this site and those from Qarassa (EB II-IIII/IV) highlights a number of interesting elements. Whilst vessels, such as platters and jars appear to be predominant (although holemouths are also present) in early phases of Qarassa (Niveau 1-2), the representation of holemouths appears to increase through Niveau 3 to 6 (Braemer *et al.*, 2009), an observation which appears to be in complete contrast to assemblages from Khirbet ed-Dabab. Whether this pattern is indicative of chronological patterns of use, or possible social/functional preference at the different sites, is debatable. Moreover, despite the systematic nature of survey and surface collection of material at Dabab (Braemer et al., 2004: 298), it is clear that such assemblages cannot necessarily be seen as directly comparable with excavated evidence.

Many of the storage jars from Dabab collection also show evidence of painted decoration (Braemer, 2002: 12, Braemer et al., 2004: 306), an interesting observation, considering the potential use of decoration on holemouths broadly dated to the Early Bronze Age at Umbashi (Braemer *et al.,* 2004: 522, figure 303).

Slip/Decoration/Fabric Type	Associated Forms?	Parallels
Brown-Orange slip associated with white/light coloured fabrics		'Grain Wash' from Jordan and Palestine (e.g. Genz 2002b)
Red-Brown burnished slip associated with brown fabrics	Closed Vessels and Plates/Platters	
Brick-Red Fabric	Jugs	
Orange slip associated with black-grey fabric	Closed Vessels	

Figure 8.37. Main Fabric and Slip Types found at Khirbet ed Dabab (Braemer, 2002: 12, Braemer and Echallier, 2000: 406, Braemer et al., 2004: 306)

Differentiation in terms of fabric, surface treatment and decoration according to vessel type, is particularly remarkable at this site (see Figure 8.37) and may, when considered alongside the dominance of forms, such as jugs and platters at Dabab, suggest specialisation in terms of the functions related to these vessels (Braemer *et al.*, 2004: 334, Figure 590). Excavations at the site of Tulul el-Far have revealed evidence for a range of slip and burnishing surface treatments occurring on a range of different vessel types (Figure 8.38). Whilst not precisely dated, these materials have been broadly assigned to the 3rd millennium BC and perhaps suggest that the elements of decoration (red-brown burnishing) seen at Dabab are not unique. It is interesting to note that several of the surface decoration techniques seen at Tulul el-Far and argued to be indicative of 3rd millennium BC production (Cluzan and Taraqji, 2009), show striking similarity to a number of examples from the Homs region, although the latter have been preliminarily dated to the Chalcolithic-EB I period (Figure 8.38).

Figure 8.38. Comparison between surface treatment techniques seen at Tulul el-Far and Homs NSA.

At present Khirbet ed-Dabab and Qarassa represent the only sites dated to EB II-III where a full survey/excavation has been carried out and as such, our interpretations remain limited. However, given the evidence from Dabab and particularly the early phases of Qarassa, suggested to date to EB II, we can argue that this area of Southern Syria appears to demonstrate an emphasis upon vessels designed for serving and consumption, rather than cooking and storage (Braemer, 2002: 12, Braemer and Echallier, 2000: 406, Braemer *et al.*, 2004: 334). Having said this, assemblages from both of these sites are small and we have to be wary of making generalisations based on limited evidence. This trend may indicate changing social practices and approaches to food preparation and consumption, possibly linked to wider social developments throughout the rest of the Levant during this period (see Chapter 9.5 for further discussion).

8.2.2.1.3. EB III-IV

In contrast to EB II, the most abundant EB III-IV material at Umbashi is represented by storage (33%) and cooking (17%) jars (Braemer, 2002: 12, 2004: 334). Globular cooking jar forms, produced using a red-brown gritty fabric are common (Braemer and Echallier, 2000: 408). The surface treatment shown on these vessels is evidence of clear effort being placed on the appearance of the exterior of the vessel. Several examples of holemouth jars and everted rim jars with '*grain-de-blé*' impressions (Figure 8.39) on the collar of the vessels are seen, suggesting possible analogies with EB IV material identified by Helms (Braemer *et al.*, 2004: 298, Helms, 1989a: 19). This form of decoration does not seem to be restricted to one specific form of vessel, being seen on both the small number of holemouths specifically assigned to the EB III-IV period, as well as on everted rim jars. Investigations at the site of Qarassa have also revealed the presence of this decorative technique, again often appearing on the collar vessels dated to the EB III-IV period.

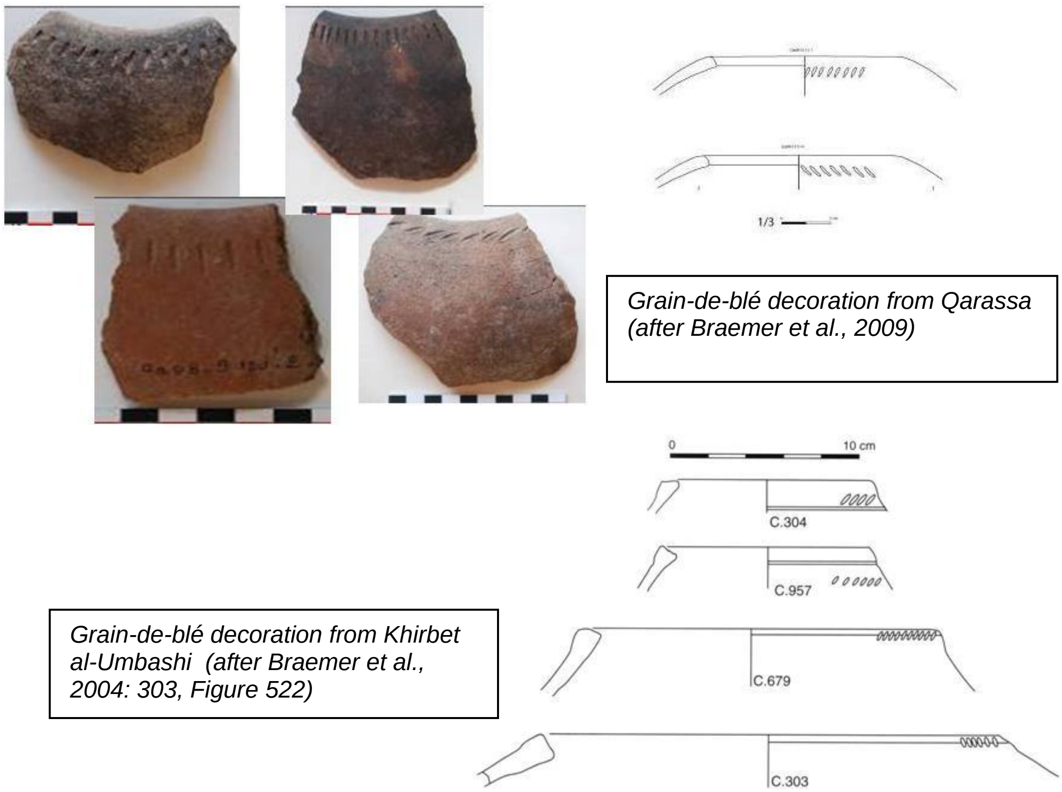


Figure 8.39. Grain-de-blé decoration on holemouth and everted rim jars from both Umbashi and Qarassa

From the Umbashi report it appears that a shift from holemouths to everted rim jars as the predominant form of storage and cooking vessels can be seen by EB III-IV. However, given the fact that a large percentage of the holemouths found at the site have just been broadly assigned to the EBA period, we have to be cautious in this interpretation. Moreover, as the investigations at Qarassa have shown, holemouths appear to increase in representation at the site throughout EB III and are still present in Niveau 7, which has been identified as an EB IV phase (Braemer *et al.,* 2009). As such, we cannot be totally sure whether a shift in storage and cooking vessel traditions can be seen at Umbashi or within the wider region or not, with the evidence from Qarassa suggesting broad phases of continuity, rather than distinct phases of change.

What is apparent from examining the range of everted rim vessels at Umbashi, is, similarly to holemouths, the variety of dimensions of vessel (c. Ø16-42 cm), attributed to their use for a range of different functions and food preparation tasks (Braemer, 2002: 12). Braemer *et al.,* (2004: 306) have identified three different fabric types although no clear differentiation in terms of form and fabric can be seen. Furthermore, plotting out the relationship between rim diameter and fabric does not seem to show any clear patterns (Figure 8.40), with the majority of vessels seen across all of the fabrics appearing to fall between 10-20cm in diameter. This observation appears to be in direct contrast to EB II-III when specific fabrics appear to have been selected for the production of specific vessel forms. Several possibilities exist; firstly it may be that the differential use of fabrics is indicative of changing chronological preference or practice, although further survey and excavation across sites, such as Umbashi would be required to assess this hypothesis. Secondly, despite the consistency which appears to be present in vessel form and size, functional differences in the utilisation of vessels producing using specific fabrics could be suggested. Thirdly, given the evidence for regional contacts during this phase [see above examples and (Braemer, 2002: 408-9)] it may be that these fabrics reflect different centres of production. Clearly, these different fabrics, especially the example which is mentioned as containing basalt, limestone and quartz inclusions would possess different characteristics, possibly facilitating their use for different functions. Thus, it is possible that whilst the size and form of vessels is not indicative of specific tasks, the use of different fabric types is.

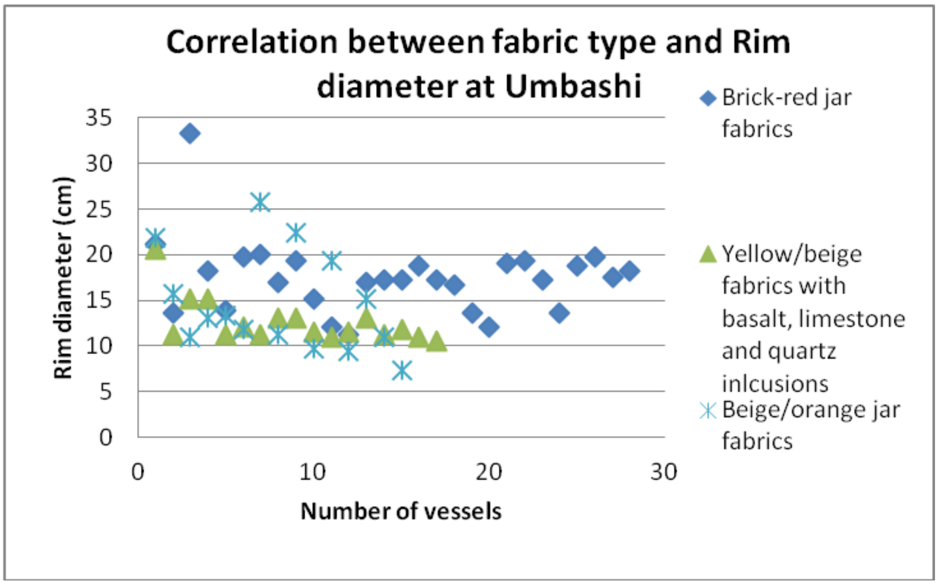


Figure 8.40. Graph showing the relationship between rim diameter and fabric type (basaltic, non-basaltic and basalt tempered clays) in everted rim jars

By the end of EB IV, pottery assemblage from sites, such as Umbashi, show clear evidence for an expansion of material culture networks. Wares such as Syrian/Hama goblets (Braemer and Echallier, 2000) indicate increased northern contacts and it would appear that at least some of the networks were new or more intensely utilised during this period. Such evidence fits well with patterns of expansion and new networks of subsistence and trade within the wider region (Braemer in press). Given the material culture evidence from the EB IV in the Hauran region, it is possible to theorise that during this period the region was strongly linked with such expansionist activity, building upon already existing regional contacts and developing them further.

8.2.2.2. Lithics and Stone Artefacts

Since Nasrallah's study in 1948, there has been little attempt to formulate a synthesis of Chalcolithic and Early Bronze Age lithic assemblages within this region. Moreover, Nasrallah's (1948: 84-98) broad brush approach which identified a 'Ghassulian' lithic industry being replaced by an indigenous 'Caanean style' by EB II-III has limited value today. Recent work at Umbashi, Dabab and Hibariyeh has led to the identification and study of around 8,000 flint artefacts, 284 of which were identified as tools and 23 as cores (Braemer *et al.*, 2004: 289). In addition, although not yet fully published, excavations at Tulul el-Far have highlighted the presence of a comparable lithic assemblage (Cluzan and Taraqji, 2009: 37, figure 8) suggesting that similar repertoires were being utilised across the wider region. The material discussed here was obtained from a range of different techniques and areas, including surface survey at Hibariyeh, systematic survey at Dabab and excavation and surface collection at Umbashi (ibid.).

As such, apart from the excavated material from Umbashi, this material is not fully quantifiable and thus conclusions are limited.

Sondage VS4.12 at Umbashi revealed a large number of flints, intermixed with ceramic sherds and bones. Unfortunately no radiocarbon determinations exist for this sondage, although the radiocarbon determinations for the rampart constructions in this area fall within the EB I-II period (see Appendix 8.1). Examination of the debitage from this area seemed to indicate that, rather than primary production, a process of retouch and re-preparation was occurring at the site (Braemer *et al.*, 2004: 289). In addition, the large percentage of burnt lithics led investigators to suggest a secondary deposition of this material (ibid.). Studies have also suggested that both direct percussion and soft percussion using faunal or botanical material may have been used (ibid: 290). The tool assemblage appears to be largely dominated by tabular scrapers and cananeean blades (Figures 8.41-2), leading the authors to suggest an Early Bronze Age date for this assemblage of material [although note suggestions for pre-EBA ‘cananeean’ blades dating to the Chalcolithic from the Negev (Rowan and Levy, 1994)].

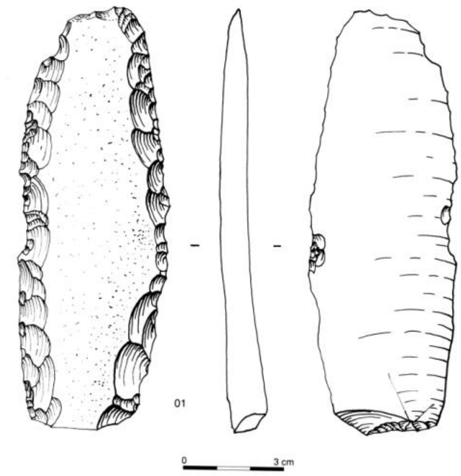


Figure 8.41. Tabular scrapers from Khirbet al-Umbashi (after Braemer et al., 2004: 290: fig. 539).

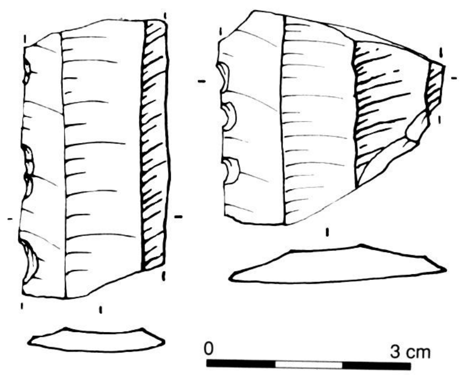


Figure 8.42. Canaanean blades from Khirbet al-Umbashi (after Braemer et al., 2004: 291, fig. 540)

Non-local raw materials appear to have been employed for the production of lithics. These vary from a grey/brown flint of medium grain quality to a finely grained flint which appears to have been reserved for the production of tabular scrapers and canannean blades (Braemer *et al.*, 2004: 290), the presence of which, appears to fit well with the EB I-II radiocarbon dating of this area [VS4 dates vary from 3328-2179 cal BC (re-calibrated 3367-2016 cal BC)]. Bearing in mind the possible evidence for secondary preparation and re-touch of material occurring at this site, a key question to be ascertained is the possible sources of the original flint raw material. As outlined in Chapter 2, Umbashi is located within a series of basalt flows, with the closest sources of flints and limestones deriving from the depressions within this region [see Figure 2.12 (Braemer *et al.,* 2004: 16)]. Whilst, as suggested in relation to other regions (e.g. the Homs Basalt), the use of flint washed into the region from the erosion of flint bearing terrace/bank deposits via the local *wadis* may be possible; these sources would clearly be limited. In addition, the rarity of cores at the site might indicate that these were exploited to the maximum and then abandoned, possibly due to the lack of suitable raw materials in the surrounding area (Braemer *et al.*, 2004: 291). Equally possible is that tools, such as tabular scrapers and cananeean blades, were being produced by specialists and then imported to Umbashi, where only re-touch and re-preparation was carried out (ibid: 292). Given the potential lack of flint raw materials within the region, the lack of basalt tools perhaps needs to be questioned. Survey within the Homs region has illustrated the potential of using basalt for the production of flaked tools (Chapter 5.3 and Appendix 5.7) and this might be expected at sites within the Hauran. Their absence from assemblages is possibly the result of several factors. Firstly, the nature of basalt within the Hauran as outlined in Chapter 2, is contrasting to that of the Homs region. In the Hauran it largely appears as flow material in slab outcrops, rather than as boulder deposits, possibly suggesting that this raw material was harder to exploit than the smaller basalt blocks within the Homs region. Given the lack of basalt vessels within this area, in comparison to the Jaulan (see Chapter 8.3.2.2), this is an obvious possibility. However, equally probable is the lack of recognition of these tools within the archaeological record, as they are extremely difficult to detect and in some cases could easily be interpreted as flaking as a result of natural processes. As such, it is possible that such objects have been overlooked within the Hauran region.

Our knowledge of lithics within this region from the Chalcolithic-EBA is incomplete and as suggested by Braemer *et al.* (2004: 292) while any synthetic or in depth studies of lithics within this region are rare, further generalisations and discussions are limited. However, the predominance of a range of tools, such as canaanean blades and tabular scrapers, such as at Umbashi and Tulu el-Far suggest that these objects were being used for a series of tasks, possibly some of which were associated with butchery activities, as has been suggested for the examples of tabular scrapers from the site of Bab edh-Dhra (McConaughty, 1979, Rosen, 1997: 74). The presence of canaanean blades may also indicate agricultural use, as these tools are often interpreted as sickle blades for the processing of reeds, grasses and cereals (e.g. Rosen, 1997: 44). Although, the range of tasks that such tools, especially when re-touched, can be used for, should also be highlighted (ibid: 44-64). The interpretation of the lithic material from Umbashi cannot go beyond general hypotheses. However, similar to the ceramic material, the evidence does seem to suggest that this site was linked into wider material networks facilitating either the importation of raw materials or partly finished tools to the site.

Excavation and survey at Umbashi has revealed a range of ‘hammerstones’ (stone-maceheads) manufactured from limestone and in one case hematite (Braemer *et al.*, 2004: 292-3). These objects consist of rounded or pear shaped perforated stones, which show clear standardisation in terms of diameter, as well as symmetry (ibid.). From the nature of the fracturing of these objects and their primary discovery at VS4.07, it has been suggested that these objects had no clear practical usage. Thus, they have been suggested to have a ‘symbolic’ function (Braemer *et al.*, 2004: 296), being compared to similar artefacts found within the Chalcolithic Nahal Mishmar hoard (e.g. Moorey, 1988: 174-5) and EB IV royal Ebla tombs and palace (Matthiae *et al.*, 1995: 343; no. 138). The discovery of these objects from contexts spanning the 5th-2nd millennia BC (e.g. Sowada, 2009: 233) makes interpretations of their chronology highly problematic. However, radiocarbon dating from the area of VS4.07 has largely been seen to fall somewhere within the EB II-III period. Moreover, it is perhaps the predominance of these finds from VS4.07 and the general VS area, which requires specific consideration. As Figure 8.43 shows nearly 70% of the maceheads recorded from the 1984-mid 1990 seasons at Umbashi were found from VS4 and nearly 100% were from the general VS area. Moreover, the examples from the VN and VW zones were single finds from specific buildings, or in one case the *wadi* [VN3 *wadi* (Braemer and Echallier et al. 2004: 16)].

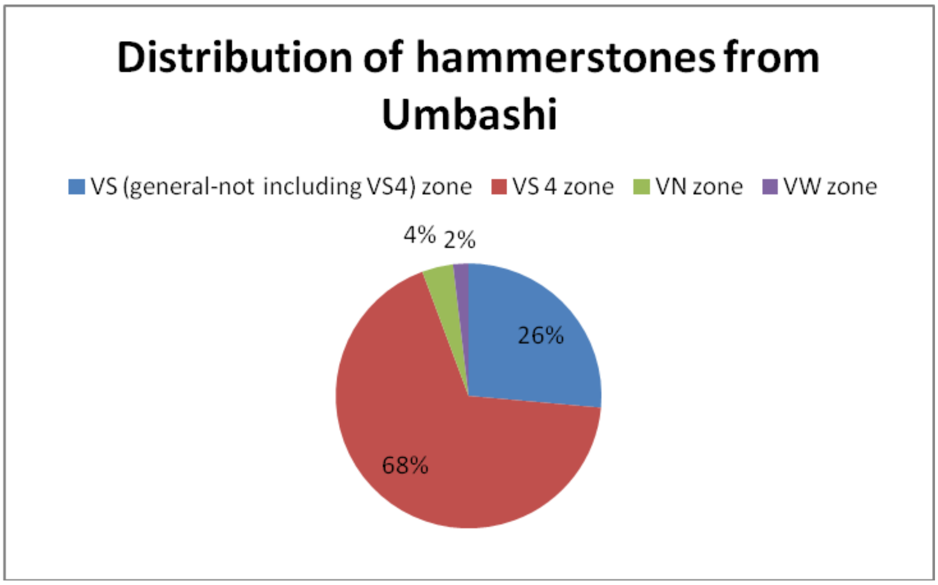


Figure. 8.43 Distribution of maceheads from different contexts at Umbashi

The predominance of these objects from a single context is particularly remarkable (Braemer *et al.,* 2004: 296) and suggests that these artefacts and thus, presumably the area in which they were found, had a specific purpose or meaning. Considering the presence of the large megalithic building VS4.10 in this general area the importance of this zone is apparent (Figure 8.44). Moreover, the standardisation in form, material and deposition of the maceheads suggests that they were being manufactured using a clear template and level of sophistication. Their production from limestone is also worth highlighting, as whilst sources of this rock can be found in relatively close proximity to this region, it is not the local geology. Thus, these objects would have had to be produced elsewhere and then transported to the site, or limestone blocks/partly finished artefacts could have been brought to Umbashi. Examples of maceheads found from sites within the Southern Levant, such as Bab edh-Dhra have shown evidence of both local production, as well as possible trade from Egypt (Sowada, 2009: 233). Due to the wide range of dates, assigned to similar objects throughout the Levantine region, as well as Egypt, it is clear we cannot assume that the examples from Umbashi are contemporary with any particular assemblage (Rosenberg, 2010, Sowada, 2009: 232-3). However, the placement of these objects within contexts, such as graves (Matthiae *et al.*, 1995: 343; no. 138) and hoards (e.g. Moorey, 1988: 174-5) suggests that these artefacts had social and ideological importance over a wide geographical and chronological span, albeit one whose precise importance or meaning changed (Rosenberg, 2010: 213, Sowada, 2009: 229). The discovery of such objects from Umbashi and in particular their manufacture from limestone is a further indication that this site was part of broader socio-cultural networks, facilitating access to raw materials and/or material culture, as well as concepts of elite emulation and representation.

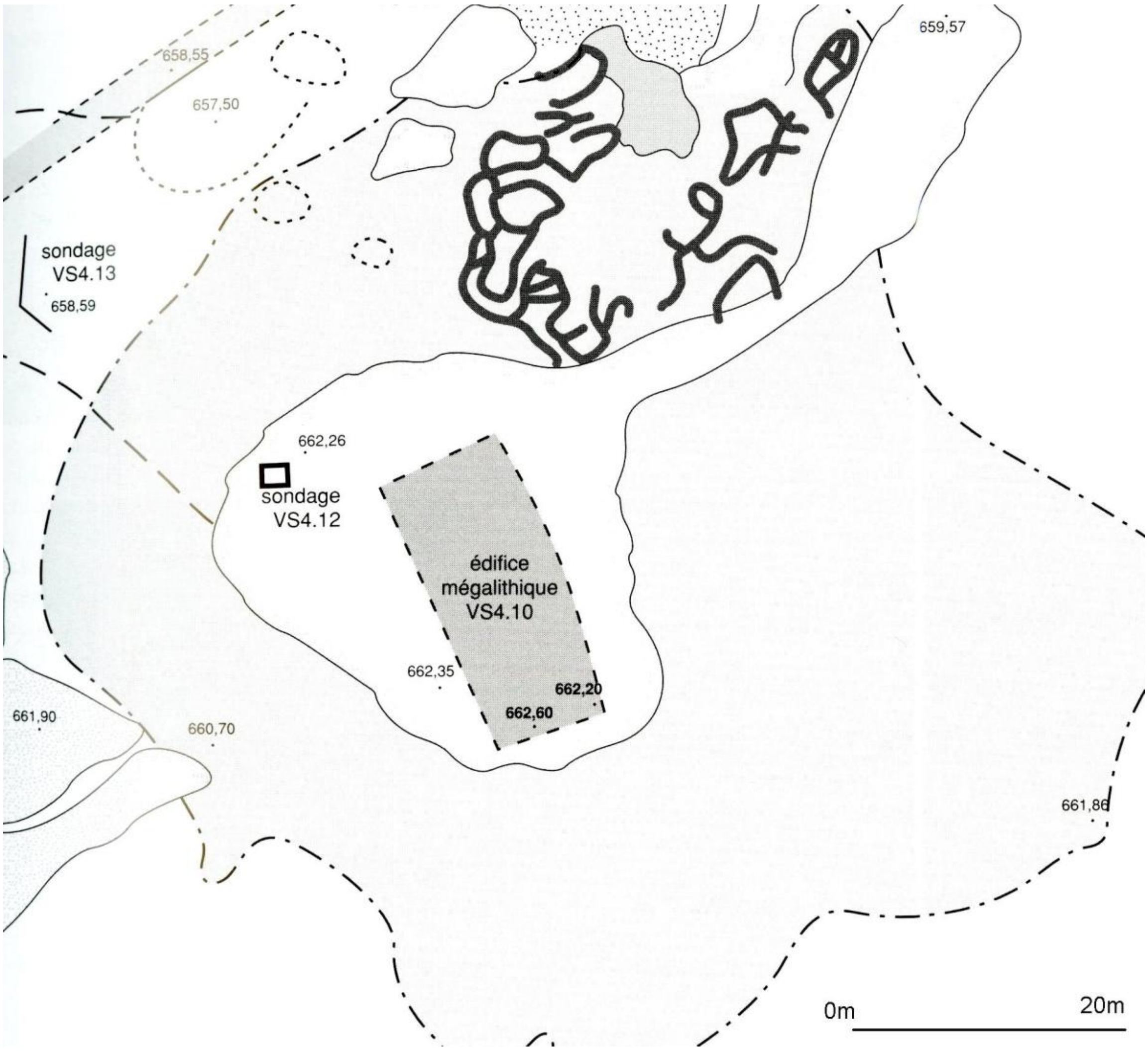


Figure 8.44. Megalithic Building VS4.10 (Braemer et al., 2004: 293, figure 541)

From surface collection and excavation, a range of largely unmodified blocks of basalt, interpreted as having been used as '*molettes*', pounders or grinders, have been identified (Braemer *et al.*, 2004: 335). In addition, fixed *in-situ* grinders were found at the western encampment area alongside flat platter groundstones (ibid: 341). Mortars have also been discovered set within basalt outcrops in the southern sector of Umbashi. Clustered in groups of between six and eighteen and ranging between 15-40cm in diameter, these have been suggested, when found in the Jaulan, to relate to the crushing of olives, although there is little evidence from Umbashi to suggest this usage (ibid.). Within the houses at Umbashi there is also evidence for a range of small, relatively mobile mortars, which are suggested to have been used both for vegetable and cereal preparation, possibly in association with wooden, rather than stone grinders (ibid.). The presence of both household and apparently 'external' based food preparation and exploitation areas may suggest that food preparation activities were performed by the larger community, rather than on a single household basis. Furthermore, the location of these grouped mortars within the southern sector again emphasizes the idea that this area can be marked out as displaying potential evidence for complex social practices. No spindle whorls have been identified from this site, suggesting that textile production (at least using whorls) did not take place at Umbashi. Given the fairly considerable number of pottery spindle whorls from the Jaulan (Epstein, 1998: 166-7, Plate XXI), the lack of such artefacts at Umbashi is suggestive. Moreover, basalt used for the production of spindle whorls is noted at sites, such as Shuna (pers comm. Philip 2010). Thus, the absence of these artefacts at Umbashi cannot merely be seen as relating to lack of raw materials. Instead, it appears indicative of distinct subsistence practices taking place across these different regions.

Finally worth mentioning in relation to this evidence for complex social practices are the shell/bead artefacts, found associated with tombs from the environs of Hijaneh, as well as the site of Umbashi. Nasrallah (1963: 45), in his analysis of the Hijaneh tomb material, emphasized the fact that it was impossible to tell whether the shells, which were Mediterranean species, were a natural product, presumably transported via *wadis* or found within neighbouring sedimentary geology or one received via exchange. However, Umbashi Tomb 269, has revealed beads produced using carnelian, steatite, basalt, quartz, ivory, dentalium and faience, varying in shape, size and form (2004: 352). Braemer *et al.,* (2004: 357) have suggested that similar bead assemblages can be seen throughout the Oman peninsula and Indus Valley during the third millennium BC. In addition, such artefacts and materials are common in Chalcolithic deposits from Peq'in cave (Bar-Yosef Mayer *et al.*, 2004: 493), as well as EB I strata at Shuna (Philip pers comm. 2010). Whilst these finds are not indicative of simple chronological parallels, they are yet another signal that this region was linked into wider networks throughout the 4^{th}-3^{rd} millennia BC.

8.3. The Jaulan

Over the past few decades a considerable amount of new research, survey and excavation has focused upon the Chalcolithic and Early Bronze Age in the Jaulan (e.g. Aveni and Mizrachi, 1998, Epstein, 1972, 1973, 1975, 1978, 1984, 1985a, 1985b, 1985c, 1987, 1988, 1993, 1998, Gal, 1988, Gilead, 1968, Kochavi, 1989, Paz, 2002, Vinitzky, 1992, Zohar, 1989). However, there exists a clear disparity in the nature of evidence for each period. Chalcolithic material predominantly derives from excavations of broadroom structures in 'village settlements' (Epstein, 1998: 1). Very little is known about the nature of burials within this period, despite emphasis being placed on the complexity of cultic activity at this time (ibid.). In contrast, work on the Bronze Age has focused on megalithic monuments, such as dolmens and cairns (e.g. Epstein, 1972, 1973, 1985a, Vinitzky, 1992, Zohar, 1989). Due to this, there is a lack of knowledge about settlements and 'domestic' architecture during this period, making interpretations concerning the indigenous development of new aspects of architecture, subsistence and dwelling particularly difficult. Whilst radiocarbon dates are available from a number of key Chalcolithic sites, no EBA sites have been dated absolutely, typological pottery assessment being used instead. The use of contrasting chronological period descriptions (i.e. IBA rather than EB IV) adds to the difficulties in interpreting these remains, especially when trying to compare the region to surrounding areas, such as the Hauran.

8.3.1. Architecture and Settlement

8.3.1.1. Chalcolithic

Over the past few decades excavation within the Jaulan by researchers, such as Epstein (1998: 1), has highlighted the strong regional character of this period throughout Palestine and in some cases the unique nature of aspects of society. This unique nature is, to some extent, being challenged by recent discoveries in areas such as the Jordanian uplands (e.g. Lovell, 2007, Lovell *et al.*, 2007). Moreover, in contrast to evidence from the Hauran and Homs NSA the Jaulan indicates a Chalcolithic (i.e. 5^{th} millennium BC), rather than Chalcolithic-EBI (i.e. 4^{th} millennium BC) expansion of settlement, a scenario possibly mirrored by activity in the Jordanian highlands [see Chapter 9.3.3.1. for further discussion (e.g. Lovell, 2002, 2007)].

Epstein's (1998: 6) review formalised sites into a number of broad variants, ranging from scattered farmsteads, which included those on the periphery of larger settlements, to small groups of houses representing dwellings of extended families, hamlets of up to fifteen houses and finally, larger villages consisting of between fifteen and thirty seven houses. Her interpretation of this variety was centred on the understanding of these villages and structures as agglomerations of family dwellings. These were characterised by chains of buildings, enabling members of an extended family to live side by side, with Epstein (ibid: 6-7) suggesting that the house chains were determined by close-relationships and thus, rarely exceed five or six structures in a row. Based on this notion, the concept of a clan-based community was developed, with isolated farmsteads representing individual family efforts, whilst larger villages acted as central loci for the wider community (ibid: 7). The lack of evidence for fortifications during this period suggested a egalitarian society, with differential house sizes reflecting family size, rather than any form of social aggrandisement (ibid: 7-8). Ethnographic parallels were also emphasized by Epstein (1998: 14-15). In her opinion, groups of recently settled or transhumant communities from the 20th century offered a potential analogy for the Jaulan Chalcolithic, with these groups constructing sub-divided multi-functional structures (Epstein, 1998: 15-16, Jarno, 1984: 204, Thoumin, 1932: 25). Her interpretations of a recently settled semi-nomadic population is in line with research carried out within the Hauran region of Southern Syria (e.g. Aurenche, 1999, Braemer, 1999). However, it lacks much of the subtlety of this approach and is presented within a much more evolutionary derived framework than that of Braemer and others (see chapter 9.3 for further discussion). One of the key questions, which arise from the hypothesis of a sedentarising semi-nomadic population, is what evidence exists for human populations within the Jaulan, prior to the Chalcolithic?

Relatively little research has been carried out considering Pottery/Pre-Pottery Neolithic activity within this region. Survey in the 1970s identified only one site which might show Neolithic characteristics (Bar-Adon and Kochavi, 1972). Even if we are dealing with a semi-nomadic community during this period, occupation or activity scatters, especially around areas of seasonal water sources, as found in the Homs region (see Chapter 6.3.2.), might be expected. It is quite possible, given the lack of intensive survey and aerial and satellite reconnaissance in this region that a large percentage of sites have been overlooked. This possibility is emphasized by a cursory examination of Google-earth imagery which shows a dense range of structural features, possible enclosures and cairn monuments previously un-recorded and published within the area (Figure 8.45 and see Appendix 8.4). Indeed, if we compare many of these structures to those found within the Homs area, certain morphological similarities can be seen (Figure 8.46). It is also interesting to note that similar structures can be seen on an aerial photograph included in Epstein's (1998: Figure 24) publication, although no note is made of them. These observations do not necessarily suggest that these features are contemporary or represented similar subsistence origins or social strategies. Instead, it emphasizes the need for further fieldwork and satellite imagery analysis within the Jaulan.

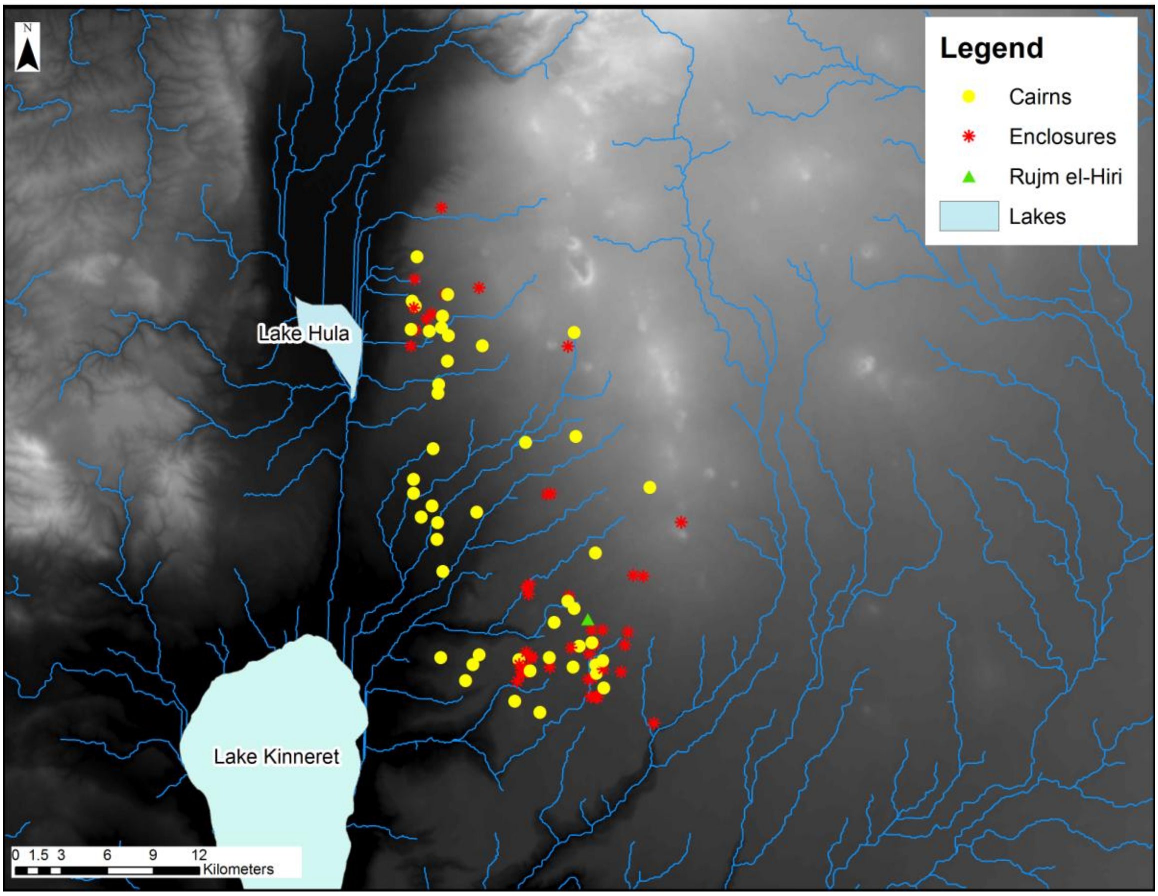


Figure 8.45. Plot of sites identified in GoogleEarth from Jaulan region to the east of Lake Kinneret

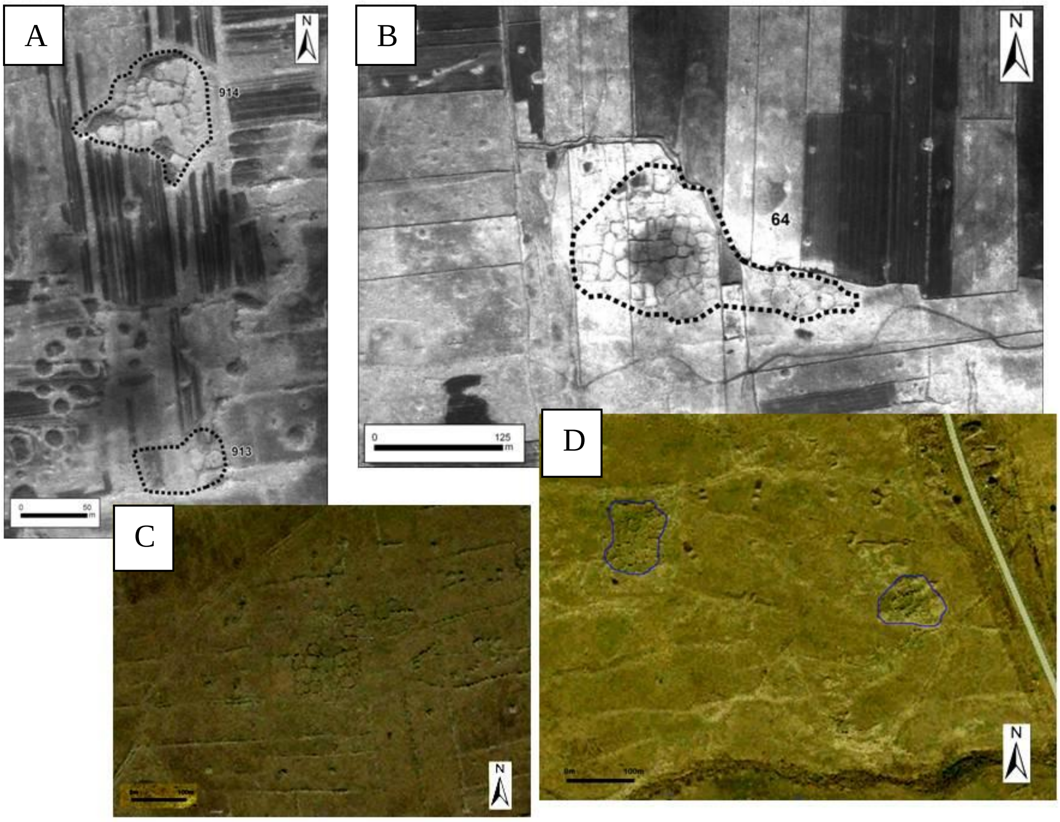


Figure 8.46. Comparative image of structures from Jaulan (C+D) shown next to irregular clustered structures from Homs region (A+B)

Notwithstanding these issues, it is important to consider the possible nature of settlement during the Chalcolithic period in this region. Given the damp and cold nature of the winter months (see Chapter 2) flocks presumably would not have remained within grazing areas (Epstein, 1998: 16). At certain times of year broadroom structures may have served as shelter for both humans and animals, a practice still seen in this area in the 20th century (Epstein, 1998: 16-17). On this basis, the question of the roofing of structures is an interesting one, especially given the lack of evidence for basalt slabs, a practice employed at the site of Umbashi during the EBA and in the Roman-Byzantine periods and later in the Jaulan (e.g. Epstein, 1998: 9, Schumacher, 1888: 164-5, Thoumin, 1932: 21-22). Debate on this subject, as within the Hauran, has often focused upon the potential seasonal use of these structures, which may have precluded the need for roofs (Epstein, 1998: 13).

However, if this was the situation, where was the population from this area moving to during winter months and why construct stone structures at all if they were only to be used seasonally? Researchers have suggested potential architectural associations between Chalcolithic sites in the Jaulan and Hula Valley settlements, such as Tel Te'o (Eisenberg *et al.*, 2001: 205-6, 207) as well as settlements in the Jordan foothills [(e.g. Lovell, 2007: 457) and see Chapter 9.3.3.1. for further discussion)]. Having said this, investigators acknowledge that whilst parallels can be seen, especially in terms of the pottery assemblages, areas such as the Hula Valley show evidence of local traditions (Eisenberg *et al.*, 2001: 207). Attempts to use such possible links to suggest earlier contacts would be tenuous, especially considering our lack of knowledge of activity in the Jaulan region, prior to the Chalcolithic. Moreover, the need to identify an area of winter dwelling may not be necessary at all. As argued by Epstein (1998: 13-14) the presence of organic roofs is a real possibility, especially given the potential existence of olive and tabor oak in the surrounding area (see Chapter 2). Such features would not survive in the conditions of the Jaulan, however, despite a lack of evidence it should not be assumed that these structures were never roofed.

Parallels for the 'broadroom' structure found in the Jaulan can be seen at Ghassul (Mallon *et al.*, 1934: 33; fig.12; planche 15) Horvat Beter (Dothan, 1959: 5) and sites in the Jordan Valley foothills [(e.g. Lovell, 2007: 457) and see chapter 9.3.3.1. for further discussion]. In addition, the presence of small end-rooms associated with broad-room structures have been seen from nearby sites in the Hula Valley, such as Tell Te'o (Eisenberg, 1989: 32; fig.3.). On the basis of such evidence, researchers have argued that this plan represents a variation on a common theme seen throughout a fairly widespread region during the Chalcolithic. The layout of these buildings in a series of chains shows clear similarities to the arrangement of buildings seen at Tell Zheir [see Chapter 8.2.2.2 and (Braemer 1991)]. This may suggest something concerning social organisation and familial occupation at these sites. However, whilst the Jaulan examples are Chalcolithic, at Tell Zheir their dating is less circumscribed, being placed somewhere between the Chalcolithic and Middle Bronze Age (see Appendix 8.1). In part this more precise dating is associated with the larger assemblages of diagnostic material from the Jaulan sites. However, if we compare the plans reconstructed for the 2nd millennium BC buildings seen at Umbashi (Figure 8.48), with those from the Chalcolithic Jaulan (Figure 8.47) a strong degree of similarity is present, especially when compared to hypothetical reconstructions of the use of wooden support posts at the Jaulan sites (e.g. Epstein 1998: 9). The key difference between these two sets of structures is the roof, which in the case of the 2nd millennium BC Umbashi houses is composed of basalt slabs (Braemer *et al.*, 2004: 147), whereas evidence for roofing material at the Jaulan Chalcolithic houses is absent (Epstein, 1998: 9). Comparisons to rectilinear structures at sites such as Tell Te'o are also potentially flawed, as whilst Chalcolithic rectilinear structures are visible from this site, researchers highlight the use of large communal courtyards (Eisenberg *et al.*, 2001) a feature which appears to be totally absent within the Chalcolithic Jaulan [although this is debated by (Eisenberg et al., 2001)]. I am not suggesting that these factors indicate that no analogous forms of dwelling across these different areas and time periods can be seen, however, it does imply that generalised typological designations, such as 'broadroom' structures cannot be used to interpret social or chronological attributes without a detailed knowledge of the area and material culture associated with the site.

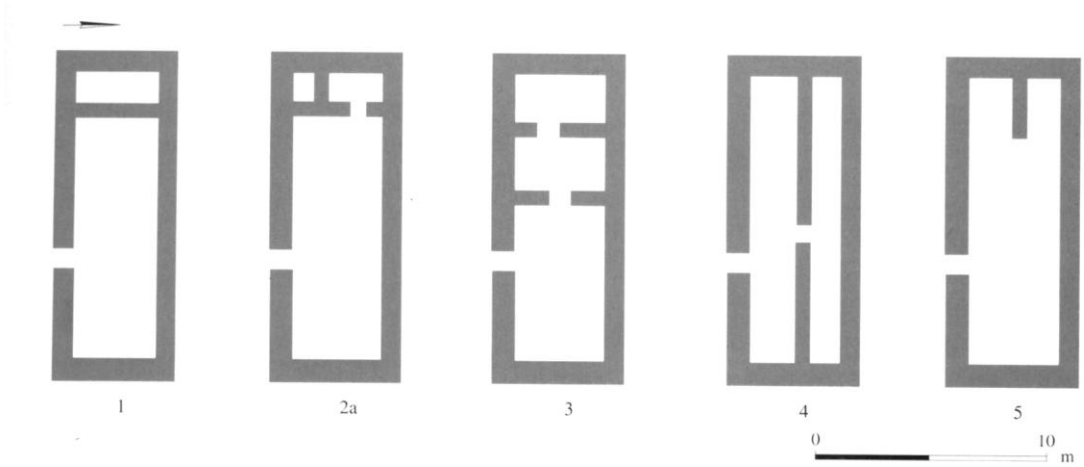


Figure 8.47. Plan of Chalcolithic Jaulan houses (Epstein, 1998: 9, figure 9)

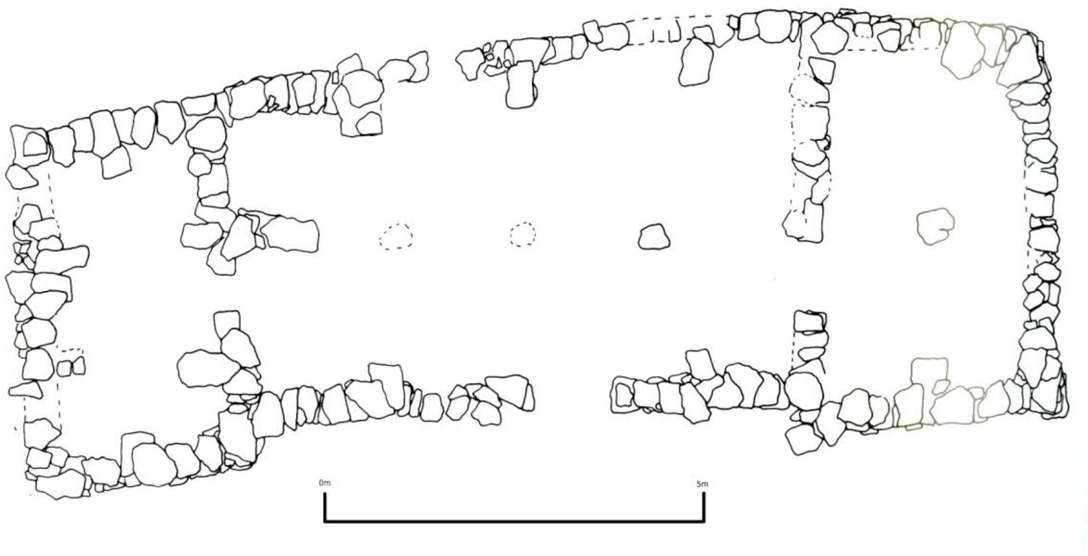


Figure 8.48. Plan of building VN1.05 from Khirbet al-Umbashi (Braemer et al., 2004: 156, figure 322)

Several built storage structures, such as silos were discovered during investigations (Sites 6, 8, 18 and 20), however, they are limited in number, an observation linked to the difficulties of trying to construct sub-surface features within the stony basaltic soil. Indeed, one example was found constructed on top of a floor surface [House 10, Site 18 (Epstein, 1998: 10)]. Clearly designated courtyards were also limited and where recorded an artefactual assemblage, paralleling that of the interior of the building was discovered (Epstein, 1998: 16). The lack of differentiation between exterior and interior at the Jaulan sites echoes evidence from sites such as Khirbet Charaya, where activities, such as burial and dwelling were not so heavily circumscribed. Moreover, Chalcolithic Jaulan sites containing dolmens built on top of or within ruined buildings have also been found [e.g. Rasm Harbush (Figure 3.9)]. Whilst the *terminus post quem* of dolmens at sites, such as Rasm Harbush is clear, we have to careful in assuming that no relationship existed between the earlier Chalcolithic buildings and later dolmen constructions (see chapters 3.2 and 9.6 for further discussion).

8.3.1.2. EBA

In contrast to the Chalcolithic, relatively little is known concerning the apparently 'domestic' structures of the EBA within the Jaulan, with much of the artefactual material dated to EB I-IV being associated with burial monuments such as dolmens (Kochavi, 1989: 2). This situation is made increasingly difficult due to the lack of finds associated with many of these burial structures (e.g. Epstein, 1985a: 21), as well as the use of a contrasting chronological framework within this area (see Table 8.1).

Kochavi's investigations within this area during the 1980s revealed a number of EBA enclosures, such as Lawiyeh whose initial construction has been dated to EB Ib [c. 3300-3050 BC according to (Paz, 2002: 238, 243)]. Located on an elongated spur overlooking the *Wadi* Kanaf to the north and *Wadi* Samakh to the south, excavation revealed a series of stone heaps or walls segmenting parts of the spur, as well as possible dwelling remains [Figure 8.49-50 (Kochavi, 1989: 4-6)]. Similar sites have been found in areas outside the Jaulan. H. Sahal Tahtit (eastern Lower Galilee) is composed of enclosure walls constructed at the two extremes of a spur which extends over 400m (Gal, 1988: 1). In contrast to Lawiyeh, few building foundations or structures have been found. Instead, the area appears to be largely free of structural remains, with bedrock being visible on the surface and the scattered finds from the site dating the enclosures to EB II (Gal, 1988: 3). Survey and excavation in the nearby semi-arid Samaria region during the 1970s-1990s led to a range of similar enclosures of EBA date being found (Zertal, 1993: 113). On the basis of comparison with the Jaulan enclosures, Zertal (1993: 119) argued that a range of common features could be identified. Firstly, most of the sites were located on high ground of either narrow spurs or high peaks, with both isolated and excellent views, as well as a lack of access to water being a common feature. In addition, sites were predominantly located in areas of Mediterranean climate, such as the site of Er-Rujm or semi-arid zones, such as close to the *Wadi Fara'ah* (ibid: 120). Zertal (ibid: 120) divided these sites into two groups; those with no apparent building remains within their interior i.e. Shahal, Rashin and Qa'adeh in the Samaria region and those with settlement, such as Lawiyeh, Sha'abniyeh in the Jaulan and Umm el-Hawa and er-Rujm in the Samaria region. These different levels of settlement were interpreted as representing various stages of urbanisation, with unfortified settlements often being found in the vicinity of these enclosures in the Lower Galilee and Samaria.

Paz (2002: 247) re-examined these sites, arguing that they were a part of a phase of fortification whose 'epicentre' could be found in the Jordan Valley. This process, he suggested was characteristic of the growth of territorial peer polities in EB IB, which linked fortified settlements with surrounding smaller 'open' settlements and agricultural hinterland (ibid: 248-249). Moreover, he argued that a tripartite categorisation of sites could be suggested, with fortified sites above 3 hectares being considered 'urban' (ibid: 245, 253).

Small (up to 2 hectares)	Medium (up to 5 hectares)	Large (up to 100 hectares)	Very Large (over 100 hectares)
Ras Reshin	Me'ona	Lawiyeh	Megiddo
Nebi Yerub	Tel Shalem	Giv'at Rabi	Handaquq North
el-Mu'amar	Tell el-Far'ah (N)		Beth Yerah
Tel Kinerot	er-Rujum		Tell es-Sa'idiyeh
Khirbet er-Rujman	et-Tulul		Aphek
es-Sunkur	Jericho		Tel 'Erani (possible)
	Tell Abu el-Kharaz		

Figure 8.49. Area of fortified sites (after Paz, 2002: 245, Table 1)

Given, the lack of associated 'open' settlements presently known within the Jaulan, this interpretation cannot be applied across the whole region during this phase. Indeed, as Paz (2002: 247) suggests, there are still major gaps in surveys across both Northern and Southern Transjordan, limiting our understanding of settlement during this period. No clear synthesis of ceramic data, spanning the 4^{th}-3^{rd} millennia BC exists and given the contrasting dating horizons used for areas, such as the Samaria region [e.g. EBI c. 3150-2850 BCE (Zertal, 1993: 120, 2004: 46-7)], not all of these sites may be contemporary. Despite this, Paz (2002) makes an interesting attempt to integrate these sites into a broader understanding of society during EB IB. However, he fails to consider the very different environments that these settlements and fortifications are found within. Given the differing resource patterns and subsistence opportunities in areas such as the Jordan Valley, Jaulan and Samaria regions, we cannot assume that all of these sites represent a single phenomenon. Furthermore, if we examine the published plans for enclosures known from the Jaulan and Samaria regions it is apparent that variability is present (Figure 8.50), possibly suggesting differing functions and settlement patterns in different micro-regions. Having said this, Paz (2002: 247) is correct in suggesting that there does seem to be a broad phase of 'monumentalisation' and enclosing of settlements during the early EBA. The extent to which this may represent changes in the socio-political and economic context of the Levant shall be discussed in more detail in Chapter 9.

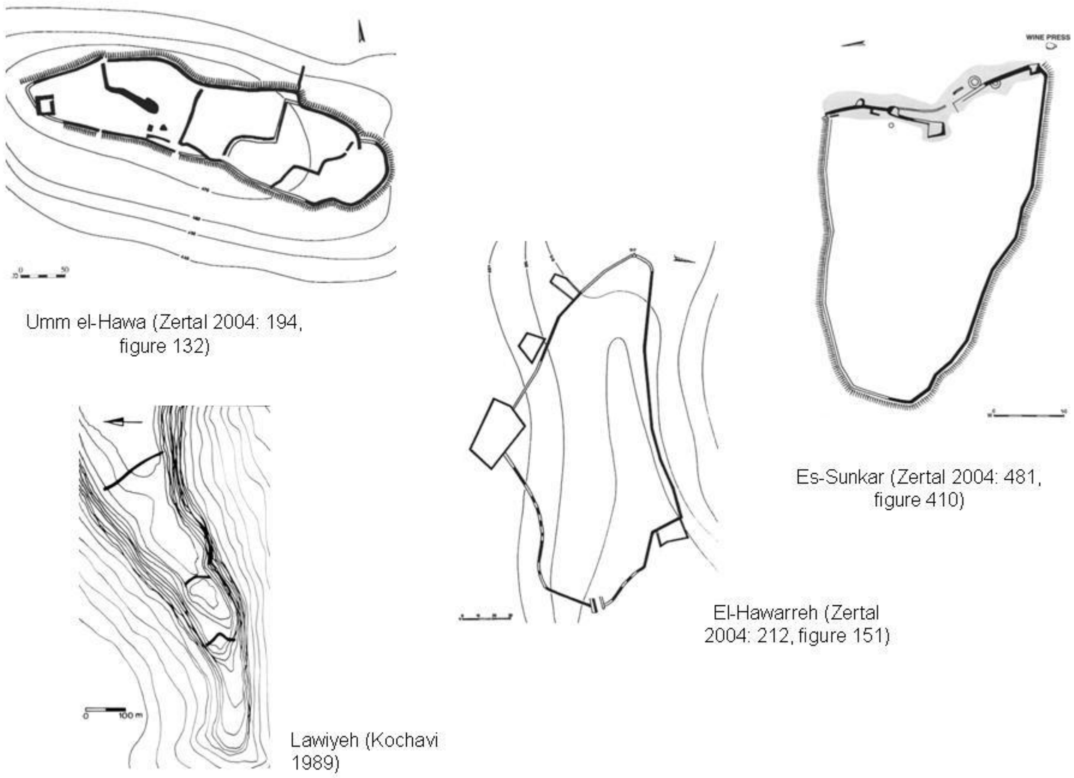


Figure 8.50. Enclosure sites in the Jaulan and Samaria region (after Kochavi, 1989, Zertal, 2004)

Current research concerning other 'settlement sites' dated to this period is relatively limited. Dauphin and Gibson (1992) have identified features, akin to those seen within the Hauran (Tell Zheir) such as those near Er-Ramthaniyye (Figure 8.52). Unfortunately, from the published plans of this site, it is not possible to make a full comparison between the structures identified within this region and those from Tell Zheir (Braemer 1991). Moreover, visibility of the site on Google Earth is extremely poor. An examination of the plan of the settlement of Er-Ramthaniyye produced in the Dauphin and Gibson (1992) publication does record a number of interesting clusters of structures in the northern half of the settlement (Figure 8.51), which in plan can be seen as akin to those from the Homs Basalt and those identified in the Jaulan via GoogleEarth imagery (see Figures 8.46-7 and Appendix 8.4). Recent work by Stepansky (2005: 45-7) on the Korazim Plateau has revealed the presence of a large site, which is dated to EB IV-MB IIA and composed of a series of stone constructed enclosures and associated tumuli (Figure 8.52). The pottery illustrations included in this article are not numerous or of particularly good quality and thus an assessment of chronology based on material culture is not possible. Having said this, the discovery of such remains highlights the need for further research within such areas.

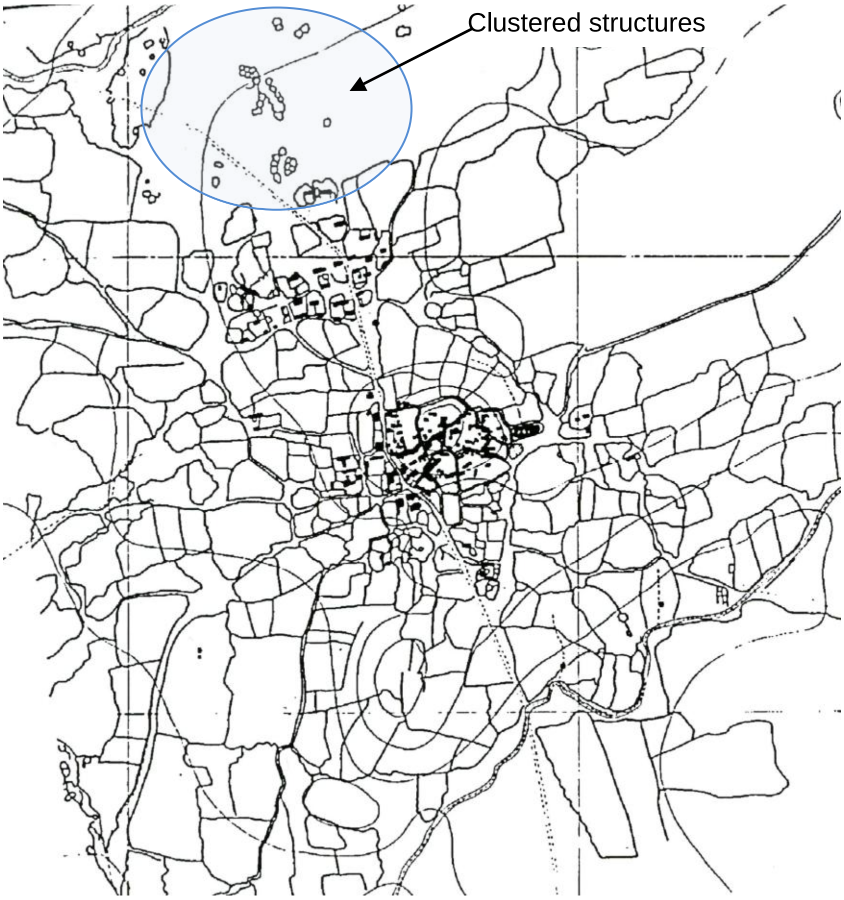


Figure 8.51. Er-Ramthaniyye (after Dauphin and Gibson, 1992: 27, figure 13)

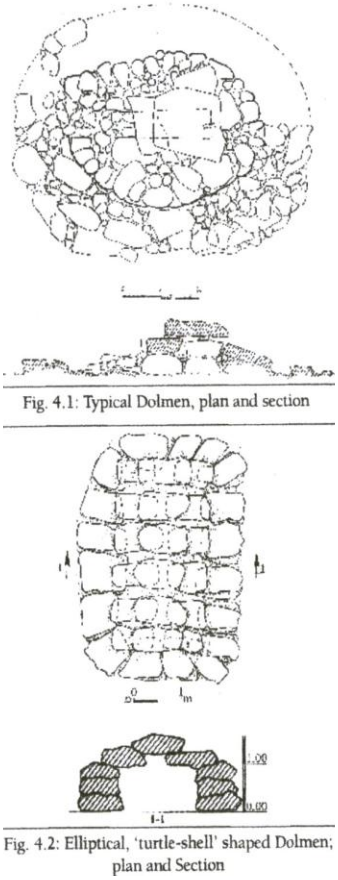


Figure 8.52. Horbat Berekh, Korazim Plateau (after Stepansky, 2005: Figure 4.1-2)

One of the most enigmatic structures within the Jaulan is Rujm el-Hiri (Aveni and Mizrachi 1998). Consisting of a large central tumulus, around which a series of substantial concentric stone walls are built, interpretations of both the chronology and utilisation of this monument have varied. The central structure, on the basis of excavated material has been dated to the Late Bronze Age [thus not directly relevant for discussion here (Aveni and Mizrachi, 1998: 477-479)]. However, the surrounding walls and elements within the monument are suggested to pre-date this. It should be noted that this chronology is based on limited artefactual material and as yet no radiocarbon samples have been obtained for this site (ibid.). Moreover, the monument is present within a region around which various cairns and enclosure settlements, potentially dating to a variety of periods can be seen [Figure 8.53 (e.g. Zohar 1992: 47)]. Investigations have focused upon the use of this structure for ritual practice (Zohar, 1989, 1992: 47), as well as its possible archaeoastronomical associations (e.g. Aveni and Mizrachi, 1998). What is clear from these investigations is the level of investment required for its construction (e.g. Aveni and Mizrachi, 1998: 475, 477). Moreover, the clear evidence for multi-period use has a bearing upon the chronological interpretation of structures, such as cairns and dolmens within this region. Investigators have suggested that its initial construction within the 3rd millennium BC may relate to its utilisation as a gathering place for 'nomadic' groups. Given the above discussion concerning the potential presence of settlements dating to this period in the Jaulan, such arguments may be a little premature. However, akin to structures, such as SHR 362 [Chapters 6.3A, 7 and (Bradbury and Philip, 2010)] it does appear to occupy an important locale within the landscape. The site is located on a plateau, bordered by a stream to its northwest (Figure 8.53) which flows in a natural depression (dammed on Google-Earth) less than 2km to the west. To the north, on a ridgeline above the plateau, is the Chalcolithic site el-Arba'in [Figure 8.53 and (Epstein 1998: Figure 192)]. As such, it is possible to conclude that such a structure and area may have been an important focal point within the local landscape, although whether used by 'nomadic', 'sedentary' populations or '*multi-resource'* communities is yet to be ascertained.

Figure 8.53. Rujm el-Hiri within is local environs

8.3.2. Portable Material Culture

One of the key elements of the Chalcolithic material culture within this region has been the identification of a predominately local pottery repertoire, as well as a lithic assemblage with a large emphasis upon agricultural usage. Excavations seem to suggest that such material can be found intermixed throughout dwelling areas and courtyards, as well as stone heaps and associated features (Epstein, 1978: 32). Thus, it appears at the Jaulan sites that manufacture and production of a variety of tools, utensils and other objects occurred within the area of the house, merging with traces of general domestic activity (Epstein, 1998: 159). Our understanding of the material culture associated with this period is at a complete juxtaposition to that of the Hauran and Homs NSA, where our knowledge of Chalcolithic (i.e. 5th millennium BC) material culture is much patchier. In contrast to this wealth of information, relatively little is known concerning the EBA period making chronological assessments and both local and regional cross comparisons difficult. In addition, there remains a lack of synthesis of the Bronze Age material, with the majority of artefacts deriving from poorly preserved and disturbed contexts.

8.3.2.1. Pottery

8.3.2.1.1. Chalcolithic

Three main forms of fabric appear to have been used within this region during the Chalcolithic, although no specific associations can be seen between form and fabric (Figures 8.54-5).

Fabric Type	Decoration?	Region
Hand-made well fired fabric containing basalt grits. Colour of fabric varies from dark red/brown and orange/red to lighter pink/red	Impressed Patterns and a range of other decorative techniques	Jaulan
Gritty, poorly fired and highly friable fabric. Colour of fabric is yellow-buff		Central Jaulan
Calcareous light-coloured fabric containing basalt, gravel and limestone inclusions	Irregular Red Paint Decoration	Southern Jaulan

Figure 8.54. Fabric Types of the Chalcolithic Jaulan

The predominant fabric type at sites throughout the Jaulan is composed of a hand-made well fired fabric [(Epstein, 1978: 27-8, 1998: 159-60) Figure 8.54-5]. Experiments by Epstein (1998: 159-60) demonstrated that a similar texture, hardness and colour of pottery vessels was only achieved through the use of temperatures c.900^{0}c. In addition, the differential colouring, both between and on individual vessels, could be partly explained by the use of simple methods of bonfire firing for baking pottery. Such a method is highly likely, especially given the lack of evidence for kilns, workshop areas or concentrations of stacked vessels. Interestingly, this is a characteristic also observed within the Homs region, suggesting that similar methods of firing may have also be taking place within this region.

Figure 8.55. Vessel colouring from the Chalcolithic Jaulan sites (after Epstein, 1998: frontispiece)

The distribution of fabric types appears to be broadly related to the local geology (Figure 8.54). Petrographic analysis of vessels, alongside cumulative evidence from excavated sites further corroborates this. As such, the clear differences seen between fabrics within the central and southern Jaulan is indicative of local geological variation [(Epstein, 1998: 160) and see Figure 2.15]. Given the evidence for a wide range of different fabric forms within the Hauran (Figures 8.37-40), indicating external contact, it appears that this strong association between sources of clay raw material and the distribution of fabric types is perhaps something remarkable about this region. Having said this, it has to be borne in mind that sites in the Hauran appear to show a considerably longer occupational history. This pattern of variation, based on the local geology in the Jaulan, is an element repeated in terms of both the monuments of this region, as well as other forms of material culture. Whether these patterns are indicative of informed social choices or merely opportunistic exploitation of the nearest sources of clay can be debated. Furthermore, despite the local and domestic production of pottery vessels, a number of researchers have suggested that ceramic production was still carried out by specialists, albeit on a part time basis (Epstein, 1998: 159, Gilead and Goren, 1987: 414).

Examination of vessels from a number of Chalcolithic Jaulan settlement sites indicates that the majority were hand-made, with evidence for the use of a 'tournette' being seen upon the neck of many vessels (Epstein, 1998: 160). This is a fairly common feature across the Levant and a technology in use until at least the 3rd millennium BC [e.g. Tel Yarmouth (Roux and de Miroschedji, 2009)]. The lack of evidence of mat impressions on the base of vessels from the Jaulan region indicates that the potter may have placed vessels upon a suitable flat basalt surface, with a second stone being used underneath to facilitate the rotation of the pot during manufacture (Epstein, 1998: 160). In the majority of cases, coil building seems to have been the predominate method of manufacture, with signs of coils being seen on the inner surface of a substantial number of vessels, whilst such signs are often carefully smoothed on the outer surface (ibid.). In addition, it has been argued that the production of large jars and pithoi was carried out in two stages. Firstly, the upper part of the vessel would be formed, with the flat rim then being placed upside down, in order to facilitate the shaping of the lower half of the body. This method of production would explain the presence of a '…shelf like rim...' (Epstein, 1998: 160), on many of the larger vessels and would have facilitated the covering of the mouth of completed vessels with a skin or flat stone, rather than a lid (Figure 8.56). The presence of similar 'shelf' rims at sites in the Hauran, such as Umbashi (Figure 8.35), as well as from the Homs region (see Appendix 5.7) suggests that this is possibly a manufacturing technique which was used across the wider region and over a considerable period of time. These types of vessel appear to have been the predominate form on most Chalcolithic Jaulan sites. According to Epstein (1998: 162), their predominance may be related to use for grain storage, and the difficulties of excavating silos into the local basalt geology (see above). Such considerations echo findings in the Hauran and the Homs NSA, which suggest the use of, in this case, holemouth jars for a wide range of storage and cooking functions, again possibly due to the difficulties of digging pits or silos into the underlying basalt geology.

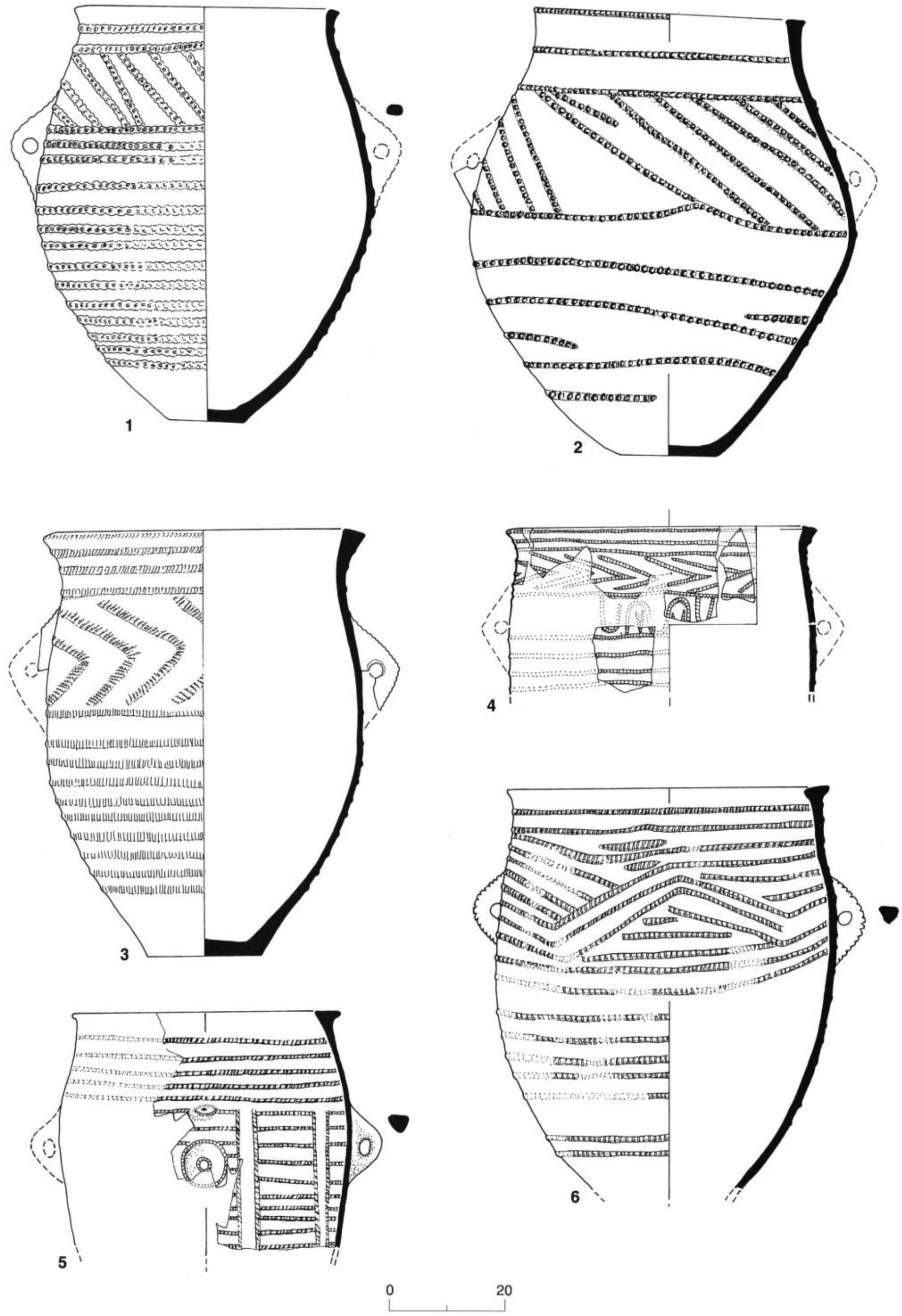


Figure 8.56. Large Jaulan storage'pithoi' jars with 'shelf like rim' (after Epstein, 1998: plate 1)

What is particularly remarkable about the Jaulan, in regard to the other areas discussed in this chapter is the lack of holemouths. Only fourteen holemouths have been found from excavated Chalcolithic deposits in the Jaulan and these are predominantly from Site 12 (Rasm Harbush). In contrast, comparison between the forms within this region and other Chalcolithic sites, such as Ghassul, shows clear similarity (Figure 8.57). Considering the hypothesis that holemouths were being used within cooking practices (Epstein, 1998: 166) it is worth noting that the rim diameter of vessels shows remarkable consistency ranging generally between 5 and 10cm (Figure 8.58). One particular vessel (Number 6) does appear to stand out and may have been used for a different function. Furthermore, a number of almost complete vessels have been found indicating that, despite the basic regularity in rim diameter, there is considerable variation in vessel size, suggesting that whilst these vessels may be being used for cooking, they may be being used for various stages or processes within this practice.

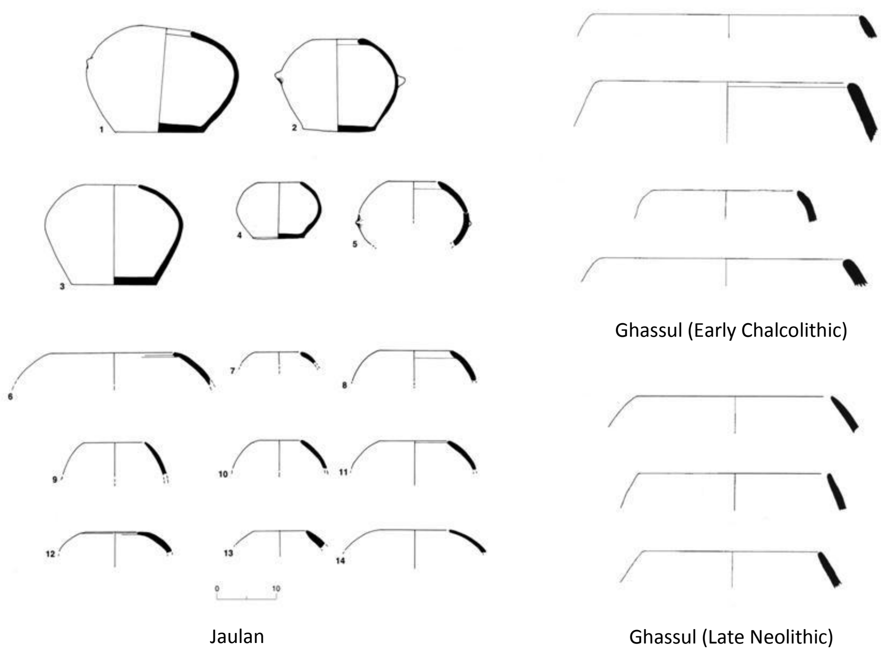


Figure 8.57. Chalcolithic Holemouths from the Jaulan region and Ghassul (after Epstein, 1998: Plate XX, Lovell, 2001: 113, Figure 4.4, 135, Figure 4.15)

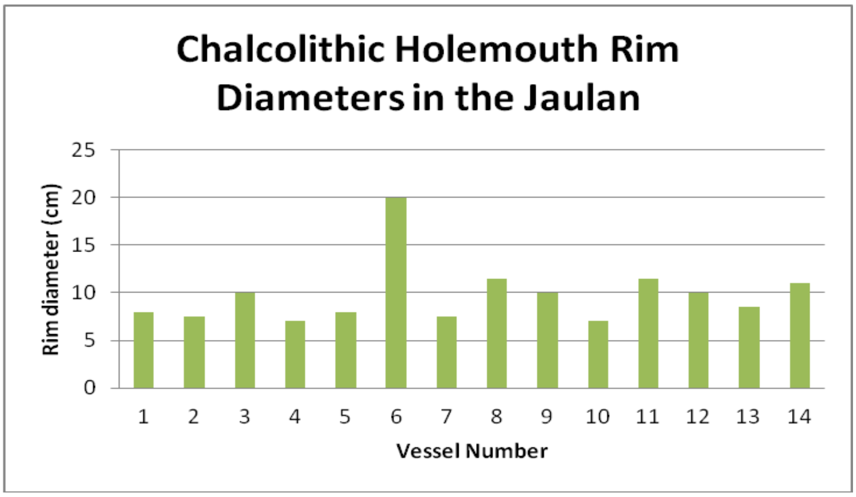


Figure 8.58. Rim diameters of Chalcolithic Holemouths in the Jaulan [from Epstein's Sites 12, 22, 21, 23 and 6, note how vessel 6 clearly stands out in this plot (after Epstein, 1998)]

One key question emerges; why in the Jaulan, in contrast to the Hauran, Negev and Homs NSA, where holemouths are ubiquitous, do we appear to have a completely distinct tradition of vessels used for 'short-term' storage activities? It may be that these differences are representative of chronological variation. At present our knowledge of Chalcolithic occupation within the Hauran is relatively limited and moreover, many of the pottery forms identified from the region may correspond to a broadly 4th millennium BC Chalcolithic-EB I phase, rather than an earlier 5th millennium Chalcolithic phase, as within the Jaulan. However, a comparison with apparent 'classic' Chalcolithic assemblages from sites, such as Ghassul (Lovell 2001), Shiqmim (Levy and Menahem, 1987), Grar (Gilead, 1995) and Pella (Lovell, 2000) show no clear analogies for the storage pithoi seen in the Jaulan, with holemouths also appearing to be the predominant storage vessels at these sites. At present these hypotheses are difficult to assess, in part due the imprecise dating of Chalcolithic deposits from the Hauran region, as well as a lack of knowledge concerning the differential characteristics of clay from the Jaulan, Hauran, Negev and Homs region. However, this variation in terms of storage vessel is one aspect of culture, which clearly marks the Chalcolithic Jaulan out from the rest of the study areas and thus, needs to be borne in mind when considering other aspects of material culture from this area.

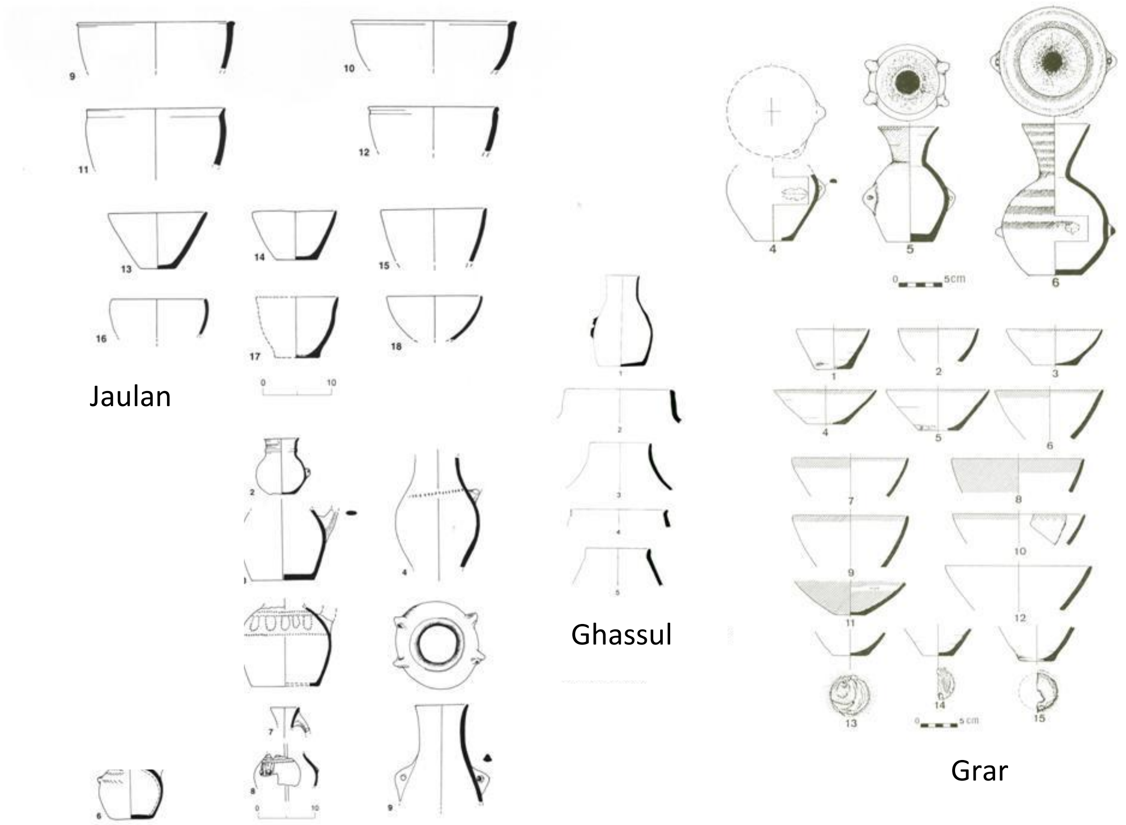
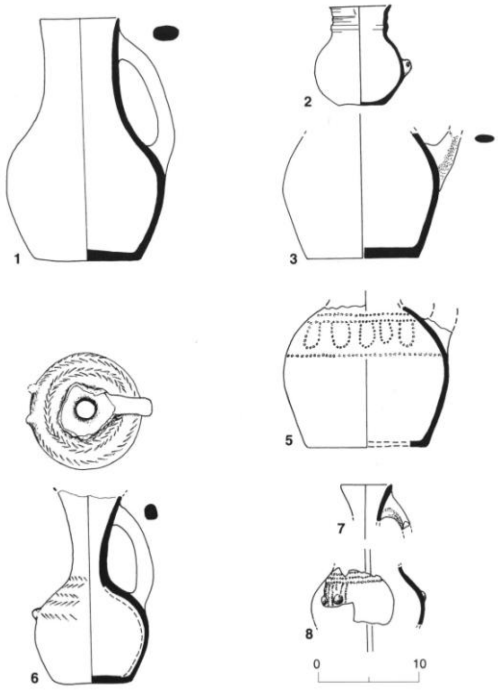


Figure 8.59. Bowls, jars and juglets from the Jaulan (Epstein, 1998: Plate VIII and XXI), Grar (Gilead, 1995: 145, Figure 4.1, 177, Figure 41.5) and Ghassul (Lovell, 2001: 187, Figure 4.41)

A wide range of other vessel forms can be seen within the Chalcolithic Jaulan. These include bowls of a variety of different shapes and sizes, jugs and juglets (Appendix 8.3). Interestingly, the bowls from the Jaulan sites appear similar in form to those from Ghassul and Grar (Figure 8.59), suggesting that whilst the storage pithoi from this region are not indicative of wider regional contacts, other forms of material culture are. The jugs and juglets are also similar, although they appear in smaller percentages at Jaulan sites, with it being suggested that they were removed prior to the abandonment or disuse of sites (Epstein, 1998: 164, 166). This is not necessarily the case. As can be seen from the published Late Chalcolithic Ghassul and Grar pottery assemblages jugs and juglets, similar to those from the Jaulan region, also appear to have a limited representation at these sites, an observation which may indicate their use for specific specialised functions, rather than their removal. The appearance of loop handles in the Jaulan (Figure 8.55: 6; Figure 8.60-1) is unusual. The first use of this handle form in the Southern Levant is generally assigned to EB I, although the handles appear to be predominantly attached to the mouth of the vessel rather than to the neck [compare Chalcolithic and EB I assemblages published in (Amiran, 1970: Plate 8, 11: 17, 19, 20, 21)]. No direct Chalcolithic analogies can be found for the jugs from the Jaulan region which may suggest, as indicated by the limited numbers of holemouths from this region, a regionally distinct element within pottery production. Having said this, it is also possible that we should actually be seeking analogies for these vessels within later deposits (EB I and later). The only clear parallels for this vessel originate from the Énéolithique Recent deposits at Byblos [Figure 8.60 and (Atin, 2009: 102, Figure 66 B)]. Bearing in mind the small number of these vessels we clearly have to be cautious. However, as Figure 8.61 shows the majority of these jugs with loop handles were found from Rasm Harbush (Site 12). It should be noted that the majority of holemouths are also from this site. Radiocarbon dates from Rasm Harbush stand out, being in the region of the later 5^{th}-4^{th} millennium BC [recalibrations of 4518-3339 cal BC (see Appendix 8.1.)], rather than the mid-5^{th} millennium BC suggested by other sites. This may suggest that this site and these pottery forms fall into a broad Chalcolithic-EB I horizon, rather than a distinct Chalcolithic phase.



6. Juglet from Rasm Harbush (= Pl. XXI:6).

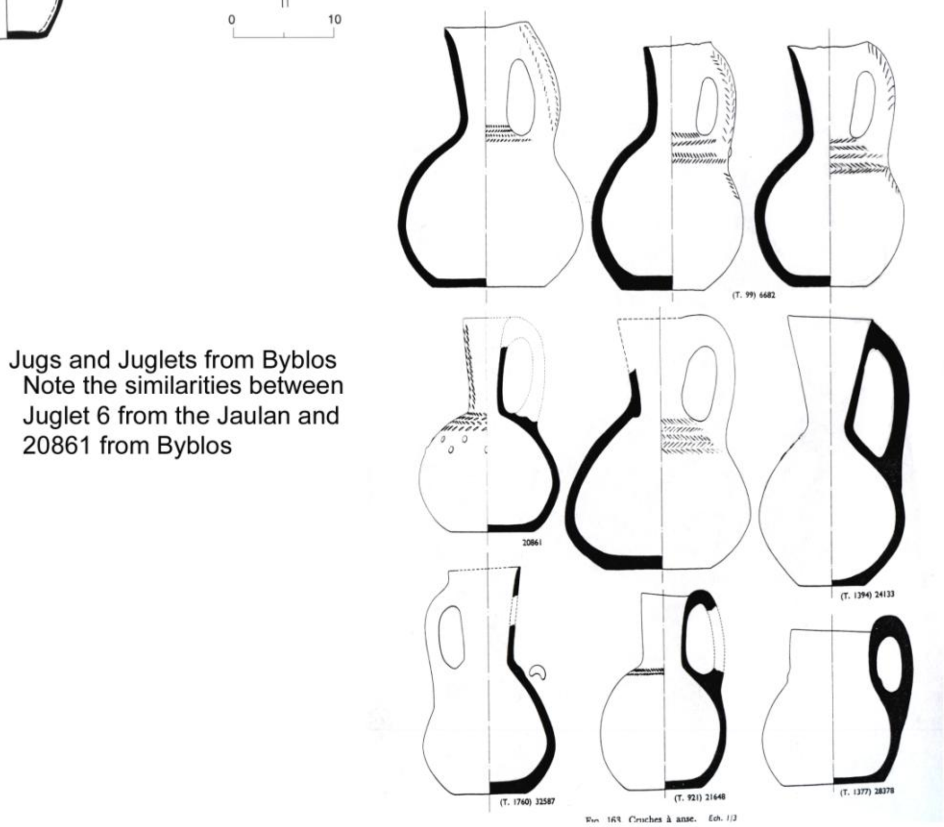


Figure 8.60. Jugs and Juglets from the Jaulan compared to examples from Énéolithique Recent deposits at Byblos (after Dunand, 1973: Figure 163, Epstein, 1998: XXI)

Jugs and Juglets from the Jaulan excavations (after Epstein 1998: Plate XXI)

Number	House	Site	Handle Type
1	P	12	Loop
2	10	12	Lug
3	3	20	Loop
4	7	12	Lug
5	7	14	Loop
6	Q	12	Loop
7	P	12	Loop
8	P	12	Unknown
9	P	12	Pierced Lug

Figure 8.61. Contexts of jugs/juglets from the Jaulan sites excavated by Epstein

Given the previously identified parallels between the Chalcolithic pottery assemblages from the Jaulan sites, Grar and Ghassul, the absence from the former of 'cornets', generally seen as a vessel form strongly characteristic of the Ghassulian/Beersheva cultural complex, is worth mentioning. This pottery form is also absent from Chalcolithic sites in the Hula Valley [e.g. Tel Te'o (Eisenberg *et al.*, 2001: 105-116)]. Potentially, its absence can be assigned to the inability to manufacture such forms using local basalt clays. Given the complexity of vessel forms within the Jaulan this is unlikely, especially considering the potential for non-basaltic clay from sedimentary sources to have been used for the manufacture of these vessels. Perhaps more likely, similarly to the differential adoption of 4th millennium BC fabric and forms in the Homs region (see chapter 9.5 for further discussion), is that this form of vessel was, for some reason, not considered an important part of the Chalcolithic pottery repertoire of this region.

Several further forms are worth mention with regard to function and prevalence. Firstly, Epstein (1998: 164) during her excavations found around 50 spouts, relating to the use of spouted kraters. These vessels, whilst not particularly ubiquitous, have been suggested to relate to domestic oil production and storage. This is an interesting idea, particularly given current interpretations of sites in the Jordan foothills and possible links between these two areas (e.g. Lovell, 2007: 457). The substantial percentage of pottery spindle whorls at certain locations, such as Site 12, has also been argued to be indicative of the economic basis of these settlements, in this case presumably relating to the herding of wool producing sheep and goats (Epstein, 1998: 166-7). Such ubiquity is particularly remarkable given the total absence of similar artefacts from the Hauran and may suggest the pursuit of distinct subsistence strategy within these regions. No basalt spindle whorls have been definitively suggested, although given the size and form of some of the smaller groundstone objects from the region (Figure 8.66), the potential use of these artefacts as spindle whorls cannot be ruled out.

One of the key elements of the ceramic repertoire of the Jaulan region during the Chalcolithic, is the use of decorative motifs on both 'utilitarian' and 'cultic' vessels (Epstein, 1998: 160). Such decoration often consisted of horizontal bands of 'rope pattern', with more than one configuration being used on larger vessels [Figure 8.56 (ibid: 160-1)]. In addition, zigzag or parallel lines of punctured dots can be seen on the flattened rim of many vessels, such as pithoi, often in association with a number of other decorative elements (ibid: 162). The use of ad hoc materials, such as pointed sticks, twigs, reeds and bone fragments has been suggested, however, interestingly, the use of thumb and finger impressions is seldom found, as is wash and paint application (Epstein, 1998: 160). This observation is particularly relevant in relation to southern Jaulan light coloured wares, which appear to show irregular red paint decoration on them (ibid.). Given the suggestion by Epstein (1998: 160) that the use of different fabric forms does not appear to correlate with different vessel forms this use of red painted decoration is interesting. Perhaps rather than form being particularly indicative of a specific function or use, the addition of red paint enabled these vessels to be marked out and differentiated from the rest.

8.3.2.1.2. EBA

In comparison to the artefactual data from the Chalcolithic, assemblages pertaining to the EBA from the Jaulan are relatively limited. The fact that very little is known about the settlement record during this period means that the majority of finds are from burial monuments, which have often suffered from looting or poor preservation (e.g. Zohar, 1992: 51, 52). In addition, many of the monuments excavated within this area have also revealed evidence for later activity, with contexts often being disturbed (Epstein, 1985a: 20, Turville-Petre, 1931: 163). Turville-Petre's (1931: 156-9, 163-5) excavations within the Kerazeh region revealed assemblages from dolmens, which included artefacts as varied as worked flints, fragments of poorly baked pottery, faience rings and bracelets, as well as Roman coins and fragments of Ottoman pipes. Epstein, (1985a: 20) during her excavations within the region also mentions the wide range of 2nd millennium BC, Byzantine and later material, which was found in the fill of many dolmens. In nearly all cases, this later material is seen as of secondary importance, often being attributed to the use of these monuments as shelters for shepherds or even outcasts [(Turville-Petre, 1931: 163) and see Chapter 4 for further discussion].

The pottery found and published from the small number of EBA settlement sites in this region is composed of a range of wares, some of which seem to have parallels with areas such as the Jordan Valley (Gal, 1988: 5). From the nearby Korazim Valley, excavations at Horbat Berekh have revealed evidence for EB IV material, although much of it derives from contexts with no stratigraphic definition (Stepansky, 2005: 47, 50). Excavations within dolmens from this region revealed material dated via parallels to Syrian assemblages [e.g. Hama J5 (Fugmann, 1958: Figure 74, 3c)] to the EB IV [late 3rd-early 2nd millennia BC (Epstein, 1985a: 21, 40, 57) and see below for further discussion]. However, as suggested by Epstein (1985a: 40) the majority of finds from the excavated dolmens, especially the pottery, can only be dated on the basis of typology, which becomes particularly difficult when no clear and direct parallels exist.

Epstein (1985a) describes the presence of several types of fabric within her Dolmen assemblages (Figure 8.62), although it is not made clear whether she thinks these are local or not.

Fabric Type	Vessel Types	Parallels
Poorly fired and friable fabric containing minimal. Colour varied between pink/buff	Pedestal Based Chalices and Lamps	Dever's (1980: Figure 2, 46) Family N wares
Well fired buff coloured fabric	Storage Jars	
Well fired thick gritty fabric. Colour varies from dark brown/reddish	Cooking Pots	

Figure 8.62. Main Fabrics from Dolmens in the Jaulan (Epstein, 1985a: 41)

The initial fabric description resembles Dever's (1980: Figure 2, 46) EB IV Northern Palestine 'Family N' ware, which would emphasize the potential 'northern' connections shown by these assemblages. Moreover, as Epstein (1985a: 41) suggests the vessels produced using this fabric may be related to specific functions. In contrast, the cooking pot fabric parallels descriptions of the basalt tempered fabric seen at many of the Chalcolithic settlement sites within this region (e.g. Epstein, 1998: 159-60) and highlights the potential for cooking ware fabrics to continue in use for lengthy periods.

Forms identified from the Jaulan dolmens vary. Cooking pots are common, characterised by handmade globular forms, free of handles, with a short out-turned neck and rim. Many of these vessels show evidence of being wheel finished and having incised decoration around the neck or vestigial shoulder handle [Figure 8.63 (1985a: 42)]. Analogies for these can be seen from Area BS at Bet Yerah (Greenberg *et al.*, 2006: 156-7, Figure 5.98), dated to the 'final EB' phase [e.g. post EB III and pre-MB I] and MB I Khirbet el-Kirmil (Dever, 1975: Figure 4, 5). Comparisons with cooking vessels from Hama (Thuesen, 1988: 261, 1-2,4,6-7) also show correlations with those found in Period K deposits (EB II-III). Possible analogies for the carinated bowls from the Jaulan dolmens can be seen from Period J deposits at Hama [e.g. Hama J5 (Fugmann, 1958: Figure 74, 3c)], as well as MB IIA (c. 1950-1730 cal BC) and MB IIB-C Megiddo [compare figures from (Amiran, 1970: Plate 27: 1-2, 21, Epstein, 1985a: Figure 5: 30, Figure 3: 21-23)]. The latter form is characterised by a solid carinated or partly solid base and on the basis of comparisons with other sites, such as the Qedesh Cave (Tadmor, 1978: 6) have been identified as lamps, possibly for use within funerary practices (Epstein, 1985a: 43). Vessels, analogous to the 'teapot', amphoriskos and jar forms found at the Jaulan dolmens (Figure 8.34), can be seen at the MB I site of Khirbet el-Kirmil, (Dever, 1975: Figure 4, 5) whilst Juglets similar to those from Dolmen 23 and 4 (Epstein 1985a: 52-3, Figure 5:4, 18-20) have been found in MB IIA deposits at Megiddo, Ras al-Ain and Qatna (Amiran, 1970: Plate 33:1-3, 9; Plate 34: 9-10). Fragments of light buff storage jars, with folded ledge-handles seen at a number of excavated dolmens display potential parallels to EB IV-MB I deposits at sites such as Megiddo [Figure 8.63 and compare (Amiran, 1970: 78, 88, Plate 24: 12, Epstein, 1985a: 42, 47, Figure 2:5, Tsori, 1975: 13, Figure 3: 1-2)]. Given the varied dates suggested by these parallels (EB IV-MB II) it is clear that any assessment of chronology based purely on the pottery assemblages are flawed. Moreover, whilst the presence of scarabs and socketed axes (see below) in some of the dolmens indicate a MB I, rather than EB IV or earlier date, where these are absent, precise dates for the use of these Dolmens cannot be assumed. It is highly possible that assemblages from these monuments represent mixed contexts, indicative of re-use over lengthy periods (see Chapters 3-4 for further discussion). As such, it may be that attempts to treat finds from Dolmens within this area as coherent contemporaneous assemblages are misleading, especially considering that the majority of finds derive from insecure contexts (e.g. Epstein, 1985a: 43, Stepansky, 2005: 50). Bearing these difficulties in mind and considering that, at present, there is a lack of material from contemporary 'domestic' sites, a general synthesis of the material culture of the EBA within this region cannot, as yet, be fully formed.

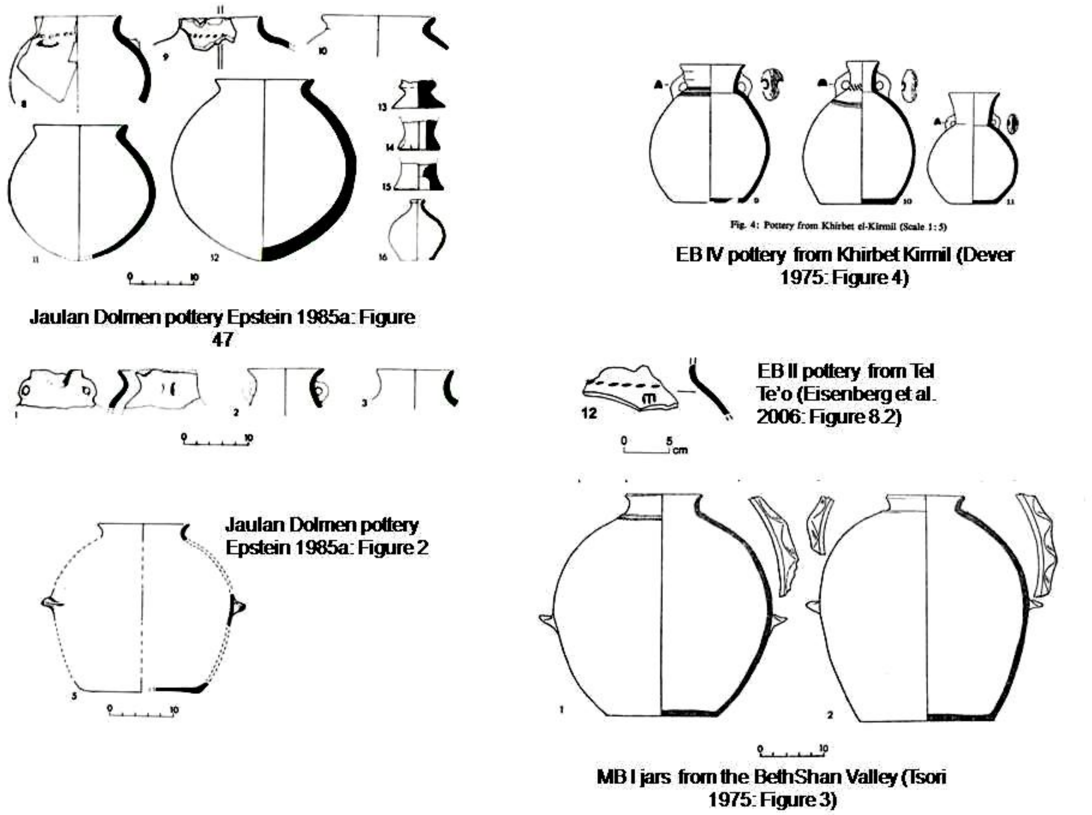


Figure 8.63. 'EB IV' cooking pots from the Jaulan Dolmens and associated examples

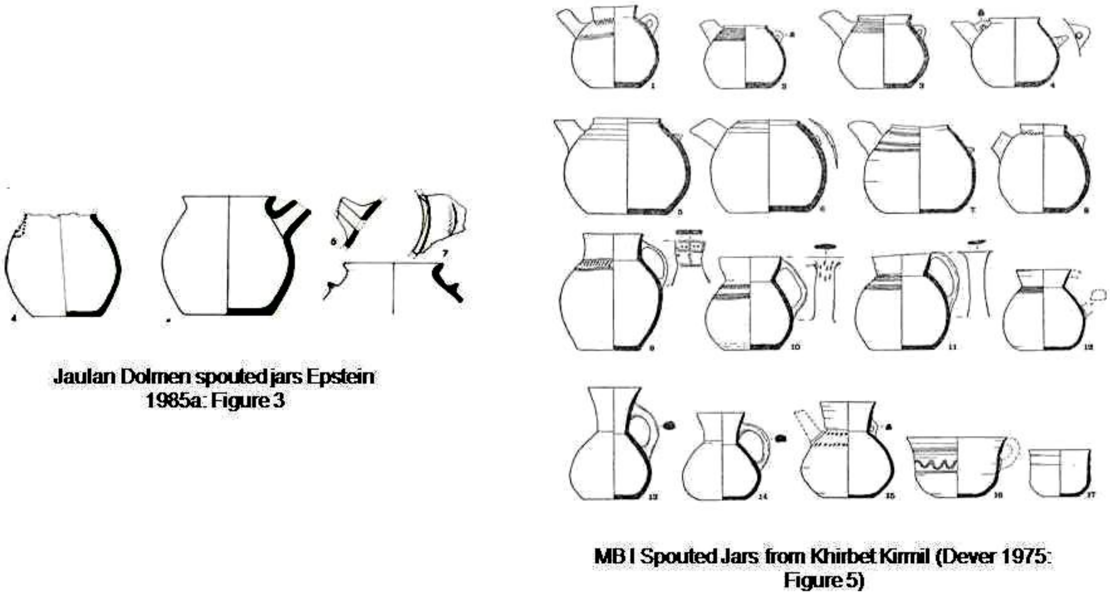


Figure 8.64. Spouted teapots from the Jaulan and associated examples

__8.3.2.2. Basalt Vessels and Objects__

In addition to the large scale use of pottery vessels within everyday Chalcolithic contexts excavation has revealed a wide range of basalt made utensils, including bowls of various shapes and sizes, querns, as well as agricultural tools [Figures 8.65-6 (Epstein, 1998: 229, 235-236)]. The local Dalwe basalt from the central Jaulan is characterised by its varying levels of vesiculation, due to layering of earlier and later flows, as well as associated debris. As such, it is highly variable in terms of texture and fracturing, with inconsistency being seen in the size of blocks formed when it fractures and splits (Epstein, 1998: 229). Considering these attributes, it is perhaps not surprising, that there is a lack of highly decorated basalt bowls from this region (Epstein, 1998: 168). Specific selection of different types of basalt does seem to have taken place. Durable olivine basalt appears to have been preferably used for milling and agricultural tools, as well as basalt pillar figurines, whilst non-vesicular basalt was exploited for the production of items such as bowls (ibid.). Many of the basalt items, such as querns, pounders and grinders appear to have been only roughly worked, presumably using locally available blocks, with just the working surface being trimmed and smoothed, whilst the underside often shows no indication of adaption (ibid: 235-6). Basalt agricultural implements, such as dibble stick weights, hoes and perforated stones has also been found, presumably being utilised for a range of tasks, such as the sewing of seeds within soil pockets, weeding and clearance (ibid.).

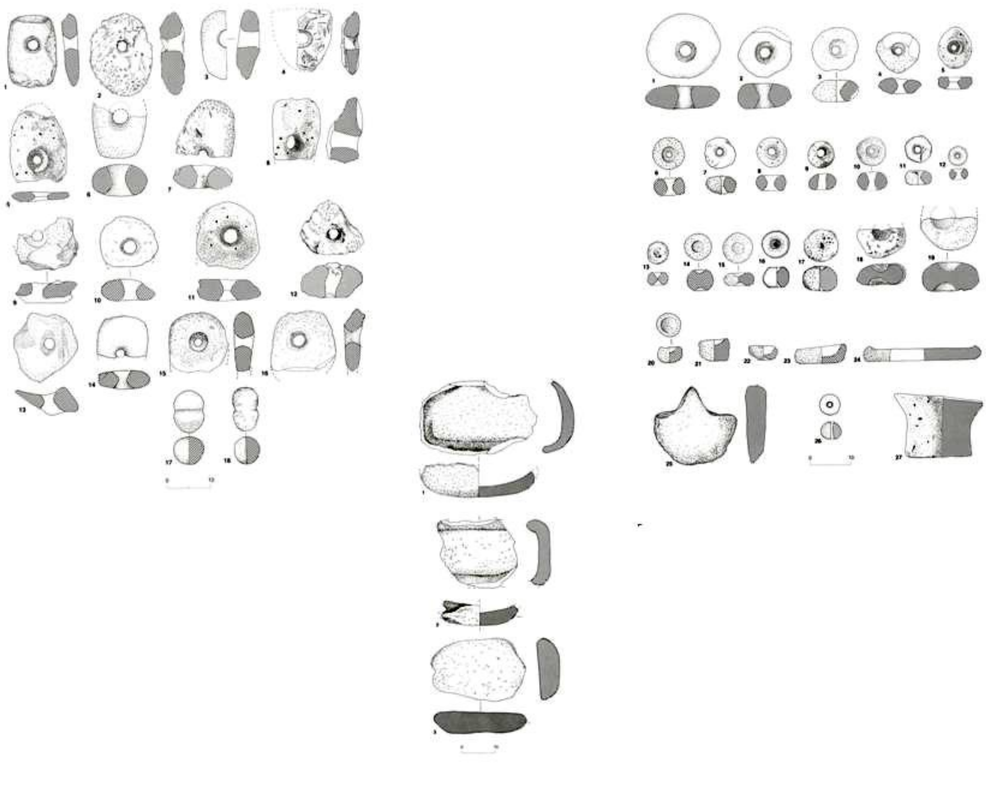


Figure 8.65. Range of basalt made implements found in this region (after Epstein 1998: Plates XLII, XLIII, XLIV)

The basalt pillar figurines of the Jaulan are one of the most well known and well debated forms of material culture from this region. Modelled in the form of a shallow offering bowl, these pillar representations depict a range of attributes, such as eyes, ears, noses, stylized beards, as well as horns and hair (Epstein, 1975: 197, 1988: 206). These attributes are repeated over a variety of carvings, however, the stylistic forms and level of precision differ, possibly relating to the manufacture of different groups by different workshops (Epstein, 1988: 206). In addition, Epstein (1975: 199-200) has suggested that the differential use of either anthropomorphic or zoomorphic attributes upon basalt figurines is indicative of the worship of these figurines by two distinct groups who were engaged in differing subsistence practices, agriculture and pastoralism. Given the large scale intermixing of material at Chalcolithic settlement sites, identifying two distinct different subsistence practice groups is highly difficult and potentially impossible during this period (see Chapter 9.4 for further discussion). The presence of analogous figurines from the Hula Valley (Eisenberg, 1987, Epstein, 1988: 208-9) possibly demonstrates their role in inter-regional networks and may even indicate a degree of shared symbolic strategies. Having said this, it should be noted that the examples from the Hula show no evidence of the carved facial features directly paralleling the Jaulan figurines [compare Figures 2-6 and Figure 7 in (Epstein, 1988)]. Basalt fenestrated vessels are paralleled at sites within the Jordan Valley, such as Shuna, where they have been found in contexts dating to c. 5000 cal BC (pers comm. Philip 2010). It is interesting to note that similar pottery vessels can also be found (e.g. Amiran, 1970: Plate 10: 6-8), suggesting that such objects had meaning beyond their material/fabric associations. Basalt vessels in the later EBA period are, in part due to the lack of identified EBA sites, less well known in comparison to their Chalcolithic counterparts. However, excavations from dolmen sites have revealed some examples, in particular fenestrated foot vessels similar to those seen within the Negev region during the Chalcolithic-EB I (Chapter 8.4).

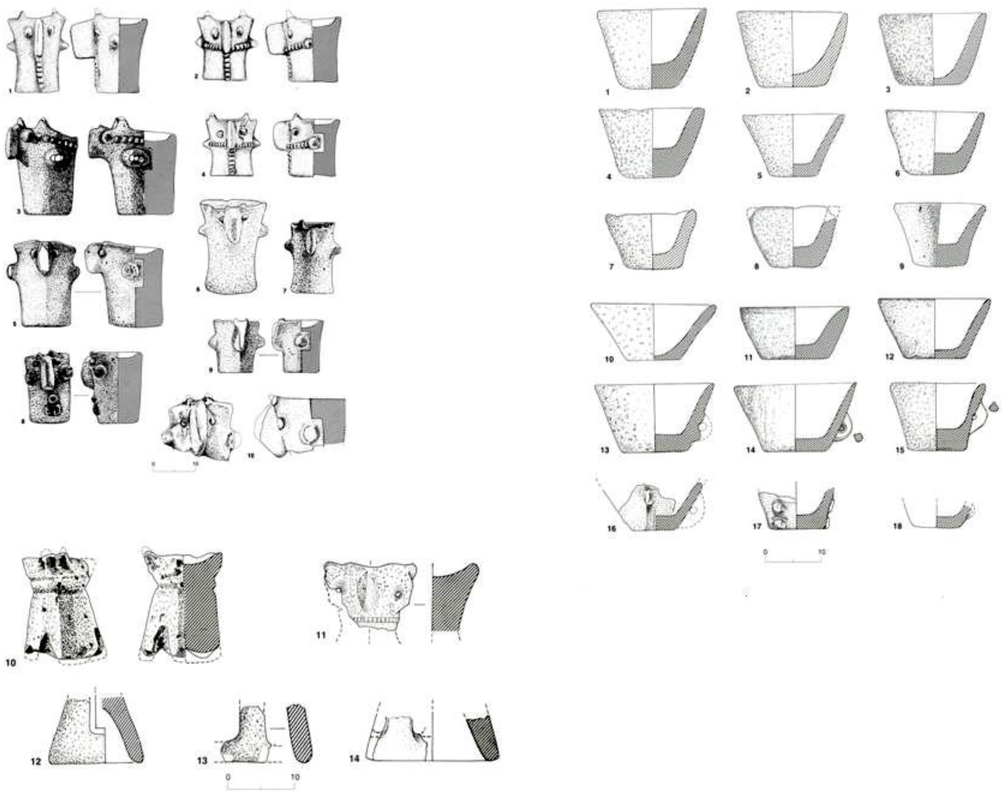


Figure 8.66. Basalt fenestrated foot vessels, bowls and pillar figurines (after Epstein 1998: Plate XXXV and XXXVIII)

Given this wider distribution of basalt pillar bowls and the prolific and easily accessible nature of basalt within the Jaulan region, the nature of the trade and exchange networks associated with such material needs to be questioned. Amiran and Porat (1984) suggested that the Jaulan and Galilee regions may be the source for raw material for the EBA basalt vessels found within the Negev. However, more recent investigations (e.g. Philip and Williams-Thorpe, 1993, Rutter and Philip, 2008) have suggested that three major sources of basalt were exploited for the production of basalt bowls during this period; the Kerak Plateau, North Jordan Valley and a previously un-identified source in the Mount Hermon region (Rutter and Philip, 2008: 344-5). Furthermore, it appears that even when a closer source of basaltic material existed, these sources were preferred and specifically returned to over long periods of time (ibid.). As Rutter and Philip (2008: 343, 353) have suggested this exploitation of particular sources over the longue dureé, whilst in part suggesting ideas of continuity in social networks, may also indicate that a range of other factors influenced their exploitation. In particular, the differing fracturing attributes of various types of basalt and basalt related rocks have been suggested to play a major role in the selection process. Craft-workers would have recognised the different properties of these sources and thus, selected accordingly (ibid: 353). Epstein (1998: 229) suggests that the majority of basalt deposits within the Jaulan do not fracture in a easily exploitable manner, an observation which emphasizes the potential importance of selection seen within the region in relation to different artefact types (e.g. Epstein, 1998: 168). Bearing this in mind it has to be questioned whether the exploitation of these deposits for inter-regional trade would have been economically or socially viable.

8.3.2.3. Lithics and Metal Objects

8,500 lithic artefacts were collected from Chalcolithic sites, ranging across all stages of manufacture, from cores and their preparation to sophisticated tools (Noy, 1998: 269-270). Unfortunately, no published material is available indicating the sites and locations from which this material was found. This makes an assessment of patterns of use and exploitation very difficult. However, work examining the lithics does seem to suggest that assemblages from these sites show similar attributes to assemblages dated to the Late Neolithic across the Levant (Noy, 1998: 270). As such, research has emphasized the restricted use of arrowheads, absence of pressure flaking and a preference for adzes over axes. However, the emergence of a range of different tools and techniques is also recorded, suggesting the development of a specifically Chalcolithic tool industry and assemblage (ibid.). It is also clear that a significant level of effort and workmanship must have been employed for the manufacture of tools and selection of raw material, with production by skilled craftsman for a variety of purposes, including trade (ibid.).

A variety of different sources of flint appear to have been used. Whilst many of these have not been identified, it is clear that specific selections and choices were made regarding the use of raw materials for particular tool types (Noy, 1998: 270, 271). Such observations appear to fit well with the evidence for selection in the use of basalt for the production of tools and vessels (ibid: 229). Two groups of cores were identified from the Chalcolithic sites. The first is composed of pebbles with a dark cortex and dark brown, grey veined or lighter flint core, predominantly used for the production of scrapers and truncations (Noy, 1998: 270). The second is a group of cores with a lighter coloured cortex and high quality flint of a pink/orange-brown translucent nature, used for the production of sickle blades [Figure 8.67 (ibid.)]. In addition, perforated flakes, discoids and fan scrapers appear to have been manufactured using large nodules of high quality Eocene flint, a source of which has not been found in the Jaulan region, although deposits exist within Upper Galilee (Noy, 1998: 270-1). In contrast to evidence from Umbashi (Figure 8.42), Canannean blade technology appears to be absent from these sites, emphasising the Chalcolithic, rather than EBA attribution of this material (e.g. Rosen, 1997: 46). Unfortunately, the composition in terms of debitage and knapping sequences is not included within the publication. However, Noy (1998: 270, 297-8) suggests that many specialised tools would have been produced close to deposits of specific types of flint and possibly even within specialised workshops. The close proximity of sites to one another would have facilitated the exchange of information regarding the location and exploitation of raw materials. In addition, the production of a variety of tools outside the region cannot be ruled out (ibid: 299). Similar tools and techniques can be seen across a broad area during this period (Figure 8.68). However, others, such as lentoid fan scrapers, appear to have a more restricted usage within this region (ibid.).

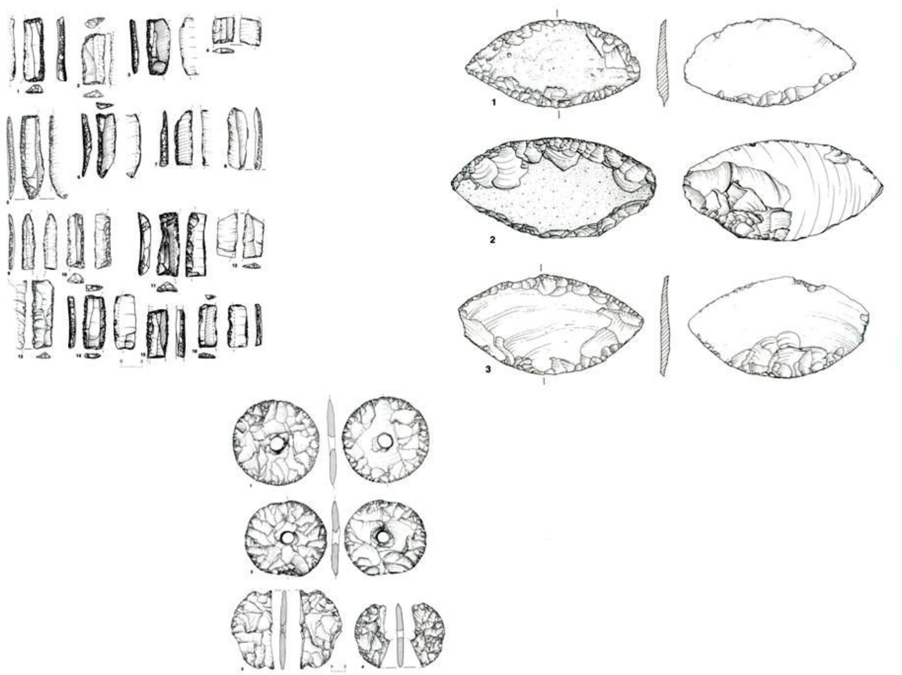


Figure 8.67. Example of Chalcolithic Sickle Blades, discoids, perforated flakes and fan scrapers from Jaulan region

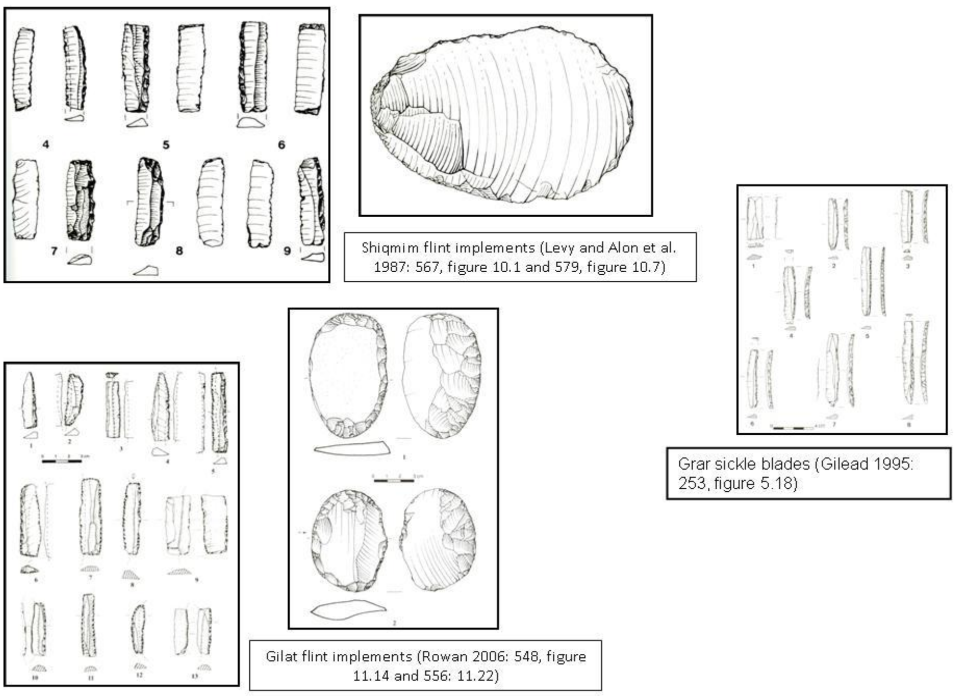


Figure 8.68. Lithics from Chalcolithic sites in the Northern Negev; Grar, Gilat and Shiqmim

In general it appears that the majority of lithics and associated raw materials were brought onto site in the form of pebbles of conglomerate origins, often with signs of abrasion (Noy, 1998: 297-8). On the basis of the levels of debitage within a number of houses and sites across the Jaulan region, ad hoc tools, such as scrapers, awls, notches, truncations and blades, were produced within settlements, presumably by those living there (ibid: 298). Thus, the presence of specialised and diagnostic tools at a number of sites has to be placed against the general background of a utilitarian flint assemblage. Such artefacts reflect the range of practices, such as the preparation of hides, wool-processing and agricultural processing, occurring within and outside houses during this period. The overall distribution of flint assemblages shows little evidence for specialised production or preparation areas (Noy, 1998: 299).

Very little synthesis or discussion exists concerning lithic artefacts from the Early Bronze period. However, EB IV-MB I metal objects and flint artefacts have been found in contexts associated with the Jaulan dolmens (Figure 8.69). Comparative examples for these artefacts can be seen from Syro-Palestinian contexts (Philip, 1989: Figure 24: 290, 293, Figure 25: 1428, 310), analogies for these artefacts from Tell el-Dab'a derive from MB II A contexts (Philip, 2006: Table 1, 65: Figure 27), suggesting a MB rather than earlier EB IV date, as suggested by Epstein (1985a). The tanged metal arrowhead found from Dolmen 13 shows interesting analogies to flint arrowheads found in the Jafr Basin (Fujji, 2004a: Figure 7, 16), demonstrating the problematic nature of dating artefacts via form, as well as the potential for artefacts to be produced in more than one type of material. As with the pottery assemblages from these monuments, the metal and small find assemblages appear to indicate several different dates. Similar to the socketed spearheads, the presence of scarab seals (Figure 8.70) from a number of Dolmens suggest a MB I or later date, with these artefacts being found in Levantine contexts from the end of the 3rd millennium BC onwards (Ward and Dever, 1994: 1).

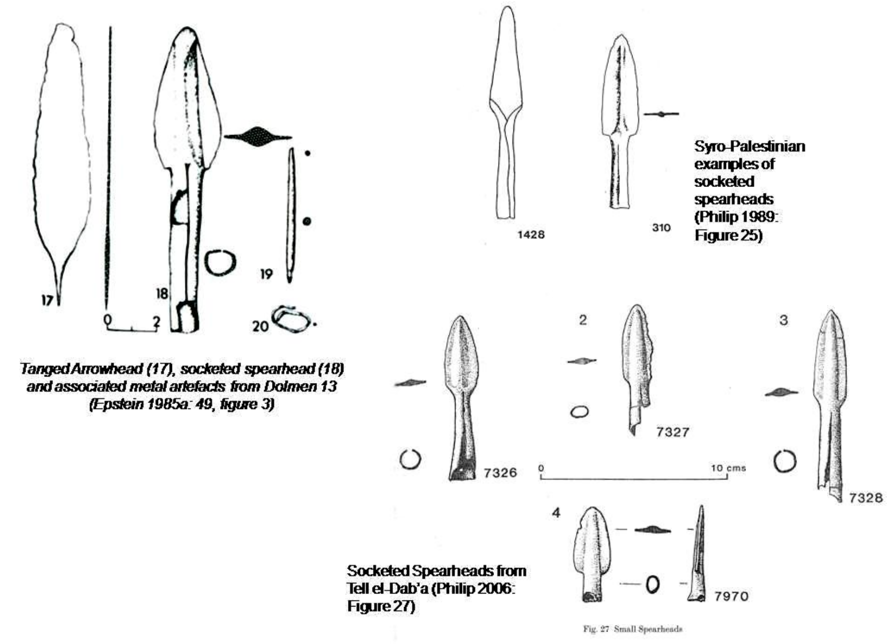


Figure 8.69. Socketed spearheads from the Syro-Palestine region and Egypt

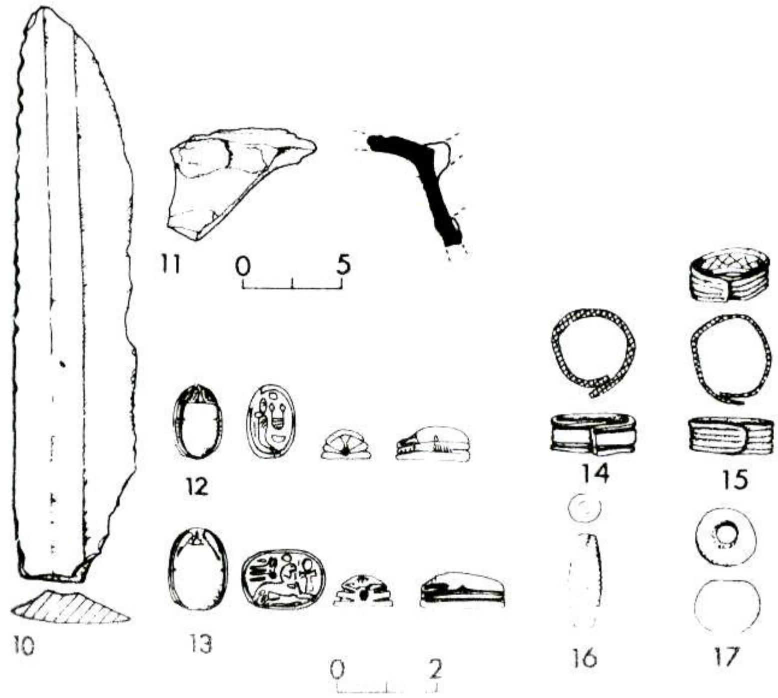


Figure 8.70. Scarabs from Dolmen 16 (Epstein, 1985a: 53, Figure 5)

Until excavated assemblages from EB I-III and EB IV-MB II monuments and sites have been studied in more detail and more importantly, fully published, an assessment of the continuity and differences between Chalcolithic and EBA deposits is difficult to make. However, on the basis of the present evidence we appear to have a scenario of a Chalcolithic cultural sphere, incorporating both locally distinct and regional elements. In contrast, it may be that evidence from later EBA contexts suggests a process of increasing inter-regional connectivity, as seen within the Hauran region during EB III-IV.

8.4. The Negev

Since the first major investigations of sites, such as Abu Matar and Shiqmim in the Northern Negev, there has been a focus on the connection between these sites and Teleilat Ghassul further north (Perrot, 1955a, 1955b). According to Perrot (1955b: 176-7), during the Chalcolithic the '*Beersheba culture*' represented by such sites extended over the whole of the Northern Negev. More recently, work has begun to focus on the variation of settlement types seen within the different ecological units of this region (e.g. Aharoni, 1960, Gilead and Goren, 1986, Haiman, 1994, 1996, Thompson, 1975), as well as cairns and sanctuary structures (e.g. Avner, 1984, Haiman, 1992a, Levy and Alon, 1982). However, as argued by Gilead and Goren (1986: 83), a major problem in reconstructing any past settlement patterns in these areas, has been the focus on larger permanent settlements, with many smaller ephemeral sites being ignored. For example, based on a sample survey along the Nahal Beersheva and Nahal Besor, Levy and Alon (1987a: 73-80) suggested a variety of hypotheses which could explain the location of Chalcolithic sites. Their findings were based upon a strong division between what they classed as temporary sites and sedentary village communities (ibid: 74). Others, such as Finkelstein (1995: 67), have suggested that the EBA represents the first large scale movement of settlement into arid zones, such as the Negev, Sinai and 'Uvda Valley. As Chapter 8.1 demonstrated this is no longer a viable model. Moreover, the radiocarbon dating of sites has emphasized the longevity of occupation/activity within the region, highlighting the multi-phase habitation of many sites throughout the Central Negev and surrounding regions. The site of Nahal Issaron has yielded radiocarbon dates suggesting an occupation span of around 4500 years [(Avner *et al.*, 1994: 279) and see Appendix 8.1]. Whilst this palimpsest of activity presents a major interpretive challenge for archaeologists working within the region, it also emphasizes the need to consider occupation over the longue durée and offers an interesting comparison against which to consider the palimpsest of activity seen within the Homs region.

8.4.1. Architecture and Settlement

8.4.1.1. Chalcolithic-EB I-III

Excavation and survey across the vast area known as the Negev has revealed a wide range of evidence for Chalcolithic settlement and activity (Gilead, 1995, Levy, 1987, Rosen, in press). One of the key challenges is trying to interpret such material within a single dating framework and also deal with the contrasting environments (see Chapter 2.2) from which evidence has been found. As a number of investigators have suggested, occupation in areas such as the Northern Negev and so-called 'Beersheva' region can be seen as highly contrasting to that of the southern deserts (Rosen, 2002a: 28) and even in many cases, the Negev Highlands. Stark differences in material culture are clearly apparent. Moreover, it has been suggested that autonomous subsistence and social strategies were operating within these areas at different times (ibid.).

8.4.1.1.1. Northern Negev

The Chalcolithic period in the Northern Negev has been seen as a period of settlement expansion, with communities moving into foothill zones and exploiting flood water and runoff irrigation farming techniques (Levy and Alon, 1987a: 81). However, much of the evidence for occupation is reliant on a handful of sites, many of which were excavated in the early 20th century (e.g. Perrot, 1955a, b). Survey along the *Wadi Ghazzeh* (lower Nahal Besor) and Beersheva region has lead investigators to interpret 4th millennium BC settlement in this region as relating to a hierarchical system, in which sites, such as Shiqmim and Beersheva, acted as sub-regional centres during the Chalcolithic-EBA (Levy and Alon, 1980: 144-5). However, whilst such surveys have been used in order to consider the settlement patterns and placement of sites within this region, little information concerning the layout, forms and features found at the sites has been published. Some of the earliest investigations within the area at the Chalcolithic settlement of Abu Matar (Beersheva region), revealed the presence of a range of subterranean structures. Built into the hillside, these were linked via a variety of tunnels which opened out onto the surface (Perrot, 1955a: 73-5). The buildings showed clear variety in terms of size and layout. Their floor plans included areas of pits dug along the walls and silos, which either opened out into the middle of the dwelling or into a passageway giving access to the area (ibid.). Surface features including fireplaces, basins, circular hut foundations, silos and small stone structures were also discovered at Abu Matar. Whilst some were found in isolated locations, others were adjacent to one another in clusters of two or three, sometimes linked by a silo (Perrot, 1955b: 76).

In contrast to the presence of subterranean structures at Abu Matar, excavations at the site of Shiqmim Village revealed a series of stone built rectilinear ‘broadroom’ buildings, with the smaller examples containing hearths, domestic refuse, grinding equipment and spindle whorls and thus, presumably being used for domestic purposes (Levy and Alon, 1987b: 160). A number of the larger structures were found to contain semi-circular mud-brick installations, as well as built benches, partition walls, passageways and adjoining courtyards (ibid: 160-1). As already suggested, the presence of ‘broadroom’ structures at sites cannot be seen as indicative of a specific period or social organisation. Furthermore, whilst this form of architecture is seen as indicative of Chalcolithic occupation across the region of Palestine, the fact that only 31% of the structures from the site are ‘broad-rooms’ suggests that over generalisations should not be made (Levy and Alon, 1987b: 180). The presence of courtyards adjoining structures, as well as benches, hearths and grinding equipment at this site suggests that domestic based activities were occurring both within and outside structures. However, the identification of copper smelting evidence from Room 1 (Area A), suggests that there was some differentiation and specialisation of activities (ibid: 163). The evidence for spatial differentiation of activities across the site of Shiqmim directly contrasts with evidence from sites with the Jaulan (Epstein, 1998: 16), where such distinctions are not apparent. Excavations at the site revealed a number of phases of occupation, with the investigators suggesting that Building Phase II showed clear evidence of spatial organisation and planning, with the alleyways and buildings found within this phase all being orientated NW-SE (Levy and Alon, 1987b: 179). In their summary of the architectural evidence from the site, Levy and Alon (1987b) suggest that only one building can be seen to be part of a complex with an adjoining courtyard (Room 6). However, it is clear from the plan (Figure 8.71) and also more detailed descriptions of buildings that a range of courtyards/courtyard features can be seen at the site [e.g. Room 15 (Levy and Alon, 1987b: 165-5)]. Moreover, adaptation and extensions of buildings can also be suggested, with the investigators indicating that the northern wall of Room 3 may have been knocked down in order to facilitate the construction of Room 1 (Levy and Alon, 1987b: 165-6). As we are dealing with a palimpsest of activity these buildings do not necessarily have to have started their lives as multi-cellular constructions in order to be later used and interpreted as such.

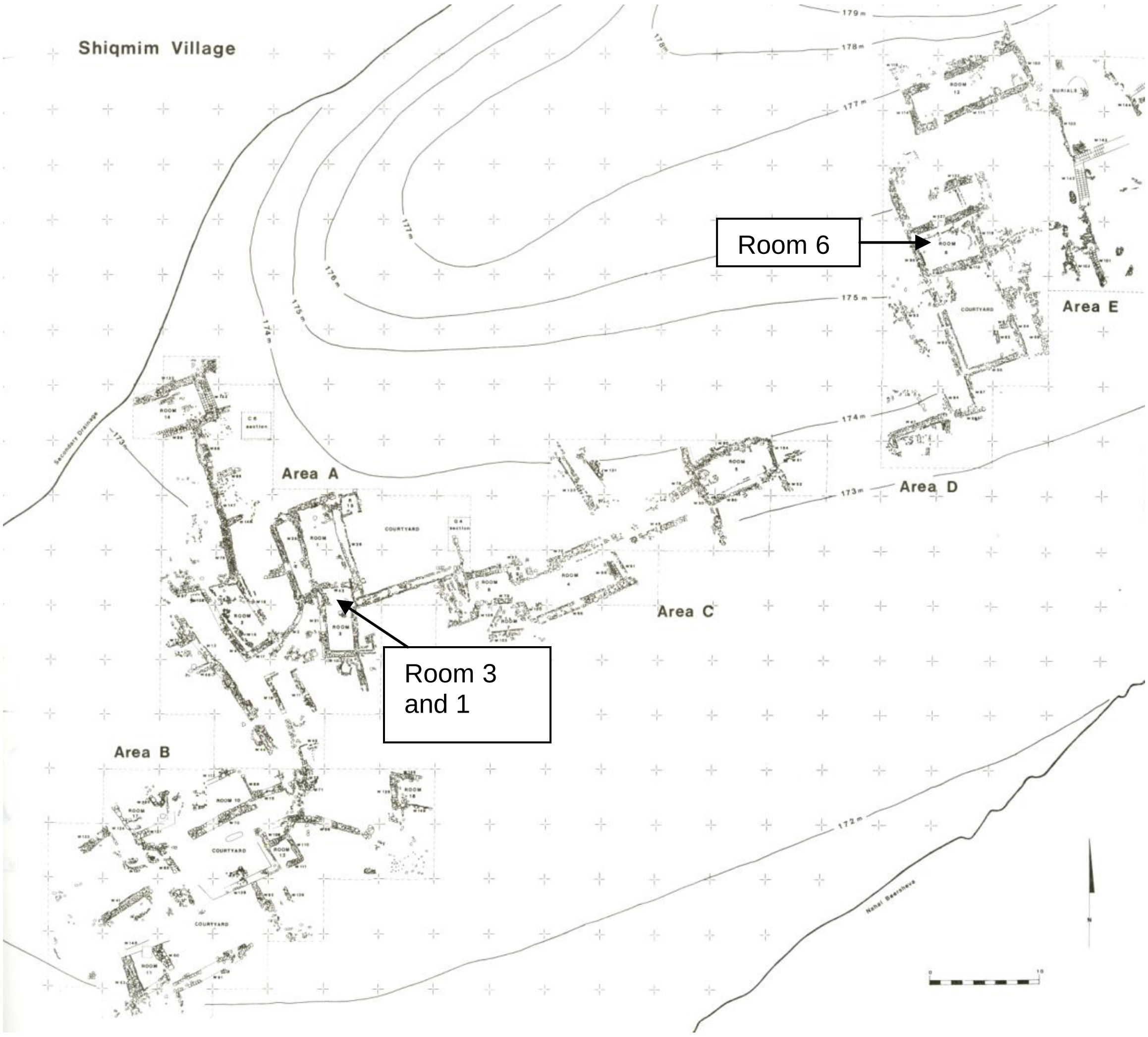


Figure 8.71. Plan of site of Shiqmim (after Levy and Alon, 1987b: Figure 6.2.)

In addition to such 'structural' sites, so called 'stations' have been identified, usually within fairly concentrated areas (Gilead and Goren, 1986: 85). Gilead and Goren's work within the Northern Negev has led to the identification of ten stations, seven of which, via concentrations of pottery and flint artefacts, were dated to the Chalcolithic[1] This evidence can be added to surveys by Levy and Alon (1987a) within the catchments of the *Wadi* Beersheva and Lower Besor, which identified sites dating to the Late Neolithic-Chalcolithic (Figure 8.20). Worth noting is the tendency for such research to simplistically classify sites into 'permanent' and 'seasonal' on the basis of the presence/absence of architectural evidence (Levy and Alon, 1987a: 46-9). As will be discussed in more detail in Chapter 9, such a strict division is not necessarily a helpful interpretative framework to work within. The sites identified by Gilead and Goren (1986) are composed of a hearth dug directly into the sand and concentrations of surface material. Various investigators interpreting these sites in terms of the dualism between 'permanency' and 'mobility' have highlighted analogies between ancient 'stations' and modern Bedouin encampments. They suggest that by comparisons with such ethnographic material, the identification of ephemeral

[1] Please note that these sites have not been included on Figure 8.20 due to issues geo-correcting the map data

installations within areas, such as the Northern Negev and Negev highlands is possible (Avni, 1992: 242, 250, Gilead and Goren, 1986: 85).

The site of Grar (Figure 8.72), located within the Northern Negev is characteristic of one of these sites. It is composed of a series of six sub-sites scattered across an area of around 550m x 100m along the northern bank of the *Nahal Grar* (Gilead, 1995: 25-27). The settlement has been interpreted as relating to several distinct clusters of activity (ibid.). Moreover, occupation appears to be dominated by pits and whilst these appear to have been used for refuse during the final stages of settlement, they had a range of functions, such as burial and possibly storage prior to this (ibid: 29-30). Installations and structures, built predominantly from mud-brick, have also been found (ibid.). Whilst the use of stone architecture is apparent in areas B, C and E of the site (ibid.), the limited presence of this resource is in direct contrast with Chalcolithic sites in the stone rich areas of the Jaulan and Hauran, as well as sites, such as Shiqmim (Levy and Alon, 1987b). One of the main challenges presented by this site is how to interpret, both chronologically and socially, the presence of sub-sites stretched out across the Nahal Grar. Investigators have suggested that many structures, installations and pits were used for an indeterminate amount of time with gradual rather than sudden abandonment (Gilead, 1995: 29). The horizontal movement of settlements across space is a phenomenon which is beginning to be more readily recognised archaeologically [(e.g. Wendrich and Barnard, 2008) and see chapter 9.3.1.]. What is worth further note from the site of Grar is the lack of differentiation of activities across these sub-sites, which is in direct contrast to Shiqmim (Levy and Alon, 1987b: 163). Indeed, the only area which has been potentially marked as differing in both location and function, based on the absence of any structures and installations, is Area G, although this may result from limited excavation, as well as deep ploughing activities (Gilead, 1995: 97-105).

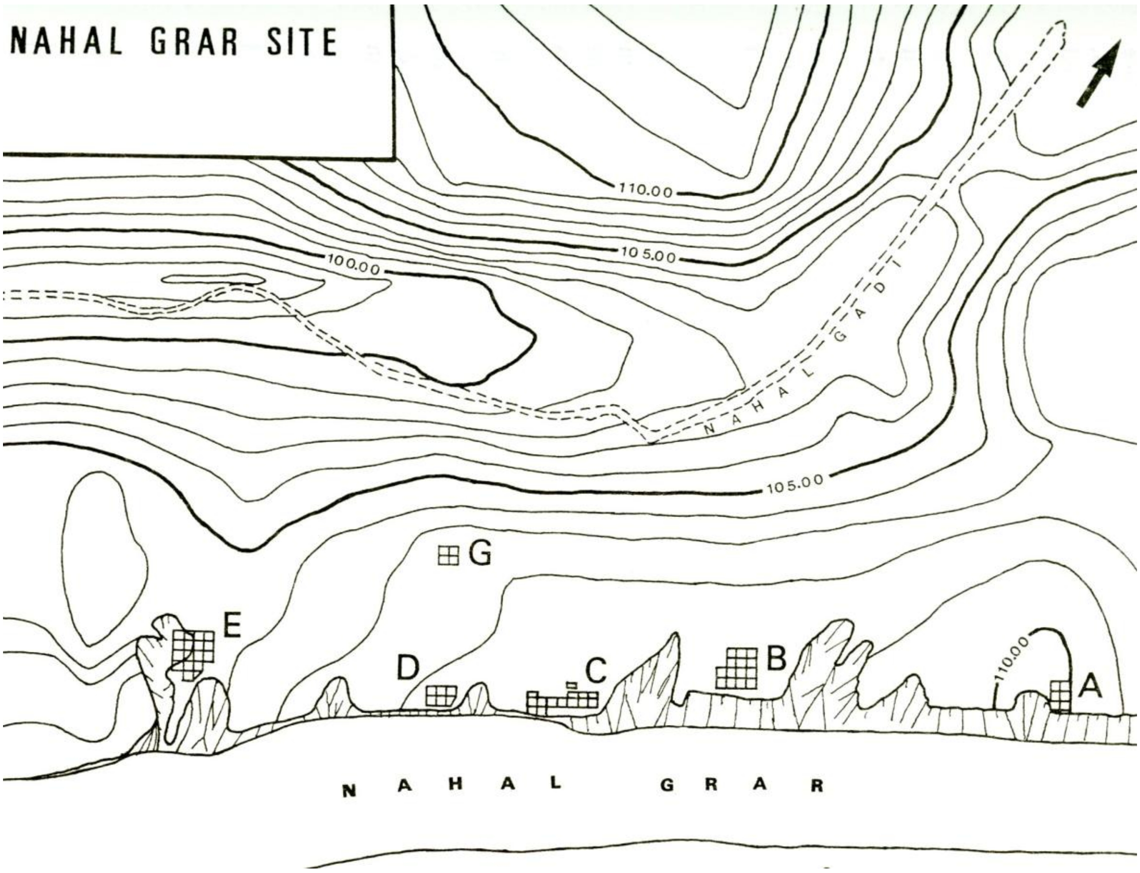


Figure 8.72. Plan of Grar (Gilead, 1995: 27, figure 3.1)

8.4.1.1.2. Central Negev Highlands

Kevish Har Harif is located on a *wadi* terrace between the *Nahal Nizzana* and an associated tributary. The site was intensively examined through both surface survey and excavation during the 1980s. The one radiocarbon date from the site has been assigned to a period between 4230-3980 cal BC [(Avner and Carmi, 2001: 1211, Rosen, 1984: 111-2, 119) re-calibrated to 4331-3820 cal BC (see Appendix 8.1.)], suggesting a later Chalcolithic occupation. However, according to Rosen (1984: 119), the lithic assemblage from the site appears to indicate a slightly earlier settlement phase. Several possibilities exist. Firstly, it may be that this site was occupied or seasonally re-occupied over a lengthy period of time, leading to the lack of correspondence between the dating of the lithics and radiocarbon sample. Secondly, given the fact that only one sample (charcoal from hearth) was derived from the site, it may be that this relates to secondary use of the area. Thirdly, given Rosen's (1984: 119) acknowledgement that at least some of the elements of the lithic assemblages appear to show Chalcolithic analogies, it may be that the possible Late Neolithic parallels are indicative of continuity in practice and production. This possibility is convincing, especially given the proposed dating for the first appearance of Chalcolithic technologies and society in the Southern Deserts [see Table 8.1 (c. 4350 BC)]. Whilst the site size, via surface cleaning and the extent of the recorded lithic scatter, has been suggested to range between 700-1000 square metres, only 74 square metres of it was excavated (10-20% of the site), making it very difficult to make any overall interpretations concerning the layout and nature of architecture at the site (Rosen, 1984: 112). Despite this, Rosen (ibid.) suggested that in line with evidence from the Southern Negev the site could be seen as a pen and room structure (Figure 8.73), formed from large upright boulders, which possibly supported a 'tent' roof. As this example highlights, the difficulties in trying to assess the chronology and nature of occupation and architecture within this region are increased by both the potential for strong continuity in material culture, as well as lack of radiocarbon dates from sites, which leads to their accuracy being questioned.

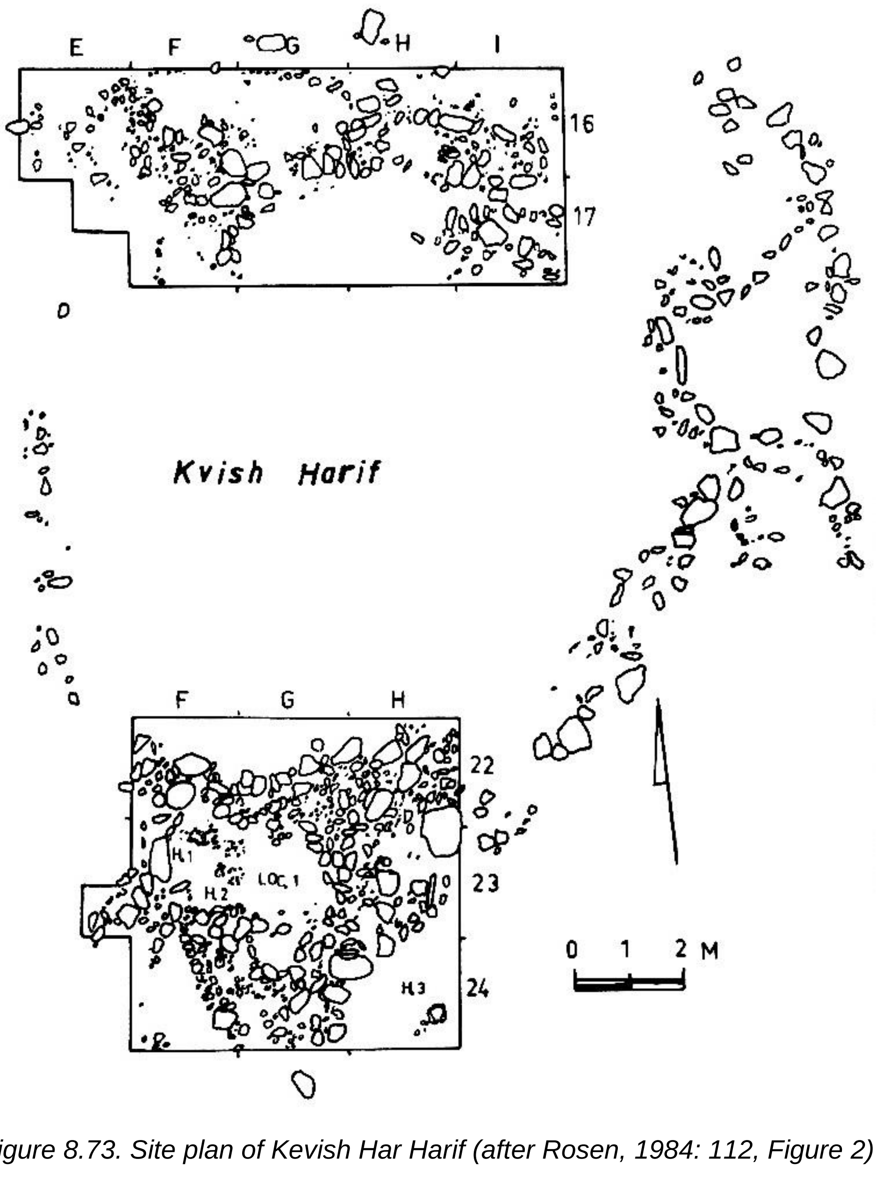


Figure 8.73. Site plan of Kevish Har Harif (after Rosen, 1984: 112, Figure 2)

Only one site, which possibly spans the Chalcolithic-EB I transition, has been clearly identified within this region. A number of dates have been obtained from the site of Har Dimon, the earliest of which fell in the range of 4660-3845 +/- 55 BP (Segal and Carmi, 1996: 1993). This date was calculated by Avner and Carmi (2001) to fall between 3520-3360 cal BC and when this calculation was re-run using Oxcal 9.0 was calculated to fall between 3632-3349 cal BC (see Appendix 8.1.). Given the evidence for continuity in practice in areas, such as the Southern Negev (Rosen, 2002a, 2002b), an area which shows strong analogies with the Negev Highlands during both the Chalcolithic and Early Bronze Age, it would be surprising to fail to find any evidence for such continuity within the Central Negev and highlands region. However, until further survey and rigorous dating programmes, facilitated by the use of absolute dating methods are carried out, the nature of this transition remains debateable.

8.4.1.1.3. Southern Negev deserts

In contrast to the scarcity of well dated remains from the Central Negev and Negev highlands, a substantial amount of research has been carried out at Chalcolithic sites within the Southern Negev, predominantly in the 'Uvda Valley (e.g. Avner, 1990a). Large numbers of possible habitations, as well as massebot shrine sites have been examined and dated via ^{14}C in this region (Avner and Carmi, 2001: 1212-1214). These include evidence for a range of courtyards surrounded by stone fences, interpreted as being used for animal pens via the presence of ovicaprid bones, as well as thick layers of cattle dung (Avner, 1990a: 126-7). Avner (1990a: 127) has suggested that alongside the appearance of such structures, it is possible to see a considerable drop in the percentage of flint arrowheads within the archaeological record, an observation which has also been emphasized by Rosen (1984; 2002a: 29) in relation to sites, such as Kevish Har Harif. In line with such evidence, a local development from single/multiple room dwellings dating to the PPNB, to so-called pen and pen-room clusters which can be observed by the 5th-4th millennia BC at Nahal Mitnan has been suggested (Haiman, 1989: 17, Rosen, 2002a: 28). In the majority of cases the impetus behind the construction and the shift from single to clustered structures is unclear (ibid.). Having said this, multiple clusters bear a clear resemblance to structures from the EBA, which have been interpreted by Rosen (2002a: 28) as indicative of a fully pastoral lifestyle. Eleven sites from the 'Uvda Valley have been dated via ^{14}C (see Appendix 8.1.). A substantial number have also been examined and dated to a broad Chalcolithic-EBA phase via surface material. These remains vary from apparent temporary dwellings (Avner, 1990a: 154-7) to extensive scatters, spanning an area of c. 3-4km (ibid.), which similarly to sites such as Grar may indicate a horizontal displacement of occupation. The habitation site of 'Uvda 9 revealed evidence for levels of goat dung, associated with small winged and tranversal arrowheads and on the basis of association with the adjacent cult installation at the site, has been dated to the 5th millennium BC (see Appendix 8.1.).

Research within the 'Uvda Valley has also revealed potential evidence for agricultural activities dating to the 4th-3rd millennium BC (Avner, 1990a: 127-8). Avner (1990a: 129) on the basis of the appearance of various implements, such as flint adzes, sickle-blades, as well as grinding stones (see below for further discussion) in association with threshing floor sites, has suggested that agriculture within this area was well established by around 4000 BC (1990: 128). 31 threshing floors were found during survey, varying between 8-18m in diameter and consisting of flat rock surfaces, often cut into the bedrock. The majority of these on the basis of associated material evidence were broadly dated to the 4th-3rd millennium BC. However, continued use of such features has being occurring up to the present day, with structures being re-dug or adapted over time (Avner, 1990a: 128, Haiman, 1986: title page). A threshing floor discovered at the mouth of the *Nahal Yitro* revealed evidence for several stages of use involving a later circular floor being dug into a larger earlier one. A number of small stone circles around 2m in diameter were found in association with this structure and based on ethnographic comparisons, interpreted as silos. Furthermore, the surface collection of material from an adjacent structure revealed a dense scatter of flints in addition to a number of installation features, including a stone anvil and flagstone bench (Avner, 1990a: 128).

In contrast, Rosen (in press) based on evidence from lithic assemblages (see below) has argued that social groups within the Southern Negev can be seen as part of a larger Saharo-Arabian pastoral society, orientated towards the central/southern Sinai, southern Jordan and Arabia. Making an assessment of this hypothesis is difficult, in part due to the contrasting terminology used to describe and classify the material evidence within different areas [(Rosen, 2002a: 31) and see Table 8.1]. Having said this, Avner's (1990a) work does suggest that, at least within the 'Uvda Valley area, subsistence may not have been merely pastoral in nature. For example, the presence of threshing floors at a number of sites would suggest that at least some of the population may have been present at other times of year to carry out activities such as, sowing, harvesting and processing of crops (ibid.). 4 wells, 2 of which are unfinished, have also been found within the area and on the basis of adjacent 4th millennium BC flint artefacts have been suggested to date to a similar period (Avner, 1990a: 131). The wells appear to be formed by a narrow shaft cut into a layer of permeable limestone, beneath which was a layer of impermeable rock with a large space cut into it. This would have allowed rainfall to filter down into the space below the permeable limestone, thus providing an important store of drinking water (ibid.). Such structures would have been of major importance for facilitating the storage of drinking water for both humans and animals.

Given the contrasting nature of the evidence presented by Rosen (2002a, in press) and Avner (1990a), it may be possible to suggest that distinct trajectories of development can be seen between the 'Uvda Valley region and the more western and southern desert areas. This approach would also suggest that rather than viewing the Negev as

‘The Negev’ a distinction between northern and southern spheres of influence are necessary. Distinctions between these regions, environmental, historical and archaeological, do exist. However, it is important that any potential correlations between this area and northern spheres are not disregarded without further consideration.

8.4.1.2. Early Bronze Age (EB I-IV)

The EBA has been characterised as a series of desert or tribal chiefdoms, based on the presence of sedentarizing nomadic groups (Finkelstein, 1995: 83). The complex relationships and networks between different ecological zones, discussed in the previous section, apparently continue (e.g. Rosen, in press) with different socio-cultural trajectories of activity and occupation being theorised for different regions. The dominance of hypotheses emphasising the importance of sites, such as Arad, tend to favour interpretations which view expansion into the southern Negev and Negev Highlands as linked to the urbanisation of these centres (Finkelstein, 1995: 67). In spite of this, it is clear that a wide range of contrasting material exists from this region, much of which no longer fits neatly within theories of competing nomadic and sedentary populations (contra. ibid.).

8.4.1.2.1. Northern Negev

Investigators have suggested that the relative increase in remains (from EB I-II) in the highlands and southern Negev can be seen as indicative of populations expanding into desert areas from Arad following the urbanisation of this site in EB II (Amiran, 1978, Amiran and Ilan, 1996). However, recent programmes of radiocarbon dating challenge the scarcity of remains during EB I (Avner and Carmi, 2001 and see chapter 8.1.2. for further discussion), suggesting that whilst Arad may have played an important role within the area during the EBA, it was not the sole impetus for expansion and settlement. Avner and Carmi’s (2001) data appears to show only a slight decline in settlement/activity during EB III (Figure 8.18). Given the apparent destruction of Arad during EB II this evidence would seem to contradict the centrality of this site. Comparison between Figures 8.21-2 suggests an increase in settlement/activity in EB IV, indicating that expansion and development within these semi-arid regions cannot be solely associated with larger centres.

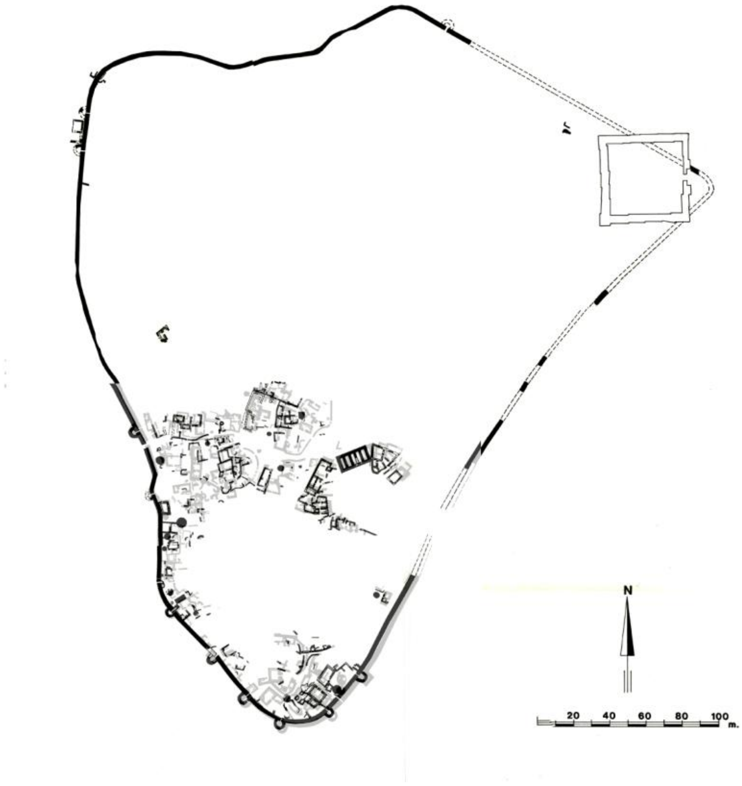


Figure 8.74. Overall site plan of Tell Arad Stratum II-III (after Amiran and Ilan, 1996: Plate 69 and 70)

The 9-10ha site of Tell Arad, dated to the EBA period has been extensively examined, with investigations revealing the presence of a network of streets and open spaces enclosed by a city wall dated to EB II [(Amiran, 1978: 10, Finkelstein, 1995: 69-71) Figure 8.74]. Excavation suggested that whilst occupation was present at the site during the Chalcolithic (Stratum V), structures during this phase were poorly built, with no evidence for fortifications and occupation being ephemeral and dispersed (Amiran and Ilan, 1996: 3-5). In fact, Stratum V deposits were only found in Areas M, T and K and were composed of pits and limited occupational debris (ibid.). In contrast, excavation of Stratum IV deposits revealed evidence for occupation over a much wider area, with pits, structures and floor levels being discovered (ibid: 5-10). In Area T a series of possible platforms, associated with pits, were found [Figure 8.75 (ibid: 10-11)]. In addition, in the so-called 'palace' area thin walls, pits, caves, floor levels and occupational deposits were revealed (ibid: 11-14). The main settlement phase appears to date to the early EB II, although there appears to be no occupation gap between the different phases of settlement, with the EB II remains being built directly on top of the EB I structures (ibid.).

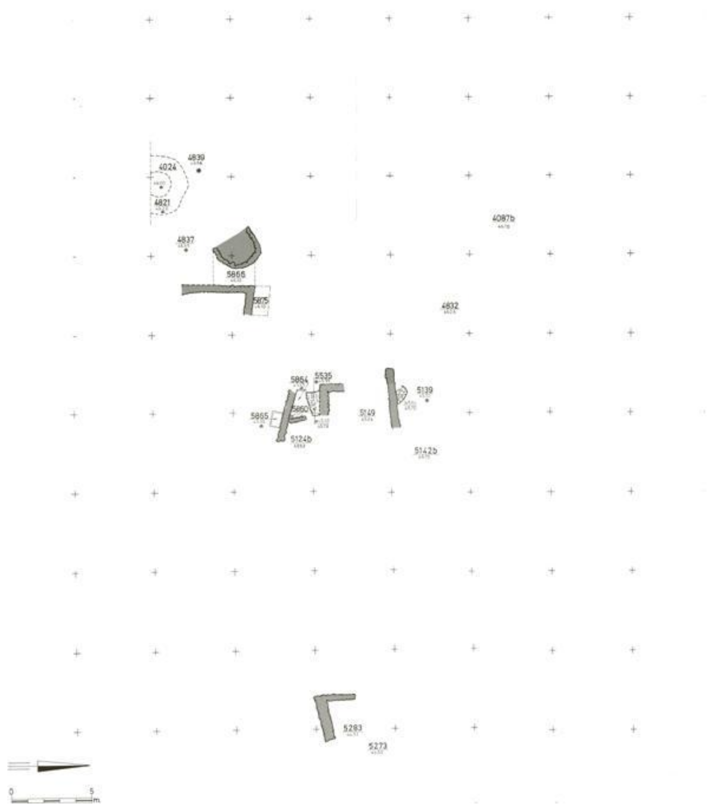


Figure 8.75. Area T, Tell Arad-Stratum IV showing evidence of platforms (Amiran and Ilan, 1996)

Amiran (1978: 10) and others identified a series of dwellings built around a central depression, interpreted as a reservoir. During this phase (Stratum III) Arad appears to become an urbanized centre, with both dwellings and public buildings appearing alongside evidence of town planning and a well constructed city wall (Amiran and Ilan, 1996: 19). It could be suggested that no clear continuity can be seen between occupation prior to Stratum III and the occupation during this EB II phase. However, given our present lack of understanding of settlement at Tell Arad during the Chalcolithic-EB I period, as well as the lack of any gap in occupation at the site, it seems sensible to suggest that rather than a sudden development and expansion of settlement during EB II, that the process at this site was more gradual. Furthermore, whilst occupation during the Chalcolithic-EB I phases appears to be more ephemeral aspects of continuity are visible. Amiran (1978: 19) mentions the presence of architectural elements, such as round and square platforms, which become typical of the site during the Stratum III-II phase. As already mentioned similar platforms were recorded in Stratum IV in Area T [Figure 8.75 (Amiran and Ilan, 1996: 11)].

Considering the lack of Chalcolithic-EB I remains, the possibility that settlement, during these periods, was focused elsewhere on the site, cannot be completely dismissed. Furthermore, many of the interpretations concerning the nature of settlement at the site during EB II are based upon comparisons with neighbouring regions and the presence of broad-room buildings within the dwelling area of Tell Arad [(Figure 8.74) and see Chapter 8.2-3 for a critique of the interpretation of broadroom structures]. Whilst Arad is one of the most extensively excavated sites within the Southern Levant, the relationship between the excavated and total area of Tell Arad may indicate that, at present, a reconstruction of a highly organised settlement with a clear division between private dwellings and public buildings (Amiran, 1978: 10) is somewhat flawed. From a basic examination of the plans at this site there does appear to be a lack of continuity in layout of structures and features from Stratum V-I. However, this does not necessarily suggest that no continuity, re-use, alteration or expansion was present. Indeed, rather than the presence of shared walls to buildings in Area H and K being indicative of pre-planning (Amiran, 1978: 11), such features may result from extensions to buildings, with new internal divisions and structures being added into or against earlier ones (Figure 8.76). Until further excavations take place many of these interpretations remain circumspect. However, given the evidence available, it is clear that the dominance, nature of occupation and role of this site within the wider region from the Chalcolithic-EB III is not necessarily as straightforward as previously supposed.

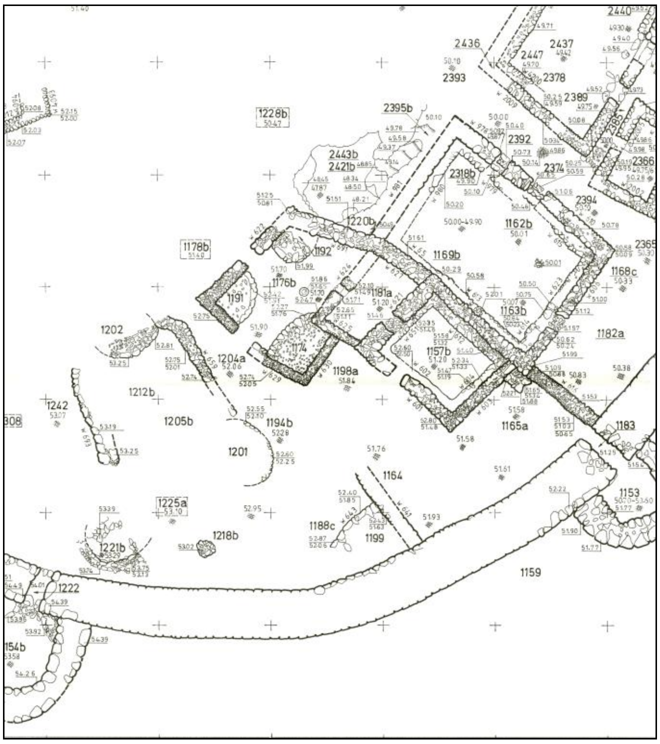


Figure 8.76. Area K, Arad (Amiran and Ilan 1996)

8.4.1.2.2. Central Negev Highlands

The nature of EBA settlement within the Negev Highlands is strongly debated. Haiman (1992b: 100) has argued that 'temporary sites' within the area appear to be located away from water sources and are characterised by 'simple' constructions, with the density of permanent settlement declining as distance from a water source increases, suggesting a seasonal movement from permanent to satellite sites (Figure 8.23). Whilst a useful concept, the characteristics of a 'simple' site are not made clear and there exist debates concerning the attribution of terms, such as 'simple', 'permanent' and 'temporary' (see chapter 9 for further discussion). The Camel site, studied by Rosen (2003: 753) and dated via pottery typologies and ^{14}C to c.3000-2700 cal BC (EB II), is interesting to consider in relation to this hypothesis. Covering an area of around 450m^2, the site is composed of two adjoining irregular stone enclosures (Figure 8.77). Researchers examining this site have suggested that the walls of structures may never have been particularly high and instead were composed of organic brush superstructures and represented animal pens (Rosen, 2003: 751-2). If this is the case, the Camel Site may have represented a semi-permanent locale, occupied by pastoralist groups. However, investigations revealed the presence of a range of artefacts, which suggest activities not solely related to pastoralism, such as bead manufacture (ibid: 754-5, 759), as well as the milling or grinding of cereals (ibid: 755-6, 758). The transportation of dry grain as opposed to the local growth of crops may be possible. Even so, we have to be careful about formulating hypotheses concerning subsistence strategies and the nature of populations during the past based merely on the apparent 'permanent' or 'temporary' nature of a site (see chapter 9.3-4 for further discussion).

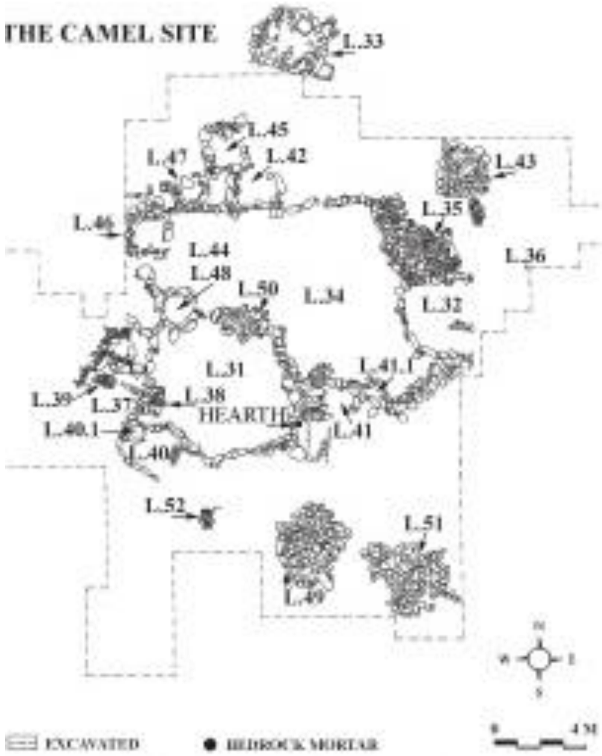


Figure. 8.77. Plan of Camel Site (after Rosen, 2003: 752, figure 2)

This argument is further highlighted by evidence from Be'er Resisim. Located within the central Negev, the site dates to EBI-IV, with the earlier EBA activity being identified as more 'ephemeral' in nature (Cohen and Dever, 1978: 42, Haiman, 1996: 12). More than seventy five round/elliptical structures (Figure 8.78) have been identified from the EB IV site, although no evidence of enclosure walls or defensive structures has been recorded (Cohen and Dever, 1978: 32-3).

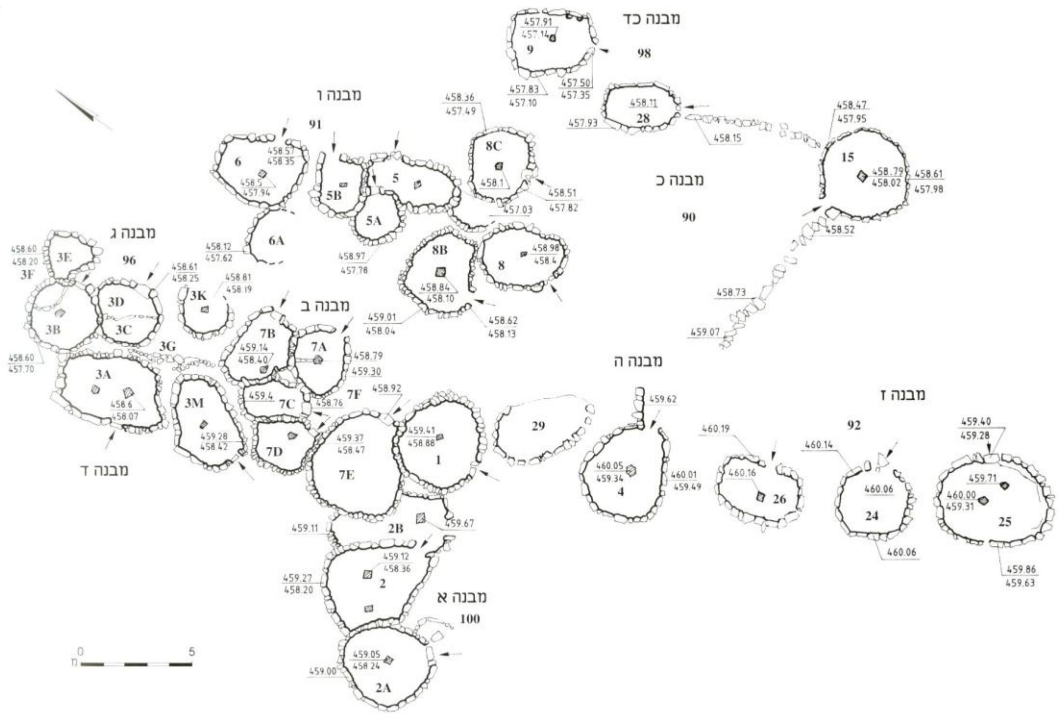


Figure 8.78. Overall plan of Khirba Be'er Resisim (after Cohen, 1999: 202, figure 129)

The buildings are constructed using local limestone, with chalk being used for the upper portions of buildings or possibly for roofs. Based on these findings, Cohen and Dever (1978: 35) argued that these structures were not bases for huts or tents but represented substantial roofed buildings. In contrast, Finklestein (1995: 97) challenged the sedentary nature of occupation interpreting the small buildings as enclosures for animals, with humans sleeping in tents. If we examine the published plans, evidence can be seen for internal features within the illustrated buildings, including grinding stones, bins and a central pillar (Figure 8.79). Contrary to Finkelstein's (ibid.) argument, such features may indicate human occupation. Moreover, considering the relatively small size of these structures (c. 4m x 4.7m in the case of Building 1, Area A) and the presence of an internal central pillar it is highly possible that these structures may have been roofed as Cohen and Dever suggest (1978: 35). The use of pillars as supports is a feature seen in the Hauran, although associated in this area with rectilinear (Braemer et al., 2004: 87), rather than curvilinear buildings. Furthermore, it is an element which can be seen at other EB IV sites within the Negev, such as 'Ein Ziq [classed as MB I by the investigators (Cohen, 1999: 57, 137-188, Site 25) and see Figure 8.80]. No clear courtyard structures have been identified from Be'er Resisim, which clearly contrasts with the evidence for pen and pen-room structures found in association with courtyards (Rosen, 2002a: 28; Avner, 1990a: 154-7). In addition, the lack of evidence for windows and wall openings (Cohen and Dever, 1978: 35), recalls evidence presented for the Hauran (Braemer *et al.,* 2004: 136) and can possibly be interpreted as allowing buildings to be left for certain periods. This hypothesis is partly challenged by the presence of a possible threshold within Building 1, Area A which investigators, based on the presence of possible door jambs, reconstructed to be around 1.7m in height. If this is the case this entranceway would have been fairly substantial and possibly may have needed to be blocked if the population was absent from the site for a lengthy period. Cohen and Dever (1978), based solely on artefactual evidence, have suggested dates of EB I-IV (EB IV here is equivalent to their MB I). The use of various diagnostic forms from Be'er Resisim within an assessment of the chronology of sites will be discussed shortly. However, at present suffice to say that whilst it has been argued that clear EB IV diagnostics can be seen from the site, continuity in material culture is problematic and without a programme of radiocarbon dating we cannot be fully assured of the precise dating of these structures.

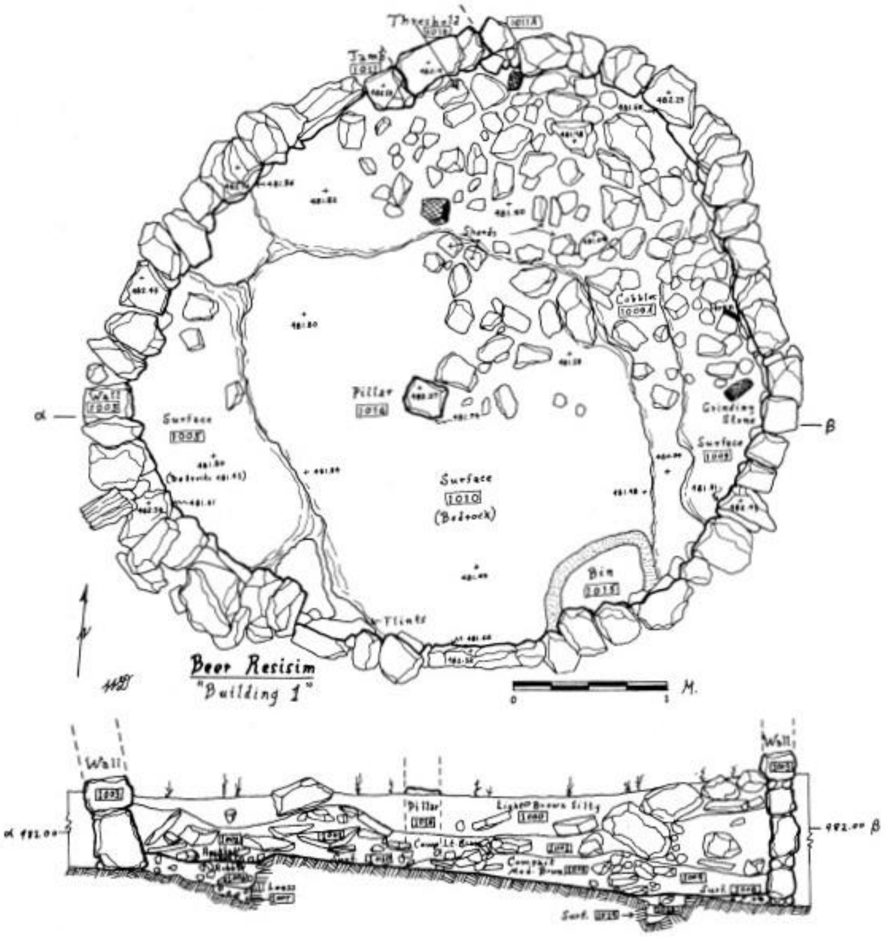


Figure 8.79. Be'er Resisim, Building 1, Area A (after Cohen and Dever 1978)

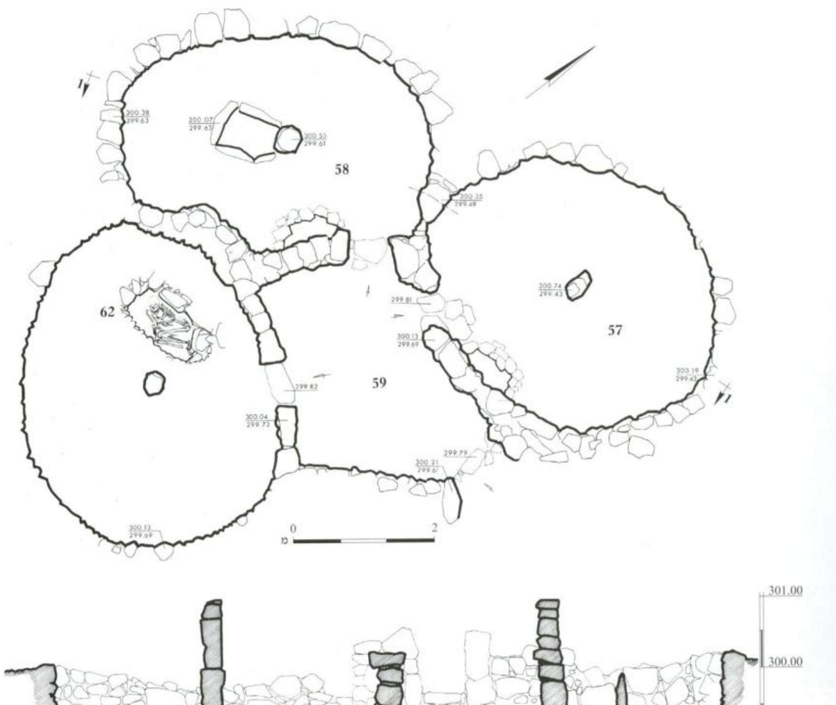


Figure 8.80. 'Ein Ziq Structures (after Cohen, 1999: 143, figure 91). Note the under the floor burial in Room 62

Survey at the site of Atar Har Harif [(EB IV) Figure 8.81] revealed evidence for a series of round and rectangular rooms surrounding a central courtyard. Clusters appear to range from c. 7-13 rooms (Cohen, 1979: 253-4, 1999: 65, Figure 47). The presence of courtyards, as well as circular and rectangular structures, presents a clear contrast to structures identified at Khirba Be'er Resisim. To date, only survey has been conducted at Atar Har Harif thus, the chronology of these structures is reliant upon surface material. Without the use of absolute dating techniques, discussions examining the contrasting evidence from sites such as Be'er Resisim and Atar Har Harif have to remain generalised. However, this variation and lack of a single cohesive dwelling pattern across the region is telling and suggests that rather than a single process of expansion from the north, this period was characterised by a series of complex processes. These may have involved both internal development and expansion, with the region being exploited in a number of different ways.

Figure 8.81. Plan of Atar Har Harif Structure (after Cohen, 1999: 65, figure 47)

In addition to settlement structures cairn monuments have also been recognised. Many of these are found in association with occupation locales (e.g. Haiman, 1993a: 49, 1994: 26-7, Lender, 1990: 105). Investigations, within the area of *Nahal Mitnan* and *Wadi el-Halufi* in the western Negev highlands, have identified the presence of around two hundred and fifty cairns in eleven main clusters spread over four square kilometres (Haiman, 1993b: 49). The cairns are composed of a ring of upright slabs filled with smaller stones, with a burial cist often being visible in the centre prior to excavation [Figure 26, Kochavi's 'filled type' (ibid: 49-50)]. In many cases these cairns are incorporated into the walls of buildings and courtyards (Haiman, 1993b: 50-54), although they appear identical to those from the nearby cairnfield of Har Yeroham. Haiman (1992a: 29) has suggested that whilst many cairns were built within abandoned dwelling rooms, the abandonment of the whole site does not necessarily have to have taken place. In addition, similarly to the Homs NSA (SHR 666, 63), clear examples exist where cairns and settlements appear to be contemporary (ibid.). As suggested in relation to the Hauran and Jaulan, it is possible that a strict dichotomy between dwelling and burial activities may not have been present within this region during the past. Moreover, as Haiman (1992a: 30) has suggested this method of burial may represent a long-lived tradition, akin to that of burying individuals underneath floors (also see Figure 8.80). If this is the case, it raises questions concerning why certain settlements appear to show no evidence of associated cairns, whilst others do. Moreover, there appears to be no distinct material culture differences between these sites, thus, we have to question what cultural choices were made concerning the burial of the dead within settlements (Haiman, 1993b: 60).

Ramat Matred 3 further elucidates some of these issues. The site, dated to EB I based on comparison with EB I contexts at Arad [(Haiman 1994: 29) it should be noted that this site is also suggested to date to the EBA (i.e. EB I-II) by Cohen (1999:51-2, 57)], appears to show evidence for a variety of different practices involving dwelling, burial and subsistence within the confines of the same site. Structures including silos, circular courtyards (containing concentrations of artefacts, such as flint, pot sherds, sheep/goat bones and grinding stones), dwelling rooms and cairns are dispersed across a hilltop (Haiman, 1994: 24-7, 30-1). Several structures containing hearths and possible storage areas have been identified, although no spatial differentiation of activities seems to have occurred between the interior and exteriors of dwellings. Two large burial cairns were excavated at this site. The first, cairn 30, revealed the presence of a central oval burial cist. One of the more enigmatic features of this structure was a small stone pile, located in the western half of the cairn. This 'pile' covered a depression although no burial deposits were found within (Haiman, 1994: 24). The phenomenon of stone piles within burial cairns is known elsewhere within the Negev highlands (e.g. Haiman, 1986: Site 367, 1991: T6, 1994: 24), although little discussion has taken place as to their purpose or meaning.

8.4.1.2.3. Southern Negev Deserts

The EBA, within the Southern Negev Desert, is seen to be a period when the classic heartland versus periphery or desert versus sown relationship develops [(Rosen, 2002a: 30) and see Chapter 9]. However, as Rosen suggests (2002; in press), characterising and discussing this relationship is difficult due to the lack of a cohesive dating framework across these different regions, with both chronological periodization and ceramic sequences from the northern 'heartlands' showing different trajectories and characteristics to those within the south.

The pen and room style of dwelling discussed above continues into the EBA following its development in the Early Chalcolithic, with walls being constructed from un-cut slabs and blocks (Rosen 2002a: 31). In the majority of cases these features have been interpreted as foundations for organic superstructures (ibid.). The presence of organic horizons within pens from a number of sites dating to this period, both within the Negev and areas such as the Sinai have been argued to represent the presence of layers of dung (Kozloff, 1981). Rosen (2002a: 31) also indicates that in many cases the pens can be distinguished from the rooms on the basis of their inferior durability and construction. Six sites from the ‘Uvda Valley have, on the basis of radiocarbon dating, been assigned to EB I-III (Appendix 8.1), with a further three being seen to date to the EB II-MB I period (Avner and Carmi 2001: 1212-1215). Unfortunately, a large number of the reports of these sites are either unpublished or in Hebrew, making a full study of the remains difficult (e.g. Avner *et al.*, 1994: 270). However, what studies have shown is the potentially large scale continuity in occupation from EB I and possibly earlier, through to EB IV, with Avner *et al.,* (1994: 283) suggesting that all of the sites of this period within the ‘Uvda Valley region could be associated with earlier settlement. In particular, as the dating range from Yotavata 6, Uvda 166 and 17 shows, these settlements display clear continuity in occupation over periods of up to 600 years (Appendix 8.1).

8.4.2. Cult Sites and Shrines: A desert phenomenon?

Excavation and survey within the Negev and Sinai regions over the past 100 years has revealed a wealth of monuments, which have been interpreted as ‘cultic’ or ‘ritual’ in nature (e.g. Avner, 1984, Haiman, 1992a, Rosen and Rosen, 2003). Whilst, some examples are relatively well dated [e.g. Gilat, (e.g. Levy and Alon 1989; Levy et al. 2006) others are assigned to a broad chronological horizon ranging from the 7th-3rd millennia BC (Rosen, 2002a: 29). Elements and characteristics (standing stones, tumuli, cairns) of these sites have already been discussed to some extent in chapter 3. However, it is worth briefly reviewing some of the current interpretations in more detail.

8.4.2.1. Northern Negev

Located in the Northern Negev around 20km north of Shiqmim, Gilat has been extensively examined in recent years (Levy, 2006). Covering an area of c.450m^2, excavation has revealed the presence of at least four layers of Chalcolithic activity, although no Neolithic or EBA material has been recovered (Levy and Alon, 1989: 166). Deep ploughing means that the majority of finds from stratum I are without context, whilst only some of the installations from stratum II were actually found in-situ (ibid: 166-7; Levy et al. 2006: 138-139). Moreover, despite Levy and Alon (1989: 166) suggesting that no remains post-dating the Chalcolithic period have been found at the site, an examination of the calibrated dates when re-run to a level of 99.7% certainty using Oxcal 4.0, shows that the second radiocarbon sample from stratum II spans a general Chalcolithic-EBI period (see Appendix 8.1). In addition, despite the fact that this site has been interpreted as cultic in nature, a question that has to be posed is at what point a structure becomes a shrine or cult building as opposed to a dwelling (ibid:

170)? Various comparisons (Avner, 1984: 120; Levy and Alon, 1989: 178) have been made between this site and features, such as central courtyards containing a basin or semi-subterranean circular feature found at Ein Gedi (Ussishkin, 1980), Tel Arad (Amiran 1981). The discovery of "massebot" at Gilat have also led to analogies to 'cult' sites in the Negev and Sinai, where these features have also been discovered [(Avner, 1984) and see Figure 8.82]. As Levy *et al.* (2006: 133) suggest the sample of the site excavated is relatively limited. Moreover, considering the large scale disturbance of Gilat and lack of in-situ remains, the interpretation of this site as being purely 'cultic' in nature is perhaps misleading. Levy and Alon (1989: 183-4) suggest that the presence of features, such as mudbrick benches and platforms can be seen as indicative of early sanctuaries. Considering the 'domestic' interpretations of benches and platforms at sites, albeit of a different date, (e.g. Khirbet Be'er Resisim; Ein Ziq), it is clear that a cultic association need not be assumed. The presence of features, such as mudbrick silos at Gilat (Levy and Alon, 1989: 179) may also suggest that a range of functions were carried out at the site. Having said this, the architecture and associated material culture (see below for further discussion) at Gilat, does suggest a complex series of social practices occurring. Moreover, many of these show aspects, which are cultic in nature. Rather than these elements being in dispute, it is the degree to which such activities should be separated from dwelling and subsistence practices that can be debated.

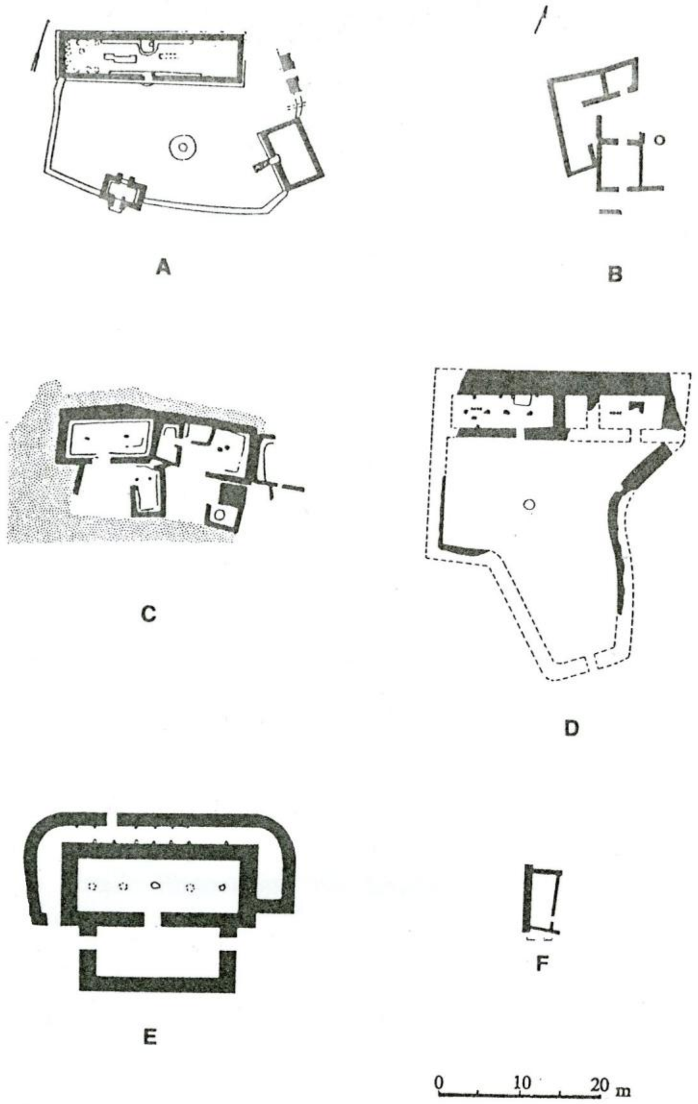


Figure 8.82. Comparing plans of apparent 'cult' structures from Gilat Stratum III (B), Ein Gedi (A) and Arad (D) (after Alon and Levy 1989: 177, figure 3)

8.4.2.2. Southern Negev

The southern Negev supports a wealth of 'cultic' monuments, found in association with potential dwellings, as well as within apparently isolated locations (Avner, 1984; Rosen and Rosen, 2003). Over the past few decades these monuments have benefited from considerable study and consideration. However, as with the majority of remains from this region one of the main challenges is assessing their chronology. The only site from which radiocarbon samples have been obtained is Eilat (Gulf of Aqaba) and in terms of environment this site is very different from the rest of this region.

'Massebot' have been identified in both the Negev and Sinai and consist of a series of upright stones, either in groups or individually located, possibly in association with small stone paved cells, altars and stone basins (Avner, 1984: 115). The dating of these structures poses a range of problems, partly due to their potential longevity, with

Avner (ibid: 117) suggesting dates, ranging from the 6th to 2nd millennia BC. These monuments appear in both 'desert' and 'settled' areas and show a general uniformity in terms of construction and form (Avner, 1984: 118). On this basis, Avner (1984: 118-9) has suggested that they can be seen as representations of deities, which first appeared in desert areas and were then constructed in settled areas. The only massebot sites within the southern Negev from which absolute dates have been obtained are found within the 'Uvda Valley. They range from 7200-2580 cal BC [re-calibrated to 7581-2337 cal BC (three date ranges-see table Appendix 8.1)] at Uvda 9 124/XVII and 4610-4360 cal BC at Uvda 151 (re-calibrated to 4798-4265 cal BC). Given the fact that only two sites have been dated and both of these sites show a substantial range of dates it is clear that we cannot be sure whether Avner's (1984) hypothesis is correct. Moreover, considering the dating of the site of Gilat (Northern Negev) [re-calibrated 4852-3018 cal BC (see Appendix 8.1)] which has evidence of massebot structures, it is possible that early evidence for these structures will be found in this region in the future. Either way, it is clear from the dates obtained at 'Uvda 9 124/XVII that these structures, at least within the Southern Negev, show a prolonged period of use and importance.

Investigations have also revealed evidence for open air sanctuaries (e.g. Avner, 1997: 132). These structures are often located along ancient desert routes and constructed using double lines of fieldstones and stone slabs, sometimes integrated into tumuli tombs or chains of long stone circles (Avner, 1984: 120, 122, Rosen and Rosen, 2003: 1-3). Due to the double form of many of these structures, Avner (1997: 132) has suggested that they represent paired 'female' and 'male' sanctuaries. In addition he argues that parallels can be seen with the broadroom temples of the Chalcolithic and Bronze Age Levant (e.g. Mazar, 1980: 62), as well as modern desert sanctuaries (Avner, 1984: 124-5). Rosen and Rosen (2003: 14, 16), in contrast, have emphasized the solar and landscape alignments, seen at sites, such as Ramat Saharonim, arguing that these precincts represent a 'ritual' space separated from the profane and domestic. This site is composed of a series of rectilinear 'shrines' constructed from local limestone. Central installations can be found, both built into the double wall (see structure 11) or, in some cases within associated smaller structures located to the north of the larger rectilinear building [Figure 8.83 (Cohen, 1999: 21-24, Rosen and Rosen, 2003: 4)]. 30 tumuli have also been found in two distinct clusters, one located on a ridgeline south of the rectilinear structures, the others to the east (Rosen and Rosen 2003: 4). Rosen and Rosen (2003: 4, 16) suggest that a clear contrast can be seen between the material found by Cohen (1999) at this site, predominantly composed of tabular scrapers and assemblages from contemporary 'domestic sites' [e.g. Abu Matar and Shiqmim (Levy and Alon, 1987b, Perrot, 1955a, 1955b)] at which tabular scrapers are unusual. Moreover, it has been suggested that in comparison to the density of finds from desert Chalcolithic/EBA domestic sites, the finds from Ramat Saharonim are extremely limited (Rosen and Rosen, 2003: 16). Whilst the importance and complexity of this site is clear, it may be that an emphasis on the association between the shrines and solstice events needs further investigation. The presence of tumuli to the east and south of these structures is acknowledged (ibid: 4, 11-13), however, the relationship between these features is never made clear. Moreover, given the limited dating evidence from the site it could be argued that our understanding of the contemporaneity of all the shrines is limited.

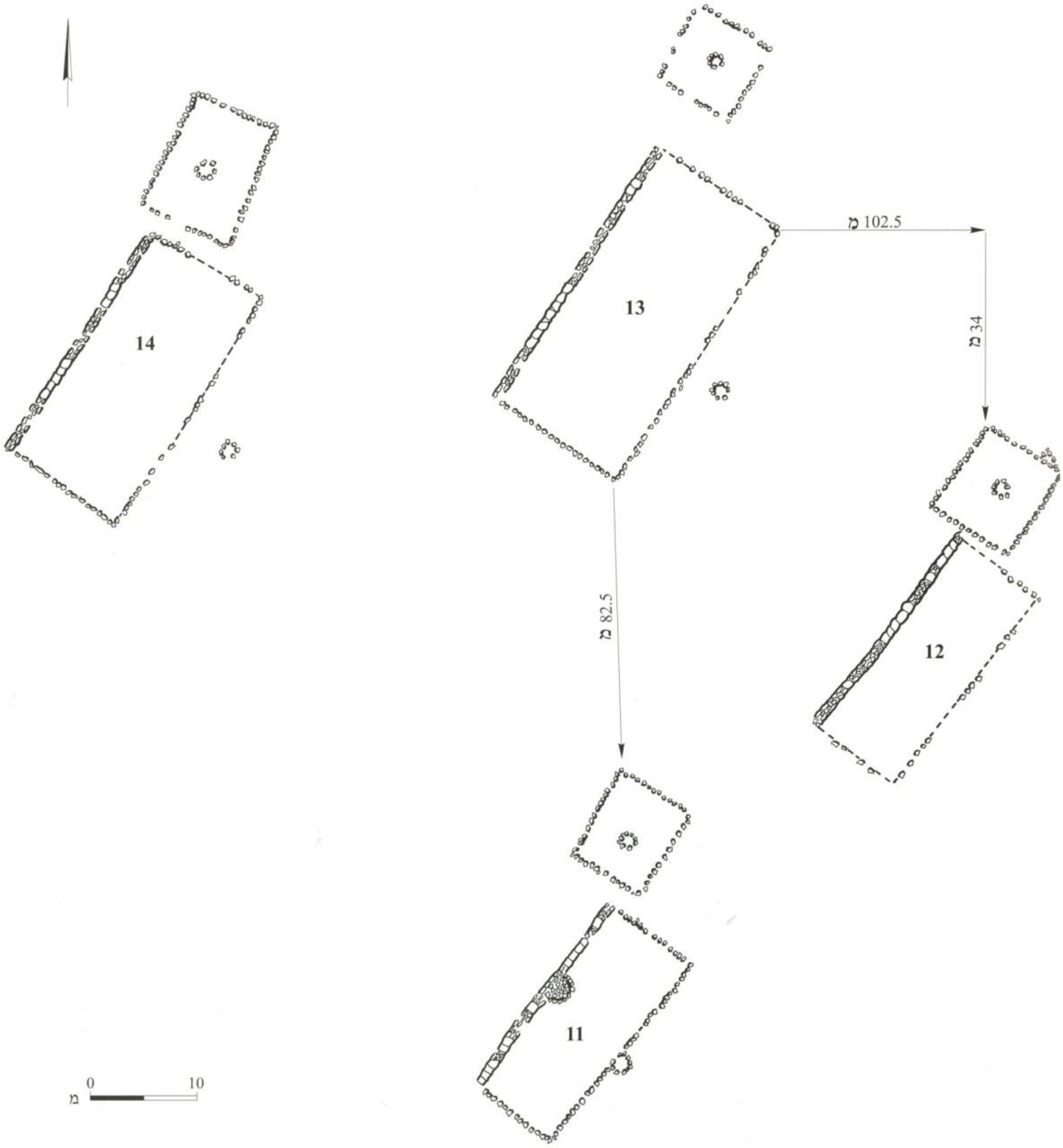


Figure 8.83. Ramat Saharonim (after Cohen, 1999: 23, figure 8)

8.4.3. Portable Material Culture

Any assessment of variation in material culture seen throughout this region is problematic due to both the paucity of finds at many sites, as well as the general lack of diagnostic material, when material is present (Gilead and Goren, 1986: 85-6). Artefact interpretation is further limited at sites, such as Mezad Aluf, due to poor preservation (Levy and Alon, 1982: 45-6). Radiocarbon dating also suggests that specific diagnostic forms, such as holemouth jars, may have been used over a longer time span than previously thought (Avner *et al.*, 1994: 269). Despite this, investigators have suggested that patterns of exchange and shared material culture can be seen. For instance common grave goods at sites, such as Mezad Aluf, include v-shaped bowls, similar to those seen at a range of other Chalcolithic sites within the Northern Negev and Beersheva valley (Commenge-Pellerin, 1990: 42-3, Levy and Alon, 1982: 47), as well as areas further south (Gilead and Goren, 1986: 85-6). Moreover, recent studies of metal artefacts within the Southern Negev and Feynan region (Southern Jordan) indicate a series of wider regional contacts present throughout the EBA and possibly earlier (e.g. Adams, 2002). A child's burial from the Chalcolithic cemetery of Mezad Aluf (Figure 8.84), which contained three v-shaped bowls, a decorated basin, a number of small holemouth jars, a goblet, a small necklace and a shell pendant, suggests trading contacts between the Negev, Mediterranean and Red Sea (Levy and Alon, 1982: 47, 53). These trading contacts are important for considering the role of this region within wider networks of interaction and contact. However, Rosen (2003: 31) has suggested that many forms of pottery and lithics found from the Southern Negev desert sites are distinct from those found within the Mediterranean zone, representing a pastoral system of production.

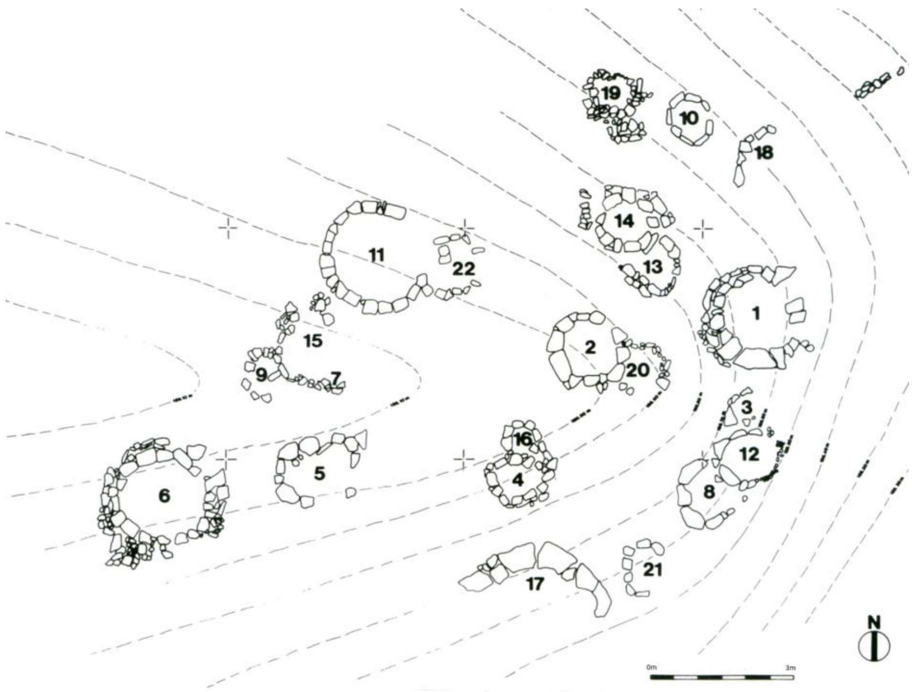


Figure 8.84. Mezad Aluf site plan (after Levy and Alon, 1982)

8.4.3.1. Pottery

8.4.3.1.1. Chalcolithic

In 1970 Amiran (1970) identified the Chalcolithic ‘Beersheba’ culture as an offshoot of the ‘Ghassulian’. As shown by Figure 8.85 she identified a number of key forms and decorative features, which could be seen both at sites such as Teleilat Ghassul, as well as those located within the Northern Negev.

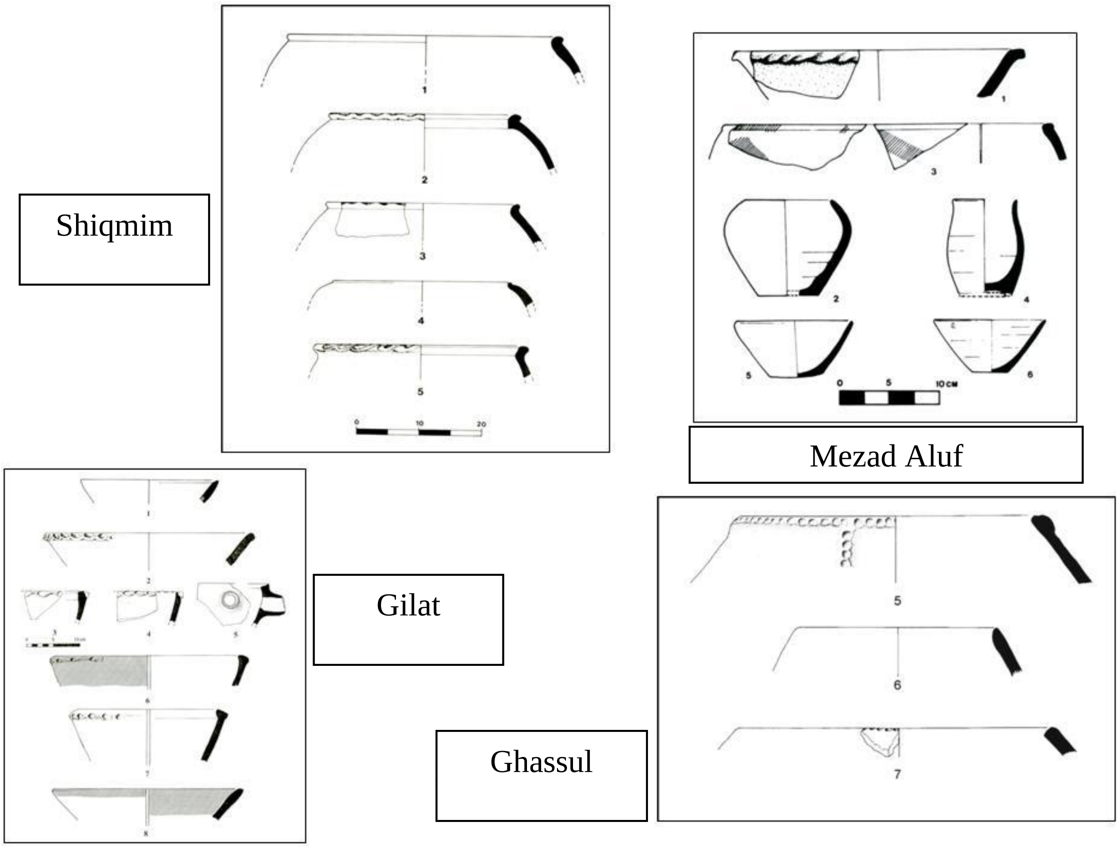


Figure 8.85. Pottery from Shiqmim (1987: Figure 12.8), Gilat (Levy, 2006: Plate 10.8), Mezad Aluf (Levy and Alon, 1982: 50, Figure 9) and Ghassul (Lovell, 2001: 135, Figure 4.15) demonstrating the use of similar decorative techniques and forms

Amiran (1970: 28) also acknowledged a number of Classic Ghassulian characteristics, such as the predominance of churns and rope decoration, which were absent from Beersheba sites. This interpretation has since been disputed by Levy and Menahem (1987: 318), who found a number of large churns at the site of Shiqmim, as well as rope decoration at the Chalcolithic cemetery of Mezad Aluf (Figure 8.86). In addition, the so-called ‘cream wares’, a term coined by Macalister (1912: 137), were identified as diagnostic of the use of kaolin from sources within the Negev and Jordan Valley, accounting for the general ‘Ghassulian’ character of the vessels made using this fabric but its absence as a fabric within Ghassulian assemblages (Amiran, 1955: 244, 1970: 29). The above observations indicate clear cultural connections between these different regions (Jordan Valley and Beersheba Valley) during the Chalcolithic. However, the extent to which the forms, fabric selection and decorative techniques from the region of Beersheba can be seen as indicative of local developments shared over the wider region of the Negev clearly needs to be considered.

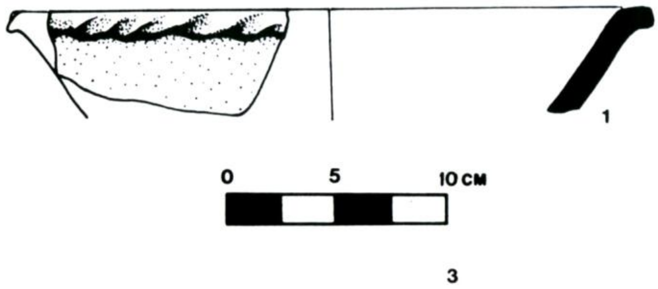


Figure 8.86. Rope decoration on vessels from Mezad Aluf (Levy and Alon 1982: 50, figure 9)

Fabric analysis at Abu Matar and Bir es-safadi has revealed a number of interesting elements. Firstly, it appears that there is a clear differentiation in the use of different clay fabrics and slips, in association with different types of vessels (Commenge-Pellerin, 1987: 30, 1990: 6-7). Moreover, certain fabrics (e.g. Type IVb), prevalent at Abu Matar, are less apparent at Bir es-safadi (Commenge-Pellerin, 1990: 7). It is possible that specific choices were being made by the individual populations at the two sites concerning the methods of production and differential use of fabrics. Microscopic studies of the fabrics from Bir es-safadi suggest a local provenance for the clay (Commenge-Pellerin, 1987: 29). This local production has also been supported by the discovery of cakes of potter's clay and fragments of unbaked vessels at the site of Abu Matar (Perrot, 1955a: 80). The manipulation of local materials and replication of apparent 'Ghassulian' forms within this region shows clear evidence for craft complexity. Moreover, the specific choices being made concerning the use of different fabrics for different vessels, is indicative of processes of selection and specialisation taking place.

Investigations at Gilat have suggested a relationship between fabric and form. For example, Tubular goblets only seem to be produced using loess clays (Commenge 2006: 408, Table 10.6). The predominant forms at Abu Matar included everted bowls and basins, which appear to vary in size depending on their overall design and function (Commenge-Pellerin, 1987: 37, Perrot, 1955a: 82). Similarly, investigations at Gilat showed a prevalence of 'open forms', such as v-shaped bowls (Commenge, 2006: 426). These vessels also appear to have been the predominant form throughout the four periods of occupation at Bir es-safadi (ibid.). Given their prevalence at Gilat, we can perhaps suggest that they represent an important diagnostic Chalcolithic form, with other vessel types varying in distribution and ubiquity. Painted decoration appears to be very common at Bir es-safadi, although few holemouth jars have been found that show evidence of decoration (Contenson, 1956a: 169, 1956b: 232-3, Perrot, 1955a: 83). This is in direct contrast to the use of decoration on utilitarian jars at sites within the Jaulan and Hauran (Braemer, 2002: 12, Braemer *et al.*, 2004: 306, Epstein, 1998: 160). In the two latter areas, decoration was in the form of incision or bands of appliqué design. Painted holemouths and storage jars are known from other regions (e.g. Bourke, 2008: 132, Figure 5.11) and holemouths with incised and painted decoration have been found at Gilat (Commenge, 2006: 476-7, Figure 10.16: 3,4,12,13; Figure 1017: 4, 11). This may suggest that different traditions of decoration existed within a relatively small region. The basins found at Abu Matar vary in diameter from between 30 and 40cm, with the size of the vessel clearly influencing the form and profile of the lip and wall of the vessel (Commenge-Pellerin, 1987: 38), again possibly indicating specialisation based on functionality of vessels. Whilst the above may not suggest evidence for standardisation of vessels, it does perhaps suggest that specific vessel forms, shapes and sizes were being produced for different functions. Such a tradition is particularly apparent at Gilat. For example, Commenge (2006: 441) has suggested that the highly decorated pointed-base beakers from this site were used for communal drinking practices, possibly by high status consumers, or for specific ‘sacred’ liquids. Given the specialised nature of Gilat (e.g. Levy and Alon, 1989: 170), it has to be questioned whether such practices can be seen as more widely indicative of functional specialisation during the Chalcolithic. Our knowledge of Chalcolithic material culture in areas of the Central Negev and Southern Negev deserts is more limited. As Avner (1990a) and others have suggested it is now clear that forms, previously identified as indicative of 5th-4th millennia BC activity and later, extend further back than previously thought. Indeed as excavations at sites in the ‘Uvda Valley have shown, diagnostically similar holemouth jars can be seen at both 6th millennium BC sites, such as ‘Uvda 6, dating to the Late Neolithic, as well as ‘Uvda 4, dating to the Chalcolithic (Appendix 8.1). Moreover, in attempting to create a wider synthesis across the broad region now known as ‘the Negev’ it may be, as Rosen (in press) suggests, that we are trying to mesh together various different cultures and traditions.

8.4.3.1.2. Chalcolithic and Early Bronze Age

One of the main issues in trying to assess continuity in pottery use and forms from the Chalcolithic into the Early Bronze Age is the lack of excavated sites within the Negev from which both Chalcolithic and Early Bronze Age material has been found in stratigrahically secure contexts. Investigations at coastal sites, such as Afridar (e.g. Golani, 2008, Golani and Nagar, in press) and Palmachim (Gophna and Lifshitz, 1980) are revealing contextually sound sequences. However, how representative and comparable this material is to Negev sequences, especially those from the highland and southern desert regions can be debated. As such the site of Arad, despite the restricted exposure of Chalcolithic deposits, is important for considering the transition between Chalcolithic-EBI and wider regional links.

A fully quantified analysis of the Arad pottery assemblages has not taken place and given the limited exposure of Stratum V across the site, such an undertaking is difficult. Moreover, the pottery from this site is, as yet, not fully published. However, examination of the Stratum IV material led investigators to highlight the presence of various diagnostic EB I forms including bowls, holemouth jars and platters (Amiran, 1978: 42). Stratum I-III, whilst showing continuity with Stratum IV showed evidence for the development of new forms, such as kraters and lamps (Amiran, 1978: 44-49). Interestingly, despite the appearance of these new forms and decorative techniques, petrogaphic analysis of the pottery fabrics from this site led the investigators to suggest that a clear relationship could be seen between fabrics from Stratum IV-I, whilst Stratum V was significantly different (ibid: 43-4). In particular the investigators highlighted the lack of grog as a temper within Chalcolithic contexts, whereas this could be seen from Stratum IV onwards. Given the apparent lack of continuity between the structural evidence from Stratum V and later periods (Amiran and Ilan, 1996: 3-5), the divergent nature of pottery assemblages from these periods is not necessarily surprising. However, the apparent lack of sharp changes in pottery forms, decoration and manufacturing techniques across Stratum IV-I [Appendix 8.3 (Amiran, 1978: 49)] highlights the difficulties in assessing chronology based on pottery typologies. Moreover, given the lack of radiocarbon dates from this sequence it is possible that stratum IV-I represent a relatively short-lived span of activity.

Ovoid and globular holemouth jars from Chalcolithic Abu Matar (de Contenson, 1956a: 164) are paralleled by similar vessels from Ramat Matred 3 and Nahal Mitnan within the Negev highlands [Figure 8.87 and Appendix 8.3 (Haiman, 1992a: 32, 1993b: 58, 1994: 29)]. de Contenson (1956a: 167) suggests that these vessels would have been used for the storage of products, such as grain and olives or possibly when spouted for oil and other liquids. The presence of both globular and ovoid forms of holemouth vessels may indicate that, similarly to evidence from the Hauran and Homs NSA (see Chapters 7-8.2), these vessels were being used for a range of different functions. As such, the long-term use of this form (Avner et al. 1994: 269) is not necessarily surprising. An examination of the holemouths from the site of Nahal Mitnan (Figure 8.87) highlights that, similar to assemblages from the Hauran region (Braemer *et al.*, 2004: 302, Figure 550, 547), a variety of rim diameters can be seen with, in this case, vessel rims ranging from around 14-33cm in diameter (Haiman, 1992a: 34, figure 10). Given the broad continuity in rim shapes, as well as fabric and manufacturing, recorded by researchers from sites such as Arad in EB II-IV (Avner et al. 1994: 280-1) it may be possible to suggest similar storage, cooking and consumptive practices were being carried out throughout these different periods across a wide range of different regions. The presence of v-shaped bowls and holemouths in EB I deposits at coastal sites, such as Ashqelon, Afridar (e.g. Golani, 2008 and further references therein), which show similar decorative motifs to those identified from Chalcolithic sites, such as Mezad Aluf, Ghassul and Gilat, emphasize the potential continuity in pottery traditions from the Chalcolithic-EB I within the Southern Levantine region [see Appendix 8.2 and compare Figure 8.87 with (Golani 2008: 28, Figure 8)].

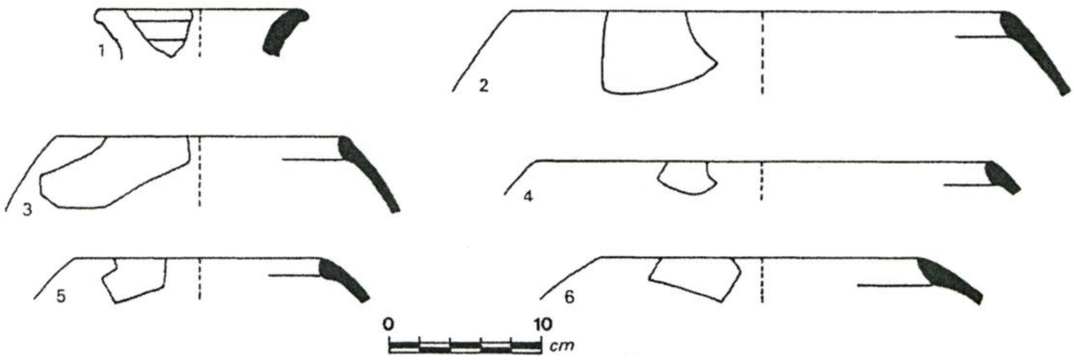


Figure 8.87. Nahal Mitnan Vessels (after Haiman 1992: 34, Figure 10)

Similar rope decoration has been seen at Ramat Matred 3 in the Negev highlands and dated to the EBA on the basis with comparisons with EB I-II Arad (Haiman, 1994: 29). Interestingly, this motif is suggested to be unusual within the Negev Highlands area (Amiran, 1970: 28, Haiman, 1994: 29), suggesting that its appearance at Ramat Matred is indicative of a wider network of contacts and shared material culture traits. Having said this, the rest of the material assemblage from this site shows clear similarities in forms and decoration to other EBA assemblages from the Negev highlands (Haiman, 1994: 29-30). If these similar decorative patterns are indicative of networks of shared material culture, why are they seen specifically at the site of Ramat Matred? Moreover, given the continuity in this motif from Chalcolithic to EB I contexts (Amiran, 1978: 28; Golani, 2008: 28), the diagnostic nature of this form of decoration has to be questioned.

Haiman (1996: 14) has argued that three key groupings, one based in the Northern Negev showing 'Canaanite' influences, the second in the northern and southern Negev which could be seen as indicative of Egyptian influences and the third in the Southern Negev which shows key similarities to Arad pottery assemblages could be seen during the early EBA (EB I-III). In contrast, he suggested that EB IV represented a homogenous cultural unit spreading from the Dead Sea to Egypt. This EB IV cultural grouping, characterised by 'Group S' pottery (Figure 8.88) has been identified at Har Saggi, linking this region to populations in Southern Jordan. Rosen (in press) has emphasized the cultural unity of regions south of the Beersheba Valley, emphasising the southern orientation of these traditions. However, in contrast to Haiman (1996) he argues that this cultural assemblage coined as ‘Timinian’ and indicative of a pastoral system of production and way of life, can be seen from c. 5000 cal BC (largely based on lithic evidence). The evidence for the early EBA cultural groupings is not made fully apparent by Haiman (1996: 14). Moreover, given the limited number of assemblages dated to the EB I-III and IV the debates concerning the dating of many sites, further assessment of these hypotheses is difficult. Evidence from sites, such as Rekhes Nafha 396 (Negev Highlands) Har Saggi (Southern Negev) and Afridar (coast) (Figure 8.88) show clear continuity in forms and decoration from the early EB-EB IV. It may be that, at present, chronological attributions on the basis of pottery forms and typology are not possible. Furthermore, even if we are dealing with a distinct ‘Timinian’ cultural unit in the South, it is unlikely, especially given the evidence for the movement of metals, that no contact between this area and regions further North was occurring, facilitating at least some sharing of cultural traits.

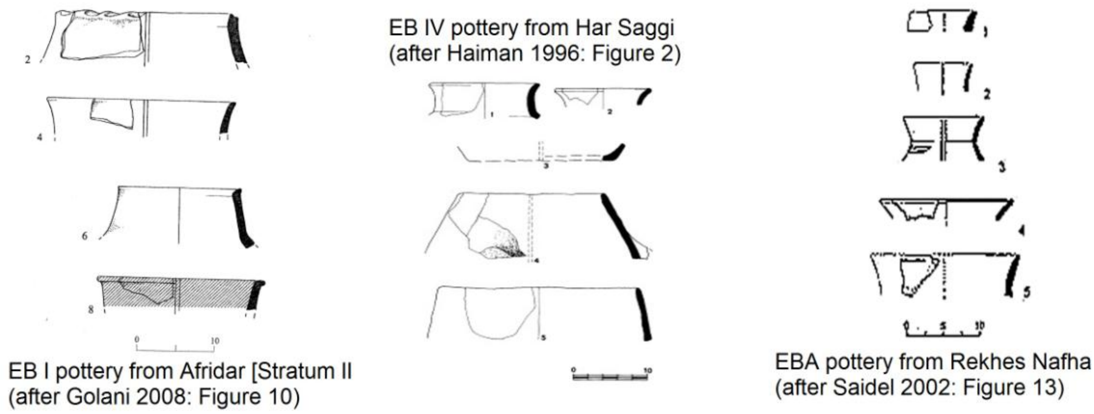


Figure 8.88. Everted rim vessel form from Rekhes Nafha and Har Saggi and Afridar (note the similarities between Afridar 4 and Rekhes Nafha and the similarities between Har Saggi 1 and Rekhes Nafha 3)

Given the new radiocarbon dates which are emerging in this region and the various debates, which exist about continuity in terms of material culture from EB II, III and into EB IV (e.g. Avner and Carmi, 2001, Avner *et al.*, 1994, Haiman, 1996: 16) the pottery assemblages from the majority of sites require re-examination. Moreover, until more detailed excavations, combining both absolute and relative dating methods, are carried out, debates concerning aspects of continuity and change will continue. Haiman (1996: 16) questioned the extent to which radiocarbon dates from specific sites could be seen as indicative of periods of occupation throughout the whole of the Negev. However, the same problems exist with material culture assemblages, especially when those assemblages are obtained from survey and dated merely on the basis of typology. Despite these problems, what this brief review has demonstrated is the degree to which various characteristics of Negev pottery repertoires may link into wider regional networks of shared material culture, orientated towards both Arabia, as well as more northern regions. The extent to which aspects of the pottery record can be seen as indicative of specialisation and functional differentiation at sites is an aspect worth further exploring through a range of other material culture forms.

8.4.3.2. Lithics, Stone and Metal artefacts

Perrot's (1955a: 78) early excavations at Tell Abu Matar revealed the presence of a variety of flint tools, principally designed for cutting and hewing activities, with choppers and chopping tools being predominant. Interestingly, considering the apparent 'Ghassulian' associations of the pottery at this site, there were no diagnostic Ghassulian scrapers recorded. In addition, it appears that despite being found in the local area, the Lower Eocene black tabular flint was rarely used, with poorer quality breccoid flint being employed for the production of most objects (Perrot, 1955a: 77-8). Investigations at Shiqmim have revealed the presence of a large quantity of simple flake tools, representative of a basic domestic Chalcolithic tool kit, showing little evidence of specialisation (Levy and Rosen, 1987: 289). Similar conclusions have been made in relation to elements of the flint assemblage from the site of Gilat (Rowan, 2006: 507). In contrast, Rosen (1997: 104) in his study of post-Palaeolithic lithics within the Southern Levant has emphasized that within the Chalcolithic certain forms of stone tools, such as blades and bladelets may have been manufactured at specific production sites and transported to other settlements. In particular, he highlights that whilst the majority of sites show evidence for at least some on-site manufacture, sites such as Gaza A show clear evidence for intense production and manufacture of bladelet and blade tools [(see Figure 8.89) and compare figures from Gaza A, Shiqmim and Grar]. Such patterns would indicate specialisation, with sites such as Gaza A (although note this site is not in the Negev) being production locales from which finished products could be transported to other sites. Whether such specialisation involved controlled access to resources by one settlement or the distribution and trade of objects between a single production centre and multiple sites can be debated.

Site Name	Number of blade cores	Number of blade tools	Numbers of bladelet cores	Numbers of bladelet tools	Numbers of flake cores	Numbers of flake tools	Numbers of Tabular Cores	Numbers of Tabular Tools	TOTAL Assemblage
Grar	11	248	10	30	190	366	0	7	862
Shiqmim	2	299	2	24	1029	5500	0	8	6864
Gaza A	450	92	950	263	20	126	0	77	1978
Kevish Harif	1	7	8	18	49	245	0	32	360

Figure 8.89. Chalcolithic stone tool assemblages (after Rosen, 1997: 105, Table 4.1.)

The above data also shows a number of possibly unusual attributes at the site of Shiqmim. Firstly, the assemblage of lithic artefacts from this site is considerable, although it has to be acknowledged that this could be related to the fairly large exposures from this site. However, if we compare the breakdown of tool/core types based on percentages calculated from the whole assemblage, a dominance of flake tools can be seen (Figure 8.90). Levy and Rosen (1987: 289) have suggested that the flake tool kit seen at this site was representative of a basic 'Chalcolithic tool kit' However, the high representation of flake tools (80% of total assemblage), especially when compared to the neighbouring settlement of Grar (Figure 8.90) is perhaps more indicative of specialised production/use of flake tools at this site. Having said this, the differential levels of study, excavation and collection across sites has to be acknowledged.

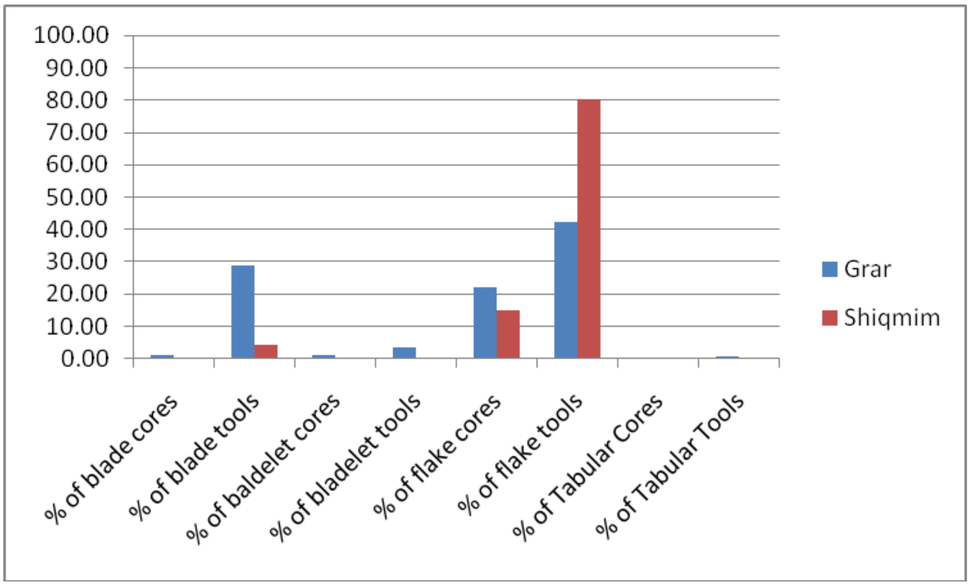


Figure 8.90. Numbers of flake tool and flake cores at the Northern Negev Sites of Grar and Shiqmim (after Rosen, 1997: 105, Table 4.1.)

Analysis of flint assemblages from the site of Gilat has shown potentially unique elements in terms of the presence of forms, such as prismatic blades and micro-borers (Rowan, 2006: 523, 542, Figure 11.7). As with the ceramic evidence from Gilat, the specialist nature of the lithics associated with the 'cultic' function of the site can be suggested. However, even if we disregard Gilat, based on the evidence from Grar and Shiqmim, it would still appear that a degree of specialisation, in terms of function and production, was occurring at different sites within a relatively localised region.

Investigations within the Nahal Sekher region, have revealed evidence for both restricted lithic and ceramic assemblages, leading to investigators relating these patterns to the fact that a narrow range of activities took place at these sites (Gilead and Goren, 1986: 86). The presence of a large number of flake tools at Kvish Harif (Figure 8.89) in contrast to the limited number of blade/bladelet cores and tools suggests some degree of specialisation in use and practice or alternatively, little on-site manufacture of bladelet technology, an interpretation which would correlate with the evidence from Gaza A. A number of sites within the central and southern Negev show evidence for the production of tabular scrapers, whilst no evidence for the production of these tools can be seen from sites within the northern Negev [(Rosen, 1997: 105-6) and see Figure 8.89]. As such we appear to be dealing with multiple systems of production, manufacture and even use across the Negev during the Chalcolithic (ibid.). This is an element, which seems to be largely absent at Chalcolithic sites known from the Hauran and Jaulan. Moreover, it appears that different categories of site across this region are not solely divided on a North-South axis, as suggested by Rosen (2002a; in press). Instead, as evidence from the Northern Negev suggests, sites within a short distance of one another appear to be to some degree functionally differentiated.

An assessment of chronology based on the presence/absence of diagnostic lithic forms has, as indicated for pottery typologies, major problems. Indeed, as Avner *et al.,* (1994: 281) and others have suggested, forms, such as fan scrapers can be seen at sites ranging in date from the Neolithic to EBA. As such, they can only be associated with a more specific period when found in association with particular tools, such as Canaanean blades [diagnostic to the EBA (Avner *et al.*, 1994: 281), although see (Levy and Rowan, 1994) for suggestions of "proto-canaanean" blades dating to the Chalcolithic]. Furthermore, it has been argued that the EBA lithic technology of desert sites, such as those within the 'Uvda Valley and Southern Negev, show strong continuity with earlier desert assemblages via high percentages of transverse arrowheads, tabular scrapers and simple blade tools (Rosen, 2002a: 31). Rosen's (ibid., in press) arguments for a technologically and typologically distinct industry to that of the Mediterranean zone are persuasive (and see Chapter 9 for further discussion). However, given the hypotheses relating to specialisation within the preceding

Chalcolithic period, this observation need not necessarily entail a cultural differentiation but instead may be indicative of functional differentiation and specialisation at sites. Investigations at Ramat Matred 3 have demonstrated the high percentage of tabular scrapers being used, with an abundance of lithics from within Structure 37 clearly demonstrating the high proportion of flake technology present at this site (Haiman, 1994: 30). Elsewhere, sites have revealed limited lithic assemblages, in comparison to the abundance of pottery (Haiman, 1993b: 58), suggesting a complex differentiation in the use of artefacts and locales for different functions. This functional differentiation can also be observed at the Camel site, with possible on-site manufacture of beads occurring within a specific loci at the site, as indicated by the large percentage of microlithic drills from two specific areas [see Figure 8.91 (Locus 37 and 36)].

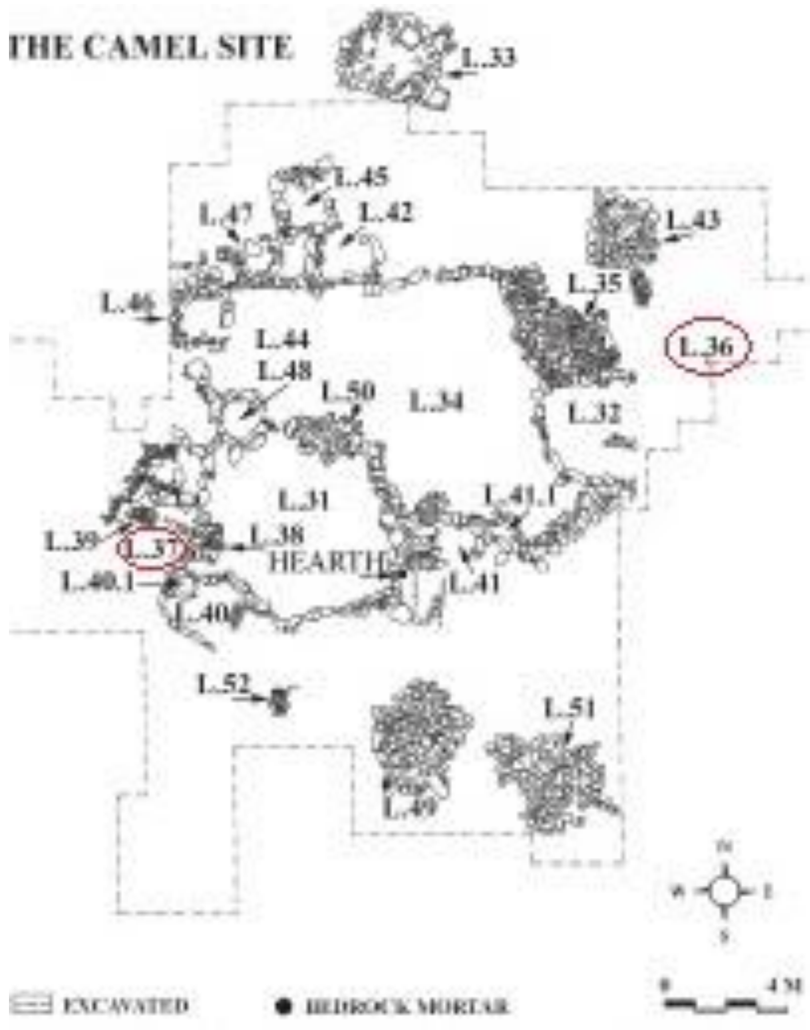


Figure 8.91. Camel Site plan with Locus 37 and 36 highlighted (after Rosen, 2003: 752, Figure 2)

Evidence for specialisation of activities across the Negev throughout the Chalcolithic-EBA can be seen from a range of other artefact forms, in particular groundstone and metal objects. At the site of Abu Matar there appears to have been the exploitation of a range of stone sources. The local siliceous limestone was used for the production of hoes, maces, mortars, pestles, grindstones and palettes (Perrot, 1955a: 78). In addition, the local sandy chalk appears to have been used for the manufacture of loom weights and perforated discs, with basalt (and hematite) being imported for the production of grindstones, pestles, perforated discs and maceheads (ibid.). The discovery of ten large basalt bowls and a range of other basalt objects from the site, which showed no evidence to indicate their on-site production, led to suggestions that these objects had been brought to the site roughly finished, ready for polishing (Perrot, 1955a: 78, Philip and Williams-Thorpe, 2001: 26). More recently, it has been suggested that these objects were traded during the late 4th-3rd millennia BC, with vessels showing clear evidence of specialised production (e.g. Amiran and Porat, 1984, Braun, 1990: 95). With this in mind it is interesting to highlight the discovery of objects, such as maceheads from Chalcolithic-EB sites in the Northern and Southern Levant (e.g. Braemer et al., 2004: 292-3; Perrot 1955a: 78; Schaub and Rast 1989: 459, figure 263.4), all of which may indicate some degree of shared awareness of elite culture across this region (Sowada, 2009: 232-3).

Philip and Thorpe-Williams (1993: 62) have suggested that a pattern of movement involving the ‘Arabah, Negev and Transjordan is highly feasible for early pastoralists during this period and would have provided the opportunity and methods for the distribution of these objects and raw materials. Recent geochemical analysis of basaltic vessels and objects in relation to possible sources of basalt throughout the Southern Levant have also revealed a series of networks of exploitation, which indicate that in some cases basalt artefacts were manufactured from outcrops at considerable distances from the sites where they are found, despite the proximity of other basalt outcrops (Rutter and Philip, 2008: 343). Similar trends have been suggested in relation to other raw materials. Sandstone millstones and querns found at the Camel site (central Negev) have been interpreted as representative of low levels of production at this site (Abadi-Reiss and Rosen, 2008, Rosen, 2003: 755-6). However, rather than indicating agricultural practices, Rosen (2003: 755-6, 758) has argued that links can be seen between these objects and similar examples found in the northern Negev (e.g. Tell Arad), suggesting patterns of exchange. Research at the sites of Ramat Saharonim, Rekhes Nafha and the Camel Site has also demonstrated the different production stages, which may have taken place at these sites (Abadi-Reiss and Rosen, 2008). Evidence for primary exploitation of sandstone material can be seen at Ramat Saharonim North, via the local presence of a possible quarry area, as well as concentrations of large blocks and a high proportion of sandstone flakes [see Figure 8.92 (ibid: 106-7, 109)]. In contrast, Camel and Rekhes Nafha 396, via the large percentage of sandstone chips (Figure 8.92), demonstrate evidence for secondary shaping and reduction of already partly worked blocks (ibid: 109, 111). The differential numbers of finds from the sites also has to be taken into account during this analysis (ibid: 110). However, the evidence for differential stages of production is compelling and reveals a complex pattern of exploitation of raw materials throughout the central and southern Negev.

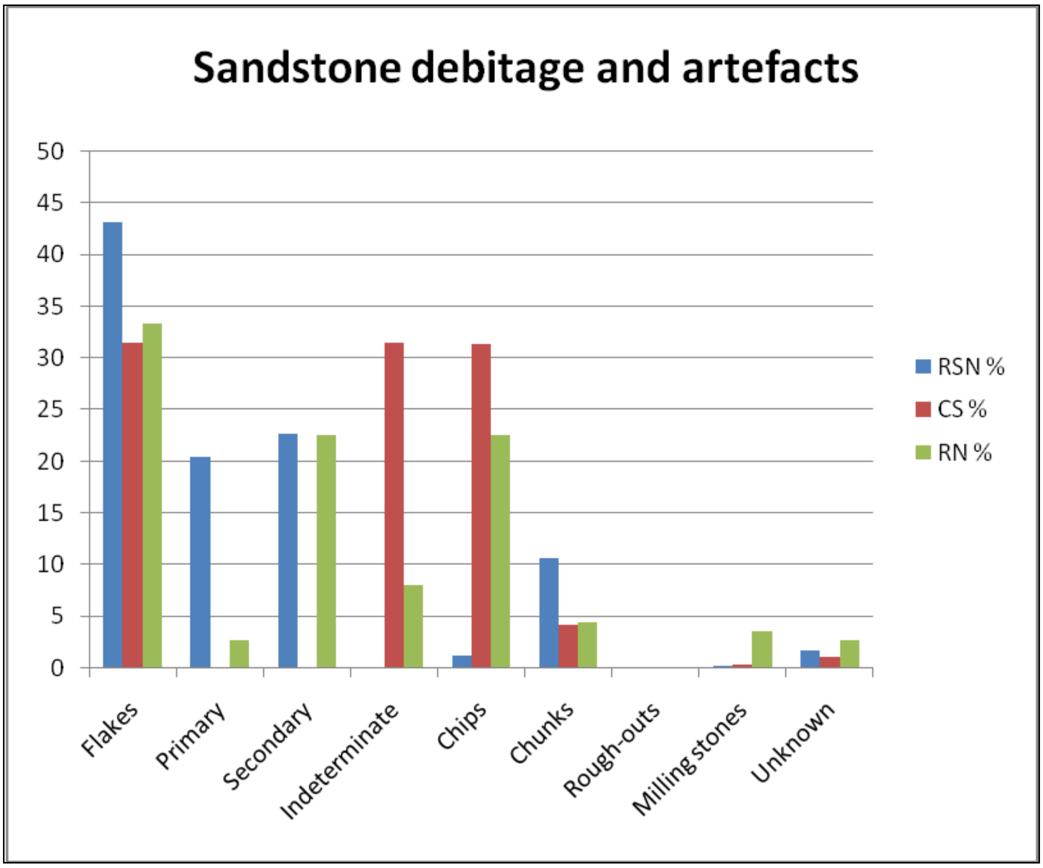


Figure 8.92. Showing the proportions of sandstone debitage and artefacts from Ramat Saharonim North (RSN), Rekhes Nafkha 396 (RN396) and the Camel Site (CS) (after Abadi-Reiss and Rosen 2008: 106-111)

The discovery of metal objects, such as copper pins, cylinders, small rings, maceheads and sceptres at sites, such as Abu Matar and Shiqmim in the Northern Negev (Shalev and Northover, 1987: 357-8) has led to considerable discussion of the sources and location of production of such material. At both sites evidence for on-site manufacturing has been found [e.g. malachite ores and smelting ovens at Abu Matar (Anfinset, 2010: 119, Golden, 2010: 40, Perrot, 1955a: 79-80) and crucibles and slag deposits at Shiqmim (Golden, 2010: 45, Shalev and Northover, 1987: 361-4)]. Adams (2002: 23-5) argues that trade in Feynan copper ore can be first seen during the Chalcolithic and EB I at sites in the Beersheba Valley. With this in mind it is worth mentioning the discovery of copper ores at Abu Matar deriving from the Feynan region, whilst another was suggested to have originated from Anatolia (Golden, 2010: 135).

Investigations at Shiqmim have demonstrated the marked differentiation and selection of different ores and extraction technology for the production of prestige items (Shalev and Northover, 1987: 365). This careful preparation, selection and evidence for long-distance trade suggest that a clear level of sophistication in the production, smelting and exchange of metals existed at these sites. Adams (ibid: 23-4) argues that evidence for increasing specialisation and standardisation of copper production and exploitation can be seen in the *Wadi* Fidan region, via the development of mining and smelting technology. Moreover, he argues that evidence for copper ingots from a variety of Negev sites [(e.g. Dever and Tadmor, 1976) dated to EBIV (MBI) by the authors], produced in casting moulds like those from Khirbet Hamra Idfan [c. 2600-2300 cal BC (Adams, 2002: 24)], can be dated to EB III. This may indicate that similar finds in this region possibly date to this period, rather than EB IV (contra. Haiman, 1996: 20-1), with exportation of copper into the Negev from the *Wadi* Fidan region and possibly beyond (ibid: 24-5). In contrast, Golden (2010: 148-9) has suggested that the beginning of the EBA marked a decline in the metal industry. This is, in part, contradicted by evidence for the intensification, specialisation and standardisation of copper production from EB II onwards (Adams, 2002: 24-5). However, the point at which copper became a widespread commodity, rather than specialist elite material clearly requires further examination. Indeed, when combined with evidence from sites, such as Nahal Mishmar (Moorey, 1988, Ussishkin, 1971) the elite quality of copper during the Chalcolithic period becomes particularly apparent. As such, whilst specialisation and standardisation of metal production may be visible within the archaeological record from the Chalcolithic-EBA, it is possible that the nature, conceptualisation and utilisation of this material changed throughout this period in both the Faynan and Negev region (e.g. Adams 2002: 21).

Considering the archaeological evidence from the Negev, presented above, what should be highlighted is the degree to which this region appears to be very different from the Hauran, Jaulan and Homs NSA. Not only can clear distinctions be made between different areas (northern, central and southern) of this region, but there appears to have been a much greater degree of specialisation on both a local and regional scale. These patterns of similarity and difference are not only seen across a North/South divide as suggested by Rosen (2002a, in press) but also within discrete areas such as the Beersheva Valley. Given the strong variations in environment and climatic potential across the Negev (Chapter 2.2) it may be that patterns of specialisation are partly a result of this complex mosaic, necessitating the exploitation of different resources and opportunities in different areas. As such, this region offers an important example of the nuances of occupation and activity which can be seen in non-optimal/sub-optimal environments.

8.5. Summary and Conclusions

This chapter has summarised the evidence for settlement patterns, architecture, economy and portable material artefacts from the three main case study areas (excluding the Homs region) of the Hauran, Jaulan and Negev. A concise overview, further summarising this information and discussions from Chapters 2-3 can be found in Appendix 8.5. It is hoped that this will facilitate comparison between the different regions. Considering the array of material discussed in this chapter and its mainly descriptive nature it is worth highlighting a number of key findings from this cross-comparison.

8.5.1. Patterns of intensity and decline?

Whilst many of the traditional interpretations of 'nomadising' populations and settlement abandonment can be challenged in all three regions via new programmes of fieldwork, survey (desk-based), data analysis and absolute dating frameworks it is clear that at certain points the scale of activity within these regions appears to intensify. At other points it diminishes. The late 4th/early 3rd millennia BC (earlier 5th millennium BC intensification can also be suggested for the Jaulan) in particular appears to represent a phase of intensification across all three regions. Whether this represents the expansion into and settlement/activity in hitherto unknown areas can be debated (Appendix 8.5. and Chapter 9). Activity during the 3rd millennium BC appears to vary considerably. However, all three regions appear to show at least a change in the nature of settlement/activity at the end of this period (e.g. intensification and expansion in the Negev and possible increasing mobility in the Hauran). At this point such change should not be viewed as indicative of either decline or advancement.

8.5.2. Networks of trade and materiality

Broad traditions of shared material culture (e.g. holemouth jars), settlement architecture (e.g. rectilinear structures/'broad-room' structures) and burial traditions (e.g. tumuli and dolmens) can be seen across the three different regions. These are not indicative of discrete chronological, social, or ethnic groupings. Instead, they may reflect or suggest a general 'awareness' of a broader concept of what it was to exist within a 4th-3rd millennia BC world. Whether such an 'awareness' derives from shared social strategies/organisation, intensifying networks of cross cultural trade and exchange, the presence of outside influences or a myriad of other possible factors will be discussed in chapter 9. Furthermore, distinct and unusual material elements can be found within these areas (e.g. basalt pillar figurines in the Jaulan and the massebot structures from the Negev). Moreover, despite shared customs (i.e. pottery traditions) it is clear that the degree to which each area was integrated into wider material networks differed over time, as well as within each region.

8.5.3. Subsistence and economy

On the surface it would appear that there was a large degree of similarity between the areas, with subsistence predominantly focusing around an agro-pastoral economy. However, variation is clear. Both the Jaulan and Hauran appear to show broad trends of continuity and whilst unique elements, in terms of the specific crops and animals being exploited, are present they fit within the concept of a multi-resource strategy (see chapters 2 and 9 for further discussion). The Negev, in contrast, appears to be somewhat distinct. In part this may relate to its location, with much of the area falling beyond the 200mm rainfall isohyet (limit of dry-farming) and indeed a large percentage of the area being beyond the 100mm rainfall isohyet. In addition, the role of this area in metal exchange, especially in the latter periods cannot be downplayed. This would have had a profound effect on the nature and intensity of settlement activity within the region. On the basis of evidence discussed in both this chapter and chapter 2, it would suggest that whilst sharing aspects of a broad multi-resource base (similar to the Jaulan, Hauran and indeed Homs Basalt), the Negev was geared towards a higher degree of specialisation during the 4th-3rd millennia BC (and earlier periods). The implications and relevance of this will be discussed further in Chapter 9.

CHAPTER 9: BEYOND THE LANDSCAPE OF TELLS: THE HISTORICAL, SOCIAL AND ETHNOGRAPHIC CONTEXT OF DEVELOPMENTS IN THE 4TH-3RD MILLENNIA BC

Introduction

The preceding chapters (5-8) have presented evidence from the primary study region of the Homs Basalt and the three comparator regions: Hauran, Jaulan and Negev. Evidence in these regions is multi-period and in particular the Homs cairns are a palimpsest of activity dating to thousands of years of use, re-use and re-construction. This chapter will focus upon the wider context of activity and the construction of cairns within the 4th-3rd millennia BC. This period is concomitant with the initial widespread construction of stone burial monuments across the Levant (although see chapters 3-4 and references therein to tombs dating to pre and post 4th-3rd millennia BC).

The transition between the Late Chalcolithic and Early Bronze Age during the 4th millennium BC within the Northern and Southern Levant has been characterised in terms of invasion or contact theories, with poorly defined chronologies and culture-historical assumptions concerning the ethnic origins of populations (e.g. Algaze, 1993, Hennessy, 1967, Kenyon, 1979, Miroschedji, 1971, Oates, 1993, Wright, 1958). Despite continuing research into the nature of these transitions [(e.g. Algaze, 1989, Amiran, 1985, Hanbury-Tenison, 1986, Lovell, 2002, Philip, 2002, Pollock, 1992) and also see (Asouti, 2006) for a critical evaluation of the use of such concepts within the Neolithic Near East], they remain poorly understood in terms of material culture, social organisation and regional interaction (e.g. Lovell, 2002: 89, Marfoe, 1998: 111). Within the Southern Levant interpretations of this transition have varied from scenarios of indigenous development (e.g. Amiran, 1985: 108, Wright, 1958: 38), to processes of 'revolution' (Ben-Tor, 1992: 83). Similarly, in the Northern Levant, strong debate surrounds the nature of the so-called Uruk 'expansion' and its relationship with the Local Late Chalcolithic (henceforth LLC) and successive phases of settlement and material culture (e.g. Algaze, 1989, Dolce, 1998, Philip, 2002, Pollock, 1992, Rova, 1996). Whichever hypotheses are adopted, many scholars argue that a sharper separation between Chalcolithic and Early Bronze Age phases is needed (Kerner, 1997: 419-420). This in itself poses a basic theoretical problem, when did the population wake up and suddenly become an Early Bronze Age community, rather than a Chalcolithic one? This highlights the necessity of re-assessing the value of 'periods', especially those which are so poorly defined (Philip, in press: 192-5).

9.1. State, elites and social complexity: Mesopotamian expectations vs. Levantine realities

"...we have learned from Robert McCormick Adams...he has taught us much, not only about ancient Mesopotamia but also about how to conceptualize civilizations..."
(Wright, 2001: xvii)

The above dedication to Robert McCormick Adams at the beginning of Rothman's (2001b) review of Uruk Mesopotamia, emphasizes the profound impact that research carried out between the 1950s and 1970s, especially that by individuals such as Adams, had upon the discipline of Mesopotamian archaeology. Adams' (1965, 1966, 1978b, 1981) research transformed the conceptualisation of complex society and statehood. His work has shaped expectations of how societies should function and the nature of the evidence we should be studying/looking for in the Ancient Near East. Research within the southern alluvium of Mesopotamia revealed the presence of a complex network of small urban centres and rural dependencies, based around the 4th millennium BC regional centre of Uruk (Adams and Nissen, 1972). Work on processes of state formation, urbanisation and complex society highlighted broad regularities in human behaviour, seen across different regions, at different times during 'urbanisation'. For example, Adams (1966: 1, 25: Figure 1) emphasized the similar trajectories of development which could be seen in Early Dynastic Mesopotamia and pre-hispanic central Mexico, suggesting that these societies were variants of a single process of advancement. He also challenged the centrality of the 'city' to the process of state formation, arguing that an urban centre could only be understood in terms of its hinterland and suggesting that one could not occur without the other (ibid: 9-10, 18-19). In addition, it was suggested that despite the agricultural underpinnings of early state formation, the probable role of nomadic groups within should not be ignored (ibid: 19).

Despite these arguments, Adams' (1966: 44) work still retained a strong focus upon agriculture as an inducement for residential stability. In turn, he suggested that these elements facilitated the development of new techniques, specialist skills and technologies. Moreover, whilst emphasizing the shifting continuum of settlement, likely to have been operating within the hinterlands surrounding regional and urban centres, Adams (e.g. 1966: 59-60) maintained the concept of the structure of a city and corresponding interdependent hinterland as a base unit throughout much of his work. These processes of 'urbanisation' were seen as an ascending curve, albeit one with oscillations (ibid: 170-1). Such theories remain entrenched within current literature. Indeed, despite the title of Ur's (2010: 387) recent review of Northern Mesopotamian society during the 5th-3rd millennia BC, cycles of development are still characterised in the manner of 'collapse' and 'rebirth'. The 'tell' has come to be seen as the archetypal settlement of the Near East (Wilkinson, 2003: 100), and there remains a strong focus upon large tell excavations today. This has led, despite Adams' original emphasis on a consideration of the hinterland (e.g. Adams, 1974, Adams and Nissen, 1972), to the social and economic situation in rural areas being largely ignored (Stein, 1994: 10). Where aspects of society such as urbanism and social complexity have been identified outside Mesopotamia, they have often been explained as intrusive or peripheral (e.g. Archi, 1996: 13, Ben-Tor, 1992: 96, Richard, 1987: 22). The role of urban elites and associated institutions within early state formation processes also remain at the forefront of discussion. Rothman (2001a: 4-5) in his review of Uruk Mesopotamia emphasizes the central importance of this region for our understanding of the origins of urban settlement systems. Similarly, Wright (2001: xxi) appears to suggest that via the identification of tells, connected water systems and routeways within Lower Mesopotamia the entire region can be mapped and dated. These statements, models and interpretations, whilst important for our understanding of state development in Mesopotamia, drew upon a number of key ideas. Not all of these are directly applicable across the entire Near East [*contra*. suggestions of variants of single processes of complex development (Adams, 1966:1)]. For example, as Chapters 7-8 have demonstrated, the regions studied within this thesis are not characterised by tell settlements and appear to demonstrate different temporal and spatial scales of complexity throughout the 4th-3rd millennia BC.

9.1.1. A 'Non-tell' perspective

In recent years scholars working in the Near East have begun to examine aspects of landscape use, settlement and subsistence away from the landscape of 'tells' (e.g. Braemer, 1984, 1988, 1991, 1993, Braemer *et al.*, 2004, Braemer and Sapin, 2001, Castel, 2007b, Castel *et al.*, 2005, Castel *et al.*, 2004, Castel and Peltenburg, 2007, Geyer *et al.*, 2007, Philip, 2003, 2008, Philip *et al.*, 2005, Philip *et al.*, 2002, Ur and Hammer, 2009, Wilkinson, 2003). The local development of complexity and processes of urbanisation have been suggested for sites, such as Tell Afis (Dolce, 2000: 103-5) and Arslantepe (Frangipane, 2001, Rothman, 2001a: 6). Regions, once viewed as peripheral to the main foci of urbanism and state formations, are now becoming important study locales (Ur, 2010: 387). Scholars are beginning to recognise that whilst urban centres may have played a crucial role in the development of state societies and complexity, it is the relationship between such centres and the majority of the population who were dwelling within the 'countryside' which needs further consideration (Falconer, 1995: 399). Indeed, it may even be that an 'urban/rural' dichotomy is not a meaningful concept for this period in the Levant (e.g. Nicolle and Braemer, 2001: 197).

New interpretations are also emerging regarding the so-called 'nomadic' segments of society, many of which are rooted within concepts developed from Adams' research. It has been suggested that the northern city states of Beydar, Chuera and Mari (3rd millennium BC) should be viewed as centres of nomadic pastoralist activity, rather than agricultural foundations (Lyonnet, 1998: 182-3). If this is the case these 'Kranzhugel' sites represent a divergent trajectory towards social complexity, emerging as 'nomadic' rather than 'sedentary' foundations. Having said this, Lyonnet's (e.g. 1998: 187) interpretations are strongly based upon linking evidence for nomadic pastoralism found within 2nd millennium BC Mari texts, with 3rd millennium BC archaeological evidence.

Symbiosis between mobility and urban centres has been based upon a hypothesis that during times of strong political control, nomads were likely to settle, whilst during periods of instability, mobility would remain dominant (Adams, 1978a; Pollock 1992: 312). Finkelstein and Perevolotsky [(1990: 34, 45) and see (Rosen, 1992, in press, 2002a, 2008) for the contrary] have argued that urbanisation and settlement expansion during the Early Bronze Age in the Negev and Sinai can be seen as a process dominated by interaction and competition between populations of the 'settled north' and those of the 'nomadic south'. These models are all very well; however, the impetus behind processes of sedentarisation is not always made explicit. The nature of mobile pastoralism and the concept of 'nomadism' will be discussed shortly, however, suffice to say that at present our knowledge of mobility during the 4th-early 3rd millennia BC would suggest that rather than two distinct populations the dividing line between the two was blurred (e.g. Braemer *et al.*, 2004: 282-3, Nicolle and Braemer, 2001: 200, Philip and Bradbury, 2010: 162-3). In addition, the different scales of urbanisation and social complexity are not made apparent in such hypotheses. It is clear that, in terms of scale (see Figure 9.1.), the growth of sites, such as Jawa (Helms, 1981) in the North Jordan steppe is very different from that of Beydar (e.g. Lebeau and Suleiman, 1997). Indeed, what should be emphasized in relation to these settlements is the differing longevity of occupation. Helms (1984: 22-3, 1987: 44) explained the development of Jawa in terms of an incipient urbanism associated with the 'kingdom of Damascus' and the process of seasonal migrations through this region by nomadic pastoralists. What is particularly apparent, however, is the relatively short term nature of occupation, especially in comparison with sites such as Beydar. Whilst relating to a second phase of urbanisation and expansion of settlement during EB IV, the 'urban' settlement at Al-Rawda has been interpreted as an organisational centre. This settlement, it has been argued, facilitated either allegiances with or amongst pastoralists, possibly also acting as a gateway for the exploitation of resources and trade (Castel, 2007b: 292, Castel and Peltenburg, 2007: 613). It too appears to show evidence for a relatively short-term occupation and as such we have to question how we are to deal with differing scales, tempos and chronologies of social complexity across regions, such as the Jaulan and Hauran and eastern steppe during this period (see section 9.3. for further discussion).

McClellan (1999: 414-6), in his review of urbanism in the upper Syrian Euphrates region, argued that whilst a useful heuristic device, the three tier settlement hierarchy model does not allow for a consideration of the different relationships and levels of complexity present within a single region. Key to addressing this may be to view urbanisation as a cyclical process rather than an ascending curve of development, with differing phases of urbanisation and social complexity emerging at different times across both the Northern and Southern Levant (Nicolle and Braemer, 2001: 197-8). Such an approach would enable us to discuss sites with relatively short-lived occupations, such as Al-Rawda and Jawa (Castel, 2007b: 292, Castel and Peltenburg, 2007: 613), as well as settlements, such as Khirbet al-Umbashi, which show clear evidence for monumentality and social complexity but can never be truly viewed as 'urbanised' (Braemer et al., 2004: 272). It is important that we are able to recognise and characterise social complexity in areas such as the Homs basalt, which have never supported fully 'urban' settlements. This is not to dismiss the clearly important dynamics of interaction between urban/rural areas, especially during later periods when an urban/rural distinction does become more apparent [e.g. the 2nd millennium BC (e.g. Amiran, 1980, Heltzer, 1976, Schwartz, 1994, Stein, 1994)]; however, it suggests that rural areas should not be considered of lesser importance. Not only can these regions be seen as an element of the multi-faceted nature of human evolution (Fortin, 1998: 15), but equally their autonomous development must be considered. The independent emergence of society in landscapes such as the Southern Negev and Sinai deserts has been emphasized by some, albeit within a general evolutionary perspective (e.g. Rosen, 2002a).

Such regions raise interesting questions concerning not only the integration of heterogeneous human groups living in a variety of different ecological niches, but also challenge certain assumed oppositions, such as nomad/sedentary; centre/periphery (e.g. Nicolle and Braemer, 2001: 197). Moreover, as Chapter 8 demonstrated they offer examples of processes of social complexity in areas where the 'city and hinterland' model suggested by Adams is not appropriate. It is clear that the transitional 4th-3rd millennia BC represents a phase of significant expansion of settlement and socio-cultural development [see sections 9.3-6 and (e.g. Braemer, in press, Philip and Bradbury, 2010, Pollock, 1992: 298)]. However, there is little direct evidence to suggest that development in areas, such as the Homs basalt, is directly linked to more distant phenomena such as the 'Uruk' expansion (e.g. Philip, 2002: 223) or increasing social complexity in the North Jordan Valley, as evidenced by the rapid growth of settlements like Shuna and Khirbet Kerak in the local EB I period (Greenberg et al., 2006: 12-13, Philip, 2008: 187). In other words, whilst external factors and connections may have had some limited influence, expansion was basically a process of local development. As such, the development of ‘sub-optimal’ regions such as the Homs Basalt does not appear to fall into the model of a centralised urban/urbanising settlement and dependent hinterland and instead appears to be characterised by a more dispersed and varied system of inhabitation, subsistence and exploitation (see chapters 7-8 and section 9.3). Bearing this in mind it is clear that we need to develop new models and hypotheses which take into account the multiplicity of urbanisation, in terms of temporality, scale and chronology, particularly within areas outside the ‘fertile’ regions which have been the traditional focus of study.

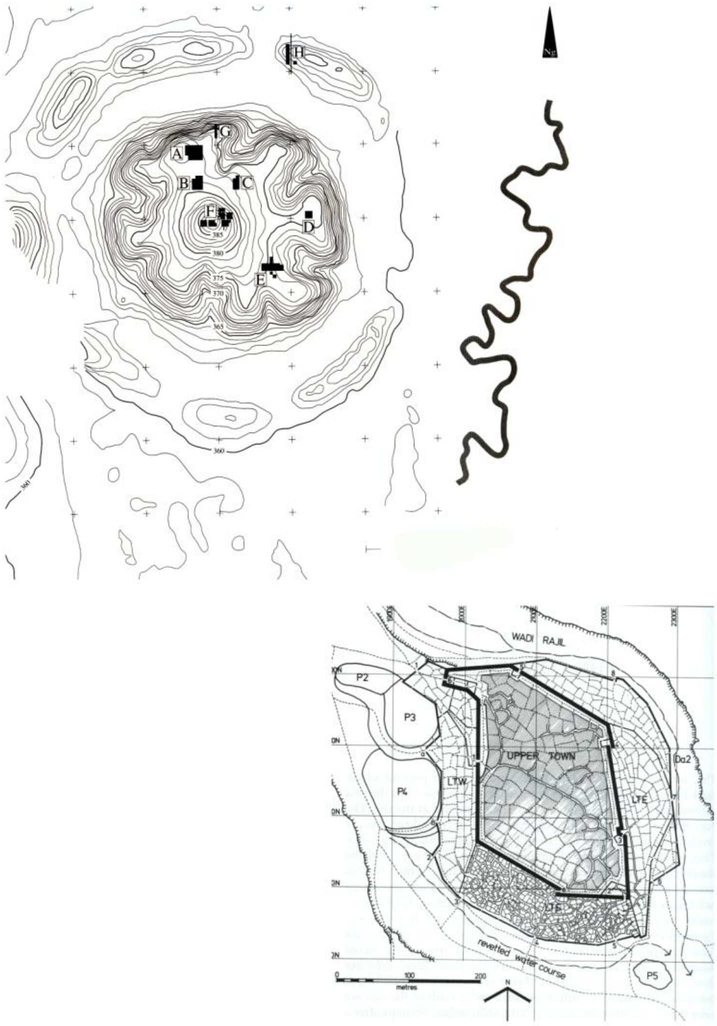


Figure 9.1. The Sites of Jawa and Beydar. The occupation of Beydar reached c.39ha during the ED/DA period (Lebeau, 1997: 15-16, Figure 5-6) whilst the occupation of Jawa totalled c. 13ha at its height in the 4th millennium BC (Helms, 1981: 84, Figure 30).

9.1.2. Beyond the Periphery

How then do we go about theorising and explaining development and expansion in 'sub-optimal' and 'non-tell' landscapes? Many researchers emphasize the importance of examining processes of economic, social and political integration during the 4th-3rd millennia BC, focusing on inter-regional networks of trade, exchange and movement (e.g. Amiran, 1978, Ben-Tor, 1986, Marfoe, 1998: 151, Massa, 2010, Milevski and Barzilai, 2010, Oates, 1993, Ricci, 2010). However, the majority continue to do so in a manner which emphasizes the role of core and periphery (e.g. Banning, 1996, Buccellati, 1990, Watkins, 1998). As such, increased economic interaction, population pressure and specialisation are often seen as the impetus for expansion into marginal or sub-optimal regions (e.g. Adams, 2002: 24-5). Moreover, models still seek to define territorial boundaries on the basis of hypothetical divisions between steppe and sown (Geyer et al., 2007: 278-80), as well as the hierarchy of settlement (e.g. Levy, 1986b: 14-15). As demonstrated in Chapter 2, the nature of marginality and sub-optimality across the Levant varies spatially, as well as historically. Moreover, we have to question what actually constitutes a periphery and how past populations may have conceptualised these areas.

Researchers from a range of disciplines are now emphasizing that many of the Cartesian dualities used by modern western society cannot be applied to the past or even all societies within the modern world (e.g. Bender, 1993, Bender and Winer, 2001, Ingold, 2000: 173, Thomas, 2004: 77). In other words, western concepts that are often taken for granted in our analyses, such as rural/urban; nature/culture; permanent/transitory may not provide appropriate frameworks for the analysis of past societies: in fact these dualities may not have existed within the past, or if they did exist may not have been conceptualised in the same way as they are in modern society. Humans are constantly constructing and being structured by their surrounding environment and their role within it (Ingold, 2000: 172). Moreover, each society and person within that society has the chance to view this process differently (e.g. Bender, 2001: 4). As such we cannot assume that the perceptions we hold concerning environments within the Levant are the same or even similar to those held within the past. For example, while Na'aman (1951: 19-20) viewed the Homs Basalt, as a 'depressing' landscape, it is possible that it may have been viewed as a 'land of plenty' in the past. Indeed, the wealth of archaeological remains from this region, such as those dating to the Roman-Byzantine period (Newson et al., 2008-9) suggests that bleak views were not always the norm. With concepts of sedentary vs. nomadic also being challenged we need to reconsider the potential role of boundaries segregating the 'settled' and the 'mobile' (Geyer et al., 2007: 278-80). This is not to suggest that boundaries, both built and imagined, as well as territorial units did not exist within the past, but rather than concepts of territoriality, frontiers and core vs. periphery had the potential to alter over time and across different regions (e.g. Gandulla, 2000, Lafont, 2000).

One way in which to examine some of the different potentials and conceptualisations held concerning such regions over time is via patterns of 'connectivity' (e.g. Horden and Purcell, 2000). In other words, we need to adopt an approach which considers the relationships between regions and their integration within wider networks of exchange, society and culture. Within many areas, such as the Homs Basalt, Hauran and Jaulan, developments were facilitated by external stimuli or events (e.g. Braemer, in press, Philip and Bradbury, 2010). This does not mean to suggest that a single core (or even multiple core regions) was responsible for settlement expansion and development within these areas during the 4th-3rd millennia BC. Instead, it argues that in response to wider social, cultural and economic developments (see sections 9.3-9.7), populations utilised emerging opportunities, expanding into new areas or intensifying activities already being carried out.

9.2. Processes of urbanisation and social complexity outside the 'settled heartlands'

It is clear that substantial developments within settlement and society occurred over the course of the 4th millennium BC, both within the 'Ubaid/Uruk' world (e.g. Dolce, 1998: 68, Dolce, 2000: 103-4, Frangipane, 1993: 139, 2000: 440-3, Oates and Oates, 1997, Philip, 2002: 223, Pollock, 1992: 298) and in the Levant (e.g. Helms, 1984: 15-16, Levy, 1986b: 7, Marfoe, 1998: 113, 151). However, the degree to which such advances were interrelated is debated. In the northern and southern Levant this period witnessed the emergence of walled settlements, craft specialisation and intensification of subsistence activities [see section 9.3-6 for further discussion (e.g. Helms, 1984: 15, Levy, 1986b: 7, 14-15, Pollock, 1992: 298)], although it is clear that the impact, scale and intensity of these developments was profoundly different across the region (e.g. Philip, 2002: 223-4). Indeed, one of the key problems in studying this period across both the Northern and Southern Levant is the lack of research examining processes, such as urbanisation, at the wider scale and across modern political boundaries (ibid: 208). As Philip (2002: 208) argues for both the Orontes valley and the southern Levant during the 4th millennium BC, decisions as to whether to adopt new forms of material are not necessarily related to lack of contact but instead may be indicative of local systems of social complexity to which new forms of material culture had little relevance.

9.2.1. A 'tick list' of complexity

The recognition of local systems of social complexity and development, alongside evidence of economic interaction and emulation in some regions, has demonstrated that developments, both within the northern and southern Levant, as well as Mesopotamia can no longer be attributed to large-scale migration (Philip, 2002: 208). Theories concerning the social organisation of societies in the 4th-3rd millennia BC Levant are largely based upon hypotheses concerning the development of complexity within economic and cultural life during this period. Indeed, despite emphasis on the cyclical nature of such developments, researchers still maintain concepts of a 'package' for the appearance/disappearance of aspects of social complexity within the archaeological record (e.g. Ur, 2010: 389). Such an approach can be critiqued for failing to sufficiently address the variations in the emergence and adoption of aspects of complexity in society, material culture and subsistence across time and space. This observation is particularly relevant for the study of sub-optimal regions (see sections 9.3-6 for further discussion). Specialisation has often been seen as a defining factor of emerging complexity (Levy, 1986a: 89), with increasing networks of trade being linked to the intensification of production, cultivation, and ultimately urbanisation (Marfoe, 1998: 146-7). In addition, there has been a long-term obsession with trying to explain social change and differentiation through notions such as chiefdoms [critiqued by (Yoffee, 2005: 22-3)]. Such terms have been used from Europe (e.g. Renfrew, 1973) to Mesopotamia (e.g. Stein, 1994). However, they have been criticised as being related to 'neo-evolutionary' concepts of the development of society and the existence of natural classes of societal organisation (e.g. Yoffee, 2005: 28). Some have used them as taxonomic categories to describe a level of society preceding that of state formation (Levy, 1986b: 7). Others, criticising the use of the term chiefdom, have suggested the employment of other expressions, such as 'tribal', arguing that such terms lack the theoretical baggage associated with other categorisation (Richard, 1987: 295). Whichever classification is used, it carries with it modern concepts of 'primitive' society and is ultimately subjective. Indeed, many archaeologists employing concepts opposing 'pre-complex' and 'complex societies' have used such approaches to form type lists of what each form of society can be seen to entail [Figure 9.2 (Dever, 1985: 24)].

Pre-Complex Societies	Complex Societies
House Form	
Curvilinear	Rectilinear
Single-room	Multi-Room
Small	Medium to Large
Few facilities	Complex facilities
Relatively impermanent	Permanent
Village Town Plan	
Small (up to 1ha)	Large (1-4ha)
Agglutinative	Deliberately planned
Socio-economic structure	
Partly nomadic	Sedentary
Pastoral or hunter-gatherer	Agriculture
Subsistence level	Intensified productivity
Socially undifferentiated	Socially differentiated
Polygynous	Monogamous
Extended families	Nuclear families
Interdependent economic units	Independent economic units

Figure 9.2. A tick-list of complexity (after Dever, 1985: 24)

Whatever structures are present within society it is clear that they will be characterised as the social norm by the community, with attempts being made to normalise and legitimise behaviour through 'social memory' (Van Dyke and Alcock, 2003). Such attempts can be challenged, threatened or negotiated, leading to change within social organisation (Yoffee, 2005: 40). Trying to formulate a methodology to examine social organisation within the 4^{th}-3^{rd} millennia BC beyond notions of state or tick-lists of complexity is difficult, partly due to the relatively limited research that has taken place outside the heartlands of urbanisation (see section 9.1). However, the sheer complexity and variation of social organisation in both state societies, as well as 'less complex' areas during this period (e.g. Chesson, 2003, Dever, 1995: 294, Dolce, 1998: 67) should not be underestimated.

How then can we go about identifying aspects of social complexity within regions across the Levant during the 4^{th}-3^{rd} millennia BC? Arguments concerning the presence of 'chiefdom' based societies have often emphasized the development of craft and subsistence specialisation. These activities, it has been argued, encouraged the development of redistributive networks relying on a central agency i.e. a chief, who organises the social, political and religious re-distribution of such goods (Levy, 1986b:

7-8, 18). Evidence to support such theories has relied upon the identification of 'central places', as well as potential ranking within burial areas. Levy (1986b: 9-10) argued that within the Shiqmim Chalcolithic cemetery complex, a potential hierarchical ranking could be seen based on the differential levels of energy involved in the construction of features and family groups which appeared to be clustered in relation to grave circles. Little consideration was given to the varied utilisation of such structures, as well as the difficulties of identifying familial relations and status via grave deposits and placement (see section 9.6 for further discussion). One of the key problems with such analyses is the blanket treatment of attributes, such as craft specialisation [i.e. production beyond the scale appropriate for a household, or one which necessitates the production/manufacture by a group with a specific skill set not held by the rest of the population (e.g. Harrison and Savage, 2003: 7-8, 18, Levy, 1986a)]. Different traditions and scales of production and specialisation exist at the same time within different areas or even between settlements within the same region. Moreover, whilst specific goods may show evidence for craft specialisation (e.g. basalt vessels), others may not (e.g. holemouth jars). These factors and materials need to be considered within their social context, rather than merely being noted as an indication of social complexity (see section 9.6 for further discussion).

We also lack the ability to fully theorise and model interaction between groups with contrasting social organisations. This has been highlighted by Nicolle and Braemer (2001: 198-200) whose studies within the Jordan Valley and Jebel al-Arab have emphasized the levels of exchange represented by similar pottery assemblages between groups with potentially very different economic and social systems. Other researchers have emphasized the need to develop a model which allows archaeologists to understand how nomadic/mobile populations may have played a key role in the emergence and maintenance of city societies (Porter, 2004: 70, 74). Porter (2004: 74) argues that at present we have no way of dealing with or considering groups which belong to more than one sphere of society (e.g. both the city and the rural/steppe landscape). However, progress is being made. In his review of 5th-3rd millennia BC settlement patterns of the Northern Levant, Ur (2010: 412) suggests that during the 3rd millennium BC phases of dispersed versus centralised power emerged. These varied across time and space, with power at times being strongly institutionalized, whilst at others strongly contested. Thus, rather than a single top-down-power, Ur (ibid.) argues for the adoption of a model which can both deal with variation as well as provide potential mechanisms for the integration of different societal groups. One possible model is Schloen's (2001) concept of a patrimonial household (Ur, 2010: 412). Schloen (2001: 255, 350) has argued that whilst different groups (mobile/sedentary, rural/urban) were present in LBA Ugarit, society was integrated/controlled by a shared concept of a patrimonial household. Differing levels of patrimony existed, but ultimately these were encompassed within a basic understanding of the god and temple being the highest form of patrimonial household (ibid: 350).

An interesting discussion relating to social organisation in the 4th-3rd millennia BC has also been carried out by Chesson and Philip (2003). In a volume specifically dedicated to these issues, the diversity in social organisation throughout the Levant is emphasized, with the potential ‘heterarchical’ nature of communities in this period, organising large-scale projects via corporate organisation, being suggested (ibid: 11). These hypotheses emphasize the potential for a differential route towards political control, through the collective rather than the individual and fit well with evidence for 4th-3rd millennia BC burial traditions (see section 9.6.). Such a corporate identity has been emphasized in relation to pastoral societies, with scholars arguing that such groups develop a strong communal basis in order to maintain social cohesion over the vast distances which they operate (Cooper, 2006: 61, Fleming, 2004: 218, Porter, 2004: 69). In contrast to the aggrandisement of the individual, which is inherent within discussions concerning ‘chiefdoms’ and linear hierarchies, this approach emphasizes the co-operative and collective nature of society. This may, to some extent, explain differential patterns of material culture adoption across the Levant [see section 9.6 for further discussion (e.g. Philip 2002: 215)]. However, as Chesson and Philip (2003: 11) have demonstrated such societal organisation does not have to be confined to mobile groups. Indeed, it has been suggested that even within potential systems of hierarchical settlement, there may have been methods of maintaining rural/regional autonomy whilst still being integrated into patterns of regional interaction (Falconer, 1995: 414). Falconer (1995: 401) observes even as late as the 19-20th centuries AD, collective and communal social practices, such as *musha*ʿ landholdings remained common in the Levant. Whatever approach is adopted for the theorisation of societal organisation during this period, it is clear that such models need to be able to deal with a wide variety of evidence and potentially contrasting social contexts and organisational strategies. In addition, the notion of an evolutionary trajectory from tribe to state no longer provides a model that is universally applicable, with evidence for complexity clearly existing outside the realm of state society (Chesson and Philip, 2003: 11).

9.3. Patterns of settlement and occupation during the 4th-3rd millennia BC

Studies of ancient settlement have, to a considerable degree, focused on the reconstruction of tell based settlement systems (e.g. Akkermans, 1993: 141, Algaze, 1999, Collins *et al.*, 2010, Danti, 1997, Danti and Zettler, 2007, Peltenburg, 2007, Wilkinson and Tucker, 1995, Wright, 2001). The expansion, intensification, scale of settlement and degree of urbanism has in turn been linked to the potential of the local environment. In other words, it has been suggested that the supporting capacity of the landscape has strongly influenced patterns of ancient occupation (e.g. Wilkinson and Tucker, 1995). This point is particularly interesting given that major centres of social complexity and population agglomeration appear to have developed in alluvial plains and basins along the northern arc of the Fertile Crescent, right on the limits of rain-fed agriculture (Ur, 2010: 390). Moreover, as chapters 7 and 8 have demonstrated, there exists a wealth of archaeological remains which do not relate to tell based settlement and emphasise the richness and diversity of settlement and occupation during the 4th-3rd millennia BC in the Levant.

9.3.1. Tells: multiple chronologies, part time occupation and the mobility of the 'sedentary'

As illustrated in Chapter 8 the variety, temporality and intensity of settlement evidence within 'sub-optimal' and 'marginal' zones is substantial, ranging from ephemeral traces of temporary occupation (e.g. Finkelstein, 1992, Finkelstein and Perevolotsky, 1990, Philip, 2008: 187) to fortified enclosures (e.g. Gal, 1988, Gophna, 1984: 28, Zertal, 1993) and settlements (e.g. Hanbury-Tenison, 1989, Helms, 1981, 1989). Despite this variation, investigators continue to group broad settlement forms and evidence into categories, such as 'nomadic', 'seasonal', 'semi-nomadic' and 'sedentary'. Whilst the 'tell' has been seen as the archetypal settlement form of the Middle East (Wilkinson, 2003: 100), it is only recently that the ideological and social implications of such settlement forms have been considered. To what degree did the nature of settlement forms and the contrasting possibilities of settlement architecture offered by different landscapes influence the identity and culture of past populations? How did such markedly different potentials influence processes of urbanisation and integration? Such questions are particularly pertinent in relation to the Homs Basalt where both tell (Mud-brick and basalt) and enclosure settlements are visible in close proximity to one another [(Philip and Bradbury, 2010); also see Chapter 7].

As recent studies have begun to suggest, mobility should not necessarily be viewed as an undesirable aspect of settlement (Bernbeck, 2008: 44). Moreover, whilst long-term occupation locales, such as 'tells' are highly visible within the archaeological palimpsest, their sedentary associations have to be proven rather than assumed.

Research at Neolithic Tell Sabi Abyad has highlighted the potential importance of mobility at this site, with investigators suggesting that whilst one group may have been based on the tell all year round, a large proportion of the population may not have been (Akkermans and Verhoeven, 1995: 236, Verhoeven, 2000). These interpretations are debatable and can be criticised for their strong reliance on different forms of architecture being used to interpret social practice within the site. However, the potential for 'tells' to be settled by a partly mobile population needs to be considered. Tells can be seen as distinctive statements of permanence and centralisation of occupation (e.g. Bailey, 1999: 97). However, this view largely ignores the diversity and mobility of activity which can take place on a tell site. As recent archaeological and ethnographic research across the Levant has shown, cycles and phases of occupation, mobility, abandonment, re-building, expansion and retraction can be seen at the majority of tell sites (e.g. Boivin, 2000, Joffe, 1993: 70-3, Wilkinson, 2003: 126, Wossink, 2009: 54-5). Rather than viewing the 'tell' as a static form of settlement, we need to be aware of how social practice shaped their development and current appearance.

Research at the Halaf site of Fistikli Höyük has emphasized the potential for settlement locales to be multi-sited (Bernbeck, 2008). Excavation at sites such as Shiqmim (Levy and Alon, 1987a,b) in the Northern Negev (see chapter 8.4.1.1. for a more detailed discussion) has revealed the presence of activity locales dispersed along the *Wadi Beersheva*. Similarly, settlements within the Hauran, such as Umbashi (Braemer et al., 2004) and Charaya (Al-Maqdissi and Nicolle, 2006), whilst supporting long occupational histories appear to be horizontally displaced. Such a pattern of settlement may also be visible in the Homs NSA (see chapter 7 for further discussion). Key to the absence of long-term stratigraphical sequences may be the location of these sites within stone rich regions. Rather than occupational sequences being built up through processes of re-occupation and re-building of mud-brick architecture, these elements are reflected via the horizontal dispersal of stone built architecture. Given the considerable evidence for re-use and re-integration of earlier structures into later constructions (e.g. Al-Maqdissi and Nicolle, 2006: 130, Braemer *et al.*, 2004: 138, Epstein, 1998: 55, Figure 74, Steimer-Herbet, 2006: 54) the long term importance of place and space at these sites should not be under-estimated. One interpretation of the re-use and integration of dolmens into later dwelling structures at sites, such as Charaya (Al-Maqdissi and Nicolle, 2006: 130) might indicate that these monuments no longer supported a burial function and thus had lost their symbolic importance within society. Alternatively, a second interpretation, preferred by this author, is that past populations were specifically choosing to locate their dwellings in association with these structures, making important statements about their connection to previous occupation and activity at the site. Such a tradition has clear longevity within the

Levant, with both pre and post 4^{th}-3^{rd} millennia BC under the floor tombs and burials existing [(e.g. Akkermans and Schwartz, 2003: 88, 339, Rollefson, 2008: 94, Schloen, 2001) although see chapter 9.6 for further discussion of burial traditions]. Just as we cannot rule out aspects of 'mobility' being associated with tell sites, we equally cannot assume that monuments, structures and activity locales within stone-rich 'marginal' areas show little evidence of long-term concern with the permanence of place.

9.3.2. Invisible Nomads?

Given discussions concerning the role of pastoralism within 4^{th}-3^{rd} millennia BC economies (Chapter 9.4.) it is worth briefly considering arguments concerning the visibility of mobile groups within the archaeological record (e.g. Cribb, 1991a,b). It is possible that certain mobile groups may not be visible at all (Finkelstein, 1995: 24-5). In part this may be linked to a lack of material remains, but it may also be due to our inability to distinguish the occupations of mobile groups from other forms and temporal scales of settlement. A number of researchers have argued that such groups only become visible via interactions with 'sedentary society' (ibid.). Moreover, in areas such as the Homs Basalt, despite ethnographic and textual references to nomadic groups moving through the region (e.g. Na'aman, 1951: Figure 22), little trace of their presence can be seen archaeologically. Indeed, the authors' own observations in the Homs environs demonstrate that despite the now common use of non-degradable fabrics, such as plastic, little evidence of the presence of Bedouin camps can be seen following their abandonment. This is, at least in part, the result of the constant modification of the land surface due to high intensity agriculture (e.g. Wilkinson, 2003: 41-2). It is possible to argue that not only are we seeing just a fragment of the evidence for mobile populations during the past, we are also interpreting a false dichotomy which leads us to focus upon the role and presence of such groups within sub-optimal and arid regions [e.g. landscapes of survival (ibid.)] rather than within fertile regions [e.g. landscapes of destruction (ibid.)]. Ethnographic work by Aurenche (1999) within the Syrian steppe has demonstrated the presence of nomadic groups using the remains of permanent villages. He also highlights the potential for villages to be occupied on a permanent basis by a segment of the population, while other groups come and go (1999: 77-81). Research amongst the Qashqaaii tribe within the highlands of Iran has revealed that whilst this group practices vertical transhumance, they own villages, with permanent solid architecture, in both their summer and winter pasture areas (Alizadeh, 2008: 83). Moreover, as Simms (1988: 199) highlighted in relation to the Bedouin residing in Petra, clear variation in settlement stability could be seen across groups and also from year to year and season to season. Such observations are not merely ethnographic. Ur III period texts allude to mobile groups from mountainous areas building and residing in houses (Kupper, 1956/1982: 159-60). In later history Herodotus refers to nomadic groups in Eurasia, such as the Scythians constructing buildings (Briant, 1982: 16-17, from Herodotus IV: 46, Lyonnet, 1998: 184). We have no textual references to mobile groups during the early 4th-3rd millennia BC [although it should be noted that references to Amorites within the Ebla texts date to c. mid-3rd millennium BC (Buccellati, 1992: 90)] and as already suggested the use of historical and ethnographic analogies can be misleading. It is likely that the growth of large settlements, such as Mari (e.g. Anbar, 1991, Charpin and Durand, 1986, Matthews, 2002) and Ebla (e.g. Archi, 1991, Mazzoni, 1991) may have had a profound effect upon pastoralist practices. Thus, rather than adopting these examples as direct interpretations of earlier practices, these ethnographic, textual and historical examples raise a number of important questions, primarily, how is it possible to distinguish between a 'permanent' and 'semi-permanent' village within the archaeological record (e.g. Alizadeh, 2008: 84)?

How then do we go about characterising settlement patterns and trajectories in the sub-optimal zones discussed in chapters 7-8? It would appear that we require a model which can account for 'multi-sited' settlements, as well as those where populations and intensity of occupation may have altered from season to season and year to year. Rather than one distinct form/way of dwelling being present across all four sub-optimal regions local variants and traditions are apparent, although parallels can be seen. As Wilkinson and Tucker (1995: 51) have observed, within the same region small eco-niches or locales can show completely different settlement trajectories. Groups developed subsistence and exploitation strategies suited to the sub-optimal (and optimal) environments in which they were dwelling. This is not to suggest that elements of a wider concept of 4th-3rd millennia BC dwelling and settlement cannot be seen. On the contrary, it is possible to identify three very broad-scale trends in settlement across both sub-optimal and optimal regions over the course of the 4th-3rd millennia BC (Figure 9.3). However, these broad trends cannot be seen in all regions. Instead we appear to be dealing with a patchwork of settlement expansion, intensification and decline, elements of which affected different regions across the Levant in different ways and at different times.

9.3.3. Modelling settlement in the 4th-3rd millennia BC Levant

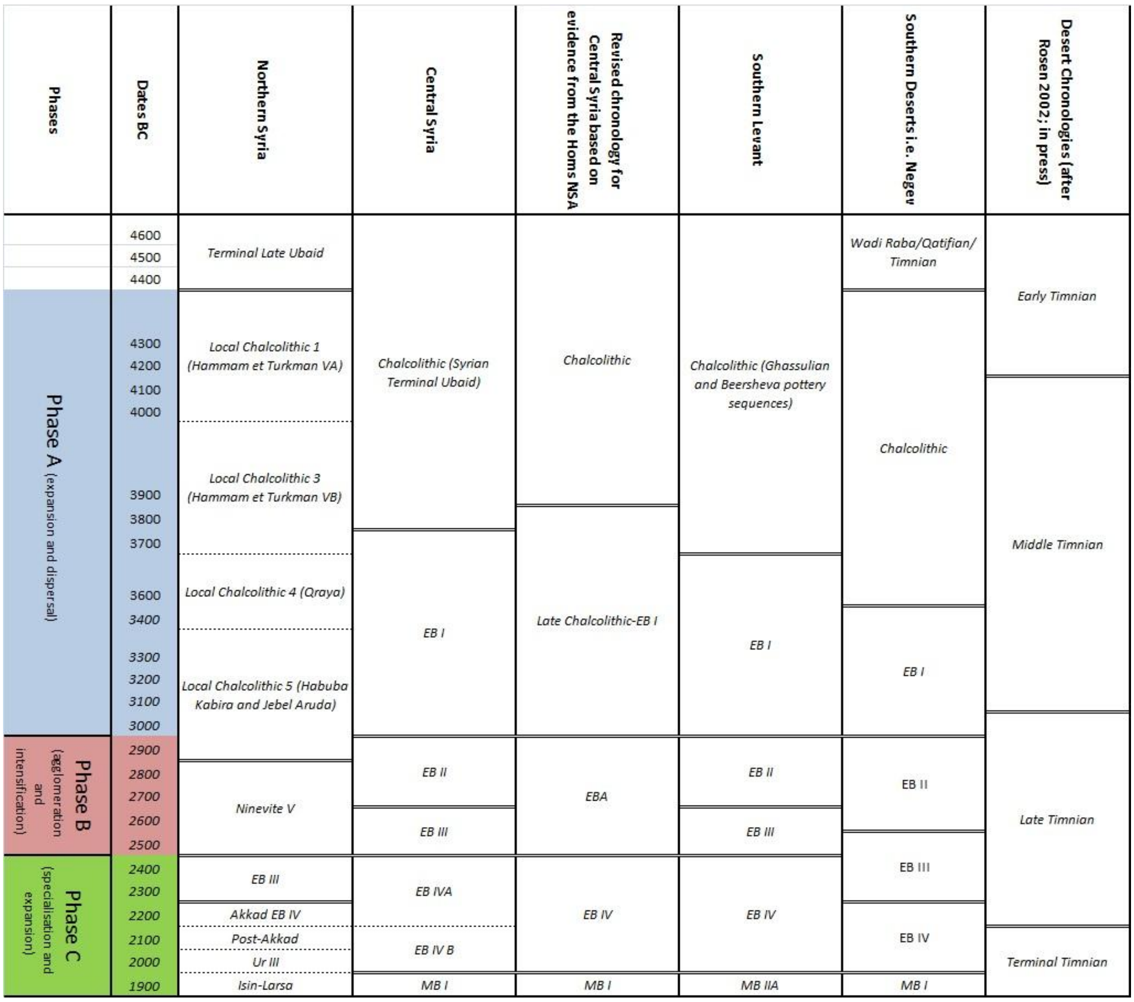


Figure 9.3. Hypothesised phases of settlement in the Levant during the 4th-2rd millennia BC. The absolute dates and chronological time frames are presented on the basis of the table presented in Chapter 8 [see Table 8.1 (after Avner and Carmi, 2001, Braemer, 2002, Rosen, in press, Rosen, 2002a: 37, Rothman, 2001b: Table 1.1., Rutter and Philip, 2008)], whilst the phasing derives from the research presented below.

9.3.3.1. Phase A: Intensification and dispersal (4th millennium BC)

As discussed in chapters 7 and 8, the 4th millennium BC appears to represent a widespread phase of expansion into previously under-utilised landscapes such as, the Homs NSA and Hauran. Settlement prior to this was present. However, the majority of pre-4th millennium BC settlement was centred on the major wadis systems, seasonal lakes and local springs (see Chapters 6.3.2. and Figures 8.1 and 8.20). It is during the 4th millennium BC that we see evidence for increased diversification in both settlement location and organisation. However, rather than viewing this as an expansion it is perhaps more appropriate to characterise this period as one of *intensification* and *dispersal*. Populations, perhaps those already present in these regions, for some reason chose to venture into new areas and take advantage of the opportunities offered by these locales. Can this process be seen across the rest of the Levant during the 4th millennium BC and to what extent does the evidence complement or contradict the data presented for the main case study regions (see Chapters 7-8)?

Researchers working in northern Syria have suggested that the 4th millennium BC can be characterised as a phase of gradually increasing social complexity and specialisation (Ur, 2010: 414). The interpretation of this evidence is problematical due to the complex interaction between sites identified as 'Uruk' enclaves or colonies [i.e. Habuba Kabira (D'Altroy, 2001: 459, Frangipane, 2001: 323)] and those argued to represent local trajectories of complexity [i.e. Arslantepe (Frangipane, 2001: 327)]. It has been argued that by the second half of the 4th millennium BC, Arslantepe already held the role of a local chiefdom, controlling the movement of goods and resources [(Algaze, 1999: 538) although see section 9.2. for a critique of the concept of chiefdoms]. Moreover, it is clear that we cannot overlook settlement complexity present across the Levant prior to the later 4th millennium BC. As Algaze (1999: 538) has indicated sites such as Hacinebi Tepe, show evidence for pre-Uruk storage structures and monumental stone platforms. Similar evidence for specialist production and centralised storage has been suggested at Chalcolithic Pella (Bourke, 1997: 98-9, 113).

Studies in the Euphrates, Khabur and Balikh regions have identified phases of major settlement expansion and intensification during the late Chalcolithic-Uruk phase (Algaze, 1999: 540-2). In the Zeugma-Carchemish area the number of sites is suggested to increase between the LLC and Uruk phase, with the total occupied area also expanding from 5.7ha to 35.5ha (ibid: 540). Indeed, it has been suggested that evidence for expansion during this phase in the Turkish Euphrates mirrors growth and intensification within the Khabur and Balikh, albeit at a much smaller scale (ibid: 542). Survey in the northern Jezira has suggested that an increase in settlement can be seen from the Ubaid to Uruk phases (Wilkinson and Tucker, 1995: 44, Figures 31, 35). This expansion also appears to be linked with the establishment of a considerable number of new settlements [only 31% of Ubaid sites are suggested to continue into the Uruk phase (ibid: 45)] and can perhaps be linked with the exploitation of new systems of settlement and subsistence (see section 9.4. for a discussion of subsistence practices during the 4th millennium BC). In the Sweyhat region only two settlements show evidence for Chalcolithic occupation (Tell Sweyhat and SS25), whilst this number increases to eleven settlements in the early EBA (Wilkinson, 2004: Table 9.1.). Similarly, Kaptjin's (2009: 413-4) research in the Zerqa triangle has indicated an intensification of occupation from the late Chalcolithic to early EBA (EB I), with the number of settlements increasing from two to nine during this period.

Survey in the region surrounding Jerablus Tahtani has led investigators to suggest that settlement during the late 4th millennium BC was widely dispersed, with patchy occupation and activity occurring across the flood plain of the Euphrates (Wilkinson, 2007: 32). Indeed, as has been indicated in relation to the Homs NSA, the mounds we see in today's landscape are not necessarily characteristic of the earliest forms of settlement in these locales (Wilkinson *et al.*, 2007: 228-9). Similar ideas can also be suggested for earlier periods. The 55ha occupation of Tell Brak during the LC2 is composed of a series of clusters of occupation, ranging between 2-4ha and located at 200-400m intervals (Ur, 2010: 395). This pattern of settlement has been interpreted as indicating the desire of localised settlement clusters to maintain socio-political autonomy whilst being influenced by a centripetal pressure from the central mound/settlement of Tell Brak (ibid: 399). An alternative hypothesis may be that these are locales of dispersed settlement which, whilst on a much larger scale than any seen at sites in areas such as the Hauran or the Homs NSA, also represent multi-sited communities. In this case, rather than discrete and contemporary social units, each cluster may represent shifting locales of settlement over the course of a 300 year period [LC2 (contra. Ur, 2010: 399)]. The concept of shifting sequential settlement has also been acknowledged in relation to the northern Jezira (Wilkinson and Tucker 1995: 46). In addition, a similar presence of dispersed communities within the Zerqa triangle region during the EB I is possible.

Kaptjin's (2009: 76-8) work in this region identified the broad background of material and sites dating to this period scattered across the *Ghor*. Whilst manuring practices were acknowledged as a possible interpretation, it was argued that the nature of the evidence was more suggestive of occupation and utilisation by pastoralist groups (ibid.). Rather than relating predominantly to pastoral activity, it may be that such evidence indicates the presence of multi-sited communities, exploiting different parts of the landscape at different points during the seasonal cycle. Indeed, it is interesting to note that distribution maps of EB I settlement in this region illustrate clusters of settlement at the eastern edge of the *Ghor*, close to the foothills and in proximity to local wadis (Kaptijn, 2009: 79-81). Given the geomorphological stability of this region, the erosion/masking of settlements seems unlikely (ibid.) and may indicate that settlements were located to take advantage of both the agricultural potential of the *Ghor*, as well as the potential advantages and opportunities offered by the eastern upland zones. Such a hypothesis parallels evidence from the Homs NSA. Given the lack of intensive survey in the uplands this hypothesis, at present, can be neither disputed nor confirmed. However, it offers a potential avenue for further research.

Researchers have characterised the Chalcolithic of the Jordan Valley and neighbouring regions as dominated by a few large settlements such as, Gilat, Ghassul, Pella and Shiqmim (e.g. Bourke, 2008: 115-6, Kaptijn, 2009: 415). Such a hypothesis fits well with models of a 4th millennium BC expansion and dispersal of settlement (i.e. a Chalcolithic-EB I), as opposed to an earlier 5th-4th millennium BC dispersal of settlement (i.e. Chalcolithic). However, can any evidence be seen for the latter? Bourke (2008: 115-116) has argued that Chalcolithic settlement in the Southern Levant was predominantly centred in the Jordan Valley with a more restricted spread into the foothills and steppe edge. Such foothill settlements appear to have been of a limited size (i.e. less than 1ha) and clustered in areas of local wadi systems and springs (Bourke, 2008: 115-6). This pattern fits well with evidence from the Jaulan, where settlements identified by Epstein (1998: 5-6) seem to show a strong association with the distribution of local springs and wadis (see chapter 8.3.1. for further discussion). It is interesting to note the potential similarities between sites identified in the eastern Jordan Valley foothills and steppe edge [e.g. Sahab (Bernbeck *et al.*, 1995, Gustavson-Gaube and Ibrahim, 1986, Ibrahim, 1984, Lovell, 2007: 457) and those recorded in the Jaulan (Epstein, 1998: 73, Figure 100; Lovell, 2007: 462-3). Having said this, Lovell (2007: 457) has recently illustrated the extent to which our understanding of the nature of Chalcolithic occupation in upland regions is limited, with the majority of excavated sites dating to this period being located in the lowland zones. Excavations as part of the Wadi Rayyan Archaeological Project (WRAP) have identified a series of upland sites, dated to the Chalcolithic, which have been associated with exploitation of secondary products, in particular olive growth [(Lovell, 2007: 457) and see section 9.4. for further discussion]. Lovell (2007: 459, 462-3) has demonstrated the potential parallels which can be seen between sites in the Wadi Rayyan and Jaulan region and those in lowland zones [e.g. Abu Hamid (Dollfus and Kafafi, 1988: Figure 41-2)]. Similar to the Homs NSA, this would suggest that settlements in the lowland and upland regions may represent elements of the same cultural/social/economic phenomenon.

The discussion above has illustrated the diversity of occupation and settlement patterns during the 4th millennium BC in the Levant. The expansion, dispersal and of settlement in some areas appears to primarily date to this period (e.g. in the Hauran, NSA and Jordan Valley (e.g. Braemer, in press, Braemer *et al.*, 2004, Kaptijn, 2009: 413-4, Philip and Bradbury, 2010). However, evidence for earlier, perhaps more localised expansion, is also apparent [e.g. the Chalcolithic (5th millennium BC) settlement of the upland region of the Jaulan (Epstein, 1998)]. Notwithstanding the problems of limited survey and excavation (e.g. Lovell, 2007: 457), this initial expansion appears to have been associated with specific craft/subsistence activities and eco-niches [i.e. olive cultivation and oil production in the Jordanian uplands (Lovell et al., 2007: 137-8) and possibly the Jaulan (Epstein, 1993)]. In contrast, the 4th millennium BC appears to be characterised by both a dispersal and diversification of settlement and activity with the exploitation of a combination of new opportunities and resources (see chapter 9.4 for further discussion). However, these phases cannot be characterised as a single burst of development and instead appear to have emerged over a lengthy period of time (i.e. at least 1000 years). Moreover, the scale, intensity, precise chronology and longevity of this process vary. With this in mind, how can we characterise settlement following this broad phase of dispersal and can similar variability be seen?

9.3.3.2. Phase B: Agglomeration and intensification (Early-Mid 3rd millennium BC)

The potential of reconstructing patterns of settlement during the early-mid 3rd millennium BC (EB II-III) in the sub-optimal regions discussed in chapters 7-8 is limited due to the variable nature of evidence, as well as imprecise chronological frameworks. Having said this, two contrasting trajectories are possible. The first, as indicated by evidence from the Jaulan and Negev, might suggest a phase of increasing population agglomeration. This is indicated by the emergence of walled upland enclosures in the Jaulan, at least some of which show evidence for settlement architecture [(e.g. Gal, 1988, Paz, 2002, Zertal, 1993) and see chapter 8.3.1.2. for further discussion] and the growth of Tell Arad in EB II in the Negev (e.g. Amiran, 1980). In contrast, unless the material has been buried underneath layers of later occupation or obliterated by later Roman-Byzantine activity, the Homs NSA shows no evidence for such agglomeration during this period. It may be that, similar to phases of expansion and dispersal during the 4th millennium BC, this process of agglomeration occurred at different rates across the Levant and perhaps in the case of the Homs Basalt cannot be documented at all.

Reconstructions of settlement patterns in the Jordan Valley during EB II-III have characterised this period as representing a phase of population aggregation, with movement and occupation in upland regions becoming highly visible for the first time (Kaptjin, 2009: 413-5, Philip, 2008). Having said this, as illustrated above, earlier 5th-4th millennia BC activity is present in the uplands (e.g. Epstein, 1998, Lovell, 2007, Lovell *et al.*, 2007). However, it is during the early-mid 3rd millennium BC that we appear to see the first emergence of walled 'urban' style upland settlements in areas of the Jordan plateau, as well as the Jaulan. Indeed, a comparison between settlement plans from sites such as, Lejjun and Khirbet Mudawwarah (Chesson *et al.*, 2005: 24-5) in the Jordanian uplands and Lawiyah in the Jaulan (Kochavi, 1989), show clear parallels (Figure 9.4.). These sites are not necessarily indicative of a single process or impetus for expansion and agglomeration (contra. Paz, 2002: 247), but may instead represent broadly concomitant localised developments. Paz's (2002) overview of upland enclosures records settlements ranging from over 100ha (e.g. Megiddo) to those up to

2ha (e.g. Tel Kinerot). These highly contrasting dimensions suggest that these sites cannot be considered as part of a single phenomenon (see chapter 8.3.1.2. and Figure 8.49 for further discussion). However, such evidence does appear to be part of a much wider development, with evidence for monumentalisation and agglomeration of settlement during this phase being seen from both the northern (e.g. Cooper, 2006: 53, Danti, 1997: 88) and southern Levant (e.g. Bourke, 1997: 99, Nigro, 2008: 9). During this period, the Samsat-Lidar area appears to be characterised by a pattern of small fortified urban centres, interpreted by Algaze (1999: 57) as relating to the emergence of a complex settlement hierarchy. Investigations at Jerablus Tahtani (c. 2700 cal BC) suggest the construction of a perimeter wall, nucleation and re-organisation of settlement (Wilkinson *et al.* 2007: 228). In addition, the location of the 3rd millennium BC site of Selenkahiye, on a ridge above the river, has been suggested as relating to defence (Cooper, 2006: 53). Occupation in the upland regions around Sweyhat also appears to peak during this phase, with intensification of settlement also being seen in the embayment area (Danti, 1997: 88). Such developments are paralleled at urban centres in Jordan where fortifications walls from sites such as Khirbet el-Batrawy (Nigro, 2008: 8), Khirbet es Zeraqon (Genz, 2002a: 10) and Bab edh-Dhra (Rast, 1995: 126) have been dated to EB II-III. Similar evidence is also apparent in the Zerqa region where Kaptjin (2009: 414-5) suggests the abandonment of the majority of lowland sites in the *Ghor* region and expansion and construction of walled settlements in the uplands.

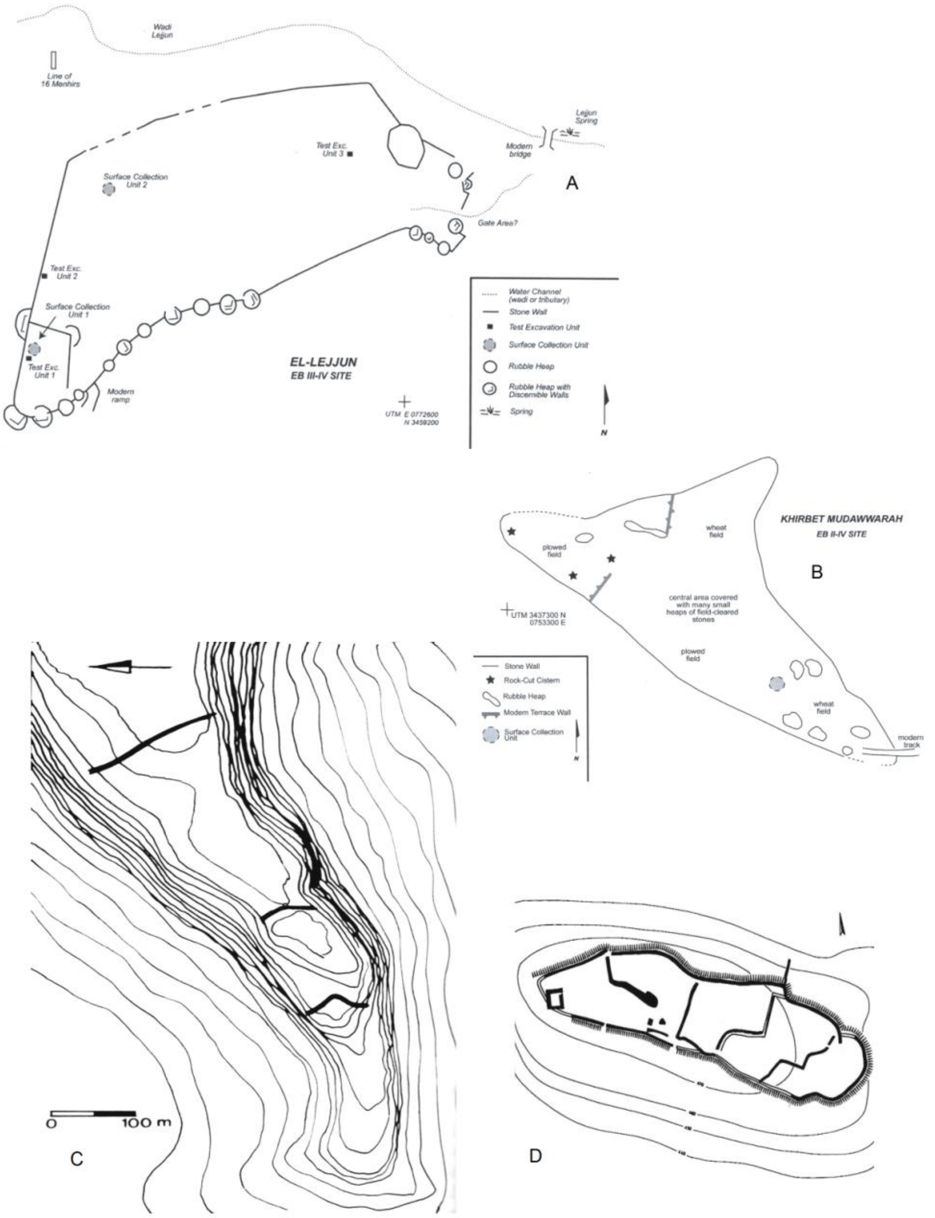


Figure 9.4. Enclosure in the Jordananian plateau and Jaulan [A: El-Lejjun; B: Khirbet Mudawwarah (after Chesson et al., 2005: Figure 13, 14); C: Lawiyeh (after Kochavi 1989); D: Umm el-Hawa (after Zertal 2004: Figure 132)]. All enclosures are depicted at the same scale.

It has been argued that expansion into upland regions during this period may have partially arisen through the desire/need to intensify agricultural exploitation of lowland regions such as, the *Ghor* (Kaptjin, 2009: 414-5). Potential would have been offered by re-locating, for more intensive and specialised exploitation of upland economies such as tree-cropping and pastoralism (e.g. Danti, 1997: 88-91, Kaptijn, 2009: 414-5). The evidence for monumentalisation that can be seen during this period may also be representative of attempts to display elements of power, control and ownership [(Kaptijn, 2009: 416-8, Peltenburg, 2007: 14, Philip, 2003: 116) and see section 9.6. for further discussion of this in relation to burial]. It has been argued that from the second half of the 3rd millennium BC, Ebla may have been controlling the northern half of the Syrian Euphrates. Such influence may have been in the form of tribute, rather than direct control (Cooper, 2006: 66). However, this interaction should not necessarily be viewed negatively and may have offered increasing potential for specialisation and economic expansion. Rather than settlement patterns along the Euphrates, during the 3rd millennium BC, being linked to a hierarchical display and organisation of power, we may be dealing with a heterarchical settlement network, with different locales being used for different functions. This would partly explain the variety in size [e.g. 56ha Tell Hadidi to under 5ha (Cooper, 2006: 57-8)] and geographical location of settlements which can be seen during this period (Cooper, 2006: 60-1, McClellan, 1999: 416). The lack of residential quarters at Tell Banat (periods III-IV) have led investigators to suggest that this site may have had a specialised function, possibly associated with mortuary practices, and never actually supported a large population (McClellan, 1999: 417). Specialisation has also been suggested in relation to sites such as, Raqa'i and Attij where large granaries have been interpreted as centralised storage sites [(Akkermans and Schwartz, 2003: 218-222, Fortin, 2000, Hole, 1991, McClellan, 1999: 416, Ur, 2010: 403) although see section 9.4 for further discussion concerning the precise economic role of these structures during the 3rd millennium BC]. A differentiation by function would also offer one explanation for the discrepancy in absence/presence of domestic structures associated with upland enclosures [(e.g. Zertal, 1993: 120) and see chapter 8.3.1.2. for further discussion] in the Jaulan, Galilee and Samaria regions.

Despite this evidence for specialisation, population agglomeration and monumentalisation (i.e. walled settlements and fortifications) during the 3rd millennium BC, as indicated by evidence from the Homs Basalt, such patterns of development cannot be seen across the entire Levant. Investigations in areas of northern Mesopotamia (i.e. around Tell Brak) have demonstrated that rather than a phase of agglomeration, the early 3rd millennium BC appears to show evidence for regionalisation and dispersal, with settlement being characterised by small tells and villages (Wilkinson, 2000a; Ur, 2010: 401). Similarly, the Samsat-Lidar region appears to demonstrate a pattern of dispersal and process of 'ruralization' at the beginning of the EBA [(Algaze, 1999: 545, Schwartz, 1994: 29)] although note the evidence discussed above for population agglomeration in the mid-late EBA]. In addition, evidence for patterns of monumentalisation and population nucleation exist prior to this period, with recent research at sites such as Tell Afis indicating the presence of monumental walls from at least the 4th millennium BC (Gianessi, 1998: 103). Similarly, if suggestions concerning the use of dolmen and burial monuments as material representations of control and ownership (Kaptijn, 2009: 416-8, Philip, 2008: 195-6) are at least partly correct, it would suggest that processes of monumentalisation as a way of representing power pre-date this period.

Yet again we seem to have a scenario, where a broad phase of agglomeration, nucleation and expansion of settlement can be identified. However, similar to processes of intensification during the 4th millennium BC, it appears that this development took place at different rates and at different times in the various sub-regions of the Levant.

9.3.3.3. Phase C: Specialisation and expansion (Late 3rd millennium BC)

The end of 3rd millennium BC in the Homs NSA appears to be characterised by a considerable decline in settlement. As suggested in Chapter 7, no unequivocal evidence for widespread settlement or activity dating to the EB IV can be seen in this region. In contrast, other areas appear to be characterised by expansion [e.g. the eastern steppe (e.g. Castel, 2007b, Castel *et al.*, 2005, Castel and Peltenburg, 2007, Geyer *et al.*, 2006, Geyer and Calvet, 2001, Gondet and Castel, 2004)] or a re-orientation of settlement [e.g. Khirbet al-Umbashi (Braemer et al., 2004: Figure 621)].

Expansion and intensification of settlement during the later 3rd millennium BC has been characterised as a very rapid and relatively short-lived process (Castel, 2007a: 159, Ur, 2010: 414). In contrast to earlier phases of growth during the 4th and earlier 3rd millennia BC, the establishment of settlements such as Al-Rawda and Tell Shai'rat, at the edge of eastern steppe, appear to have been a deliberate and political establishment (Castel 2007a: 174). Moreover, this process is characterised by elements of deliberate urban planning and expansion (ibid.). The site of Al-Rawda is located within the eastern steppe at the very limit of rain-fed agriculture. The settlement appears to have been established rapidly during EB IV and is characterised by a 12ha intra-mural settlement pattern (Barge and Moulin, 2008: 19). Geophysical survey and excavation has illustrated the strong degree of planning involved in the layout of buildings at this site [(e.g. Gondet and Castel, 2004) and see figure 9.5). Similar evidence has also been suggested for Kranzhugel sites such as Tell Chuera, where clear parallels, despite the contrasting size of settlements, can be seen in terms of organisation and layout [e.g. (Meyer, 2006: 163) and see figure 9.5]. Kranzhugelen have been identified from the steppe edge regions of the Balikh and Khabur. Predominantly composed of a central tell, surrounded by an area of possible settlement and megalithic structures, the interpretation of these sites varies (Lyonnet, 2004: 31-3). Whilst some investigators have argued for their function as locales of ancestral worship by nomadic groups (Meyer, 1997), others have indicated their utilisation within pastoral systems, integrating both valley and plateau lands (Lyonnet, 2004: 32). Both suggestions are possible and given their similarities to sites such as Al-Rawda, they perhaps represent a version of steppe based occupation, local to a particular region of north Mesopotamia rather than a unique settlement phenomenon.

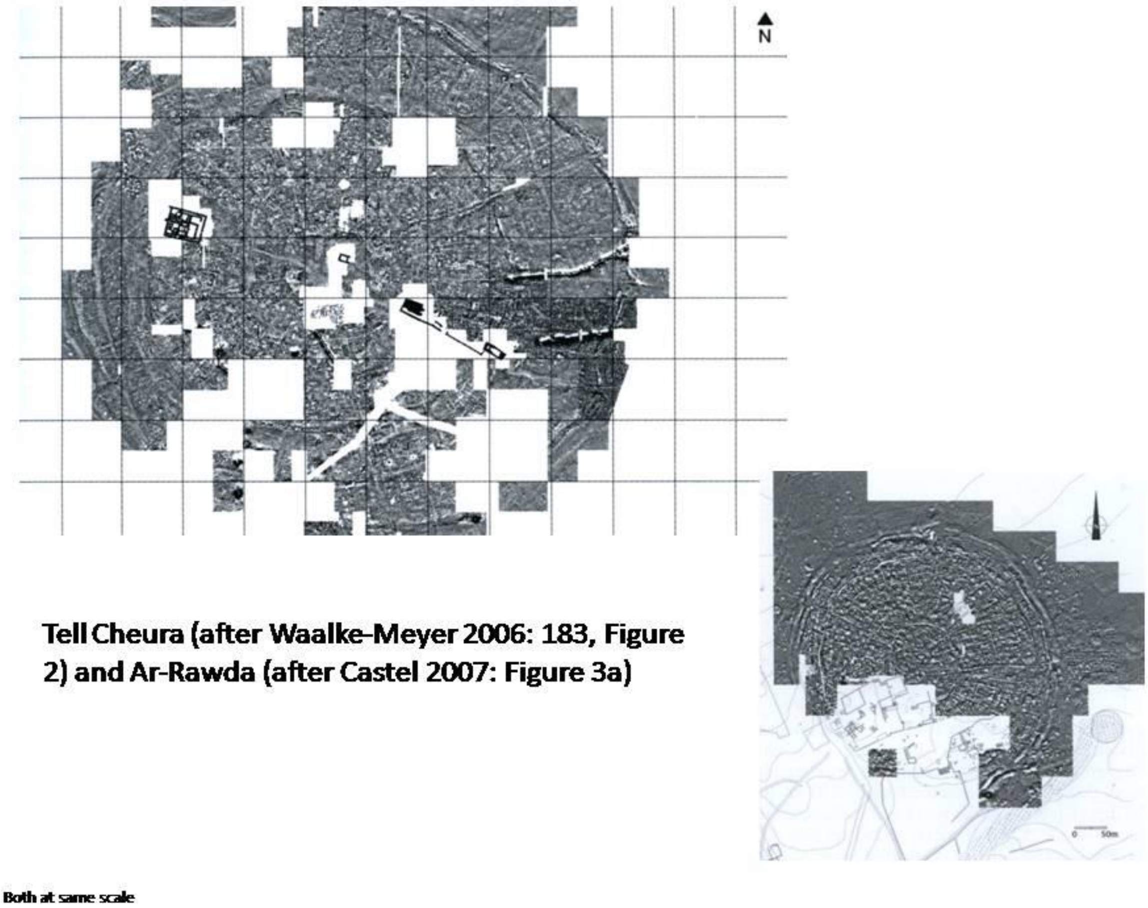


Figure 9.5. The settlement layouts of Chuera and Al-Rawda. Note the similarity in internal composition and layout despite the contrasting sizes of settlements

Changes in settlement traditions are not only visible in regard to new foundations during this period. The site of Umbashi appears to show a completely new type of settlement architecture at this time [(Braemer et al., 2004: Figure 621) and see section 8.2.1.3. for further details)]. Similarly, evidence from sites such as Tell es-Sweyhat (Danti and Zettler, 2007: 167-9) and Titiris Höyük (Algaze, 1999: 552) indicate increasing control and organisation of settlement. At the site of Tell es-Sweyhat the occupation area appears to have tripled in size by the end of 3rd millennium BC. At the same time, there seems to be a re-organisation of the settlement structure, with the fortified citadel, lower town and extramural suburb becoming distinct units (Danti and Zettler, 2007: 167-9, Wilkinson, 2004: 193). Titris Höyük also shows evidence for re-organisation, with an increasing standardization in the size of buildings and layout of structures (Algaze, 1999: 552). Both the Birecik Dam and North Jazira regions show an increase in settlement during this phase (Wossink, 2009: 73, Figure 5.2, 84, Figure 5.6). In contrast Bernbeck (1993: 61) has argued that parts of the Syrian Jazira appear to be abandoned.

Titris and Kurban Höyük were both abandoned during the EBA-MBA transition (c. 2200-1900 BC) (ibid.). Similarly, the desertion of Al-Rawda, whilst perhaps representing a slightly longer and more progressive event, can be dated to the early 2nd millennium BC (Castel, 2008: 159, 174). Akin to development and expansion into this region it has been argued that the decline of settlements, whilst influenced to some degree by aspects of over-exploitation and population increase, was largely associated with changing political contexts (ibid: 174). Sites such as, Al-Rawda and Shai'rat, show no evidence for re-occupation. However, whilst there appears to be a disjuncture in later 3rd millennium BC settlement in regions such as the Homs basalt and east Jordan Valley [settlements occupied in the EBA do not appear to have been re-settled in EB IV-MBA (e.g. Ibrahim et al., 1976: 51)], continuity is apparent in some regions (Chesson *et al.*, 2005: 45). Chesson *et al's* (2005: 45, Table 5) work on the Kerak plateau suggests that around 60% of the sites occupied during EB II-III continued to be occupied during EB IV. This is in direct contrast to neighbouring regions such as, the north and south central hills where continuity in occupation could only be seen at around 12% of sites (ibid.).

How then can we characterise this variety of evidence for occupation, re-occupation and expansion of settlement during EB IV? Researchers have argued that the later 3rd millennium BC in northern Mesopotamia represents a period of "urban resurgence and complexity" (e.g. Ur, 2010: 404). To some degree aspects of this can be seen elsewhere in the Levantine region. However, we have to question why some regions appear to have expanded, whilst settlement in others declined. This differential development may partly relate to the rapidity of expansion. Whilst development during the 4th millennium BC appears to have taken place over a period of at least a thousand years (see section 9.3.3.1.), expansion in the EB IV possible took place over less than two hundred (e.g. Ur, 2010: 414). The speed of such developments would clearly have impacted upon the ability of areas to either adopt or take advantage of the emerging economic and political networks. As such, it may have been that the sheer swiftness and politically driven nature of expansion during the EB IV meant that areas such as the Homs Basalt, did not have enough time to become aware of, or take advantage of, the new opportunities offered. In addition, expansion of settlement at the steppe edge indicates the increasing importance of long-distance transhumance during this period (see section 9.4.4.3. for further discussion). Whilst regions such as the Hauran are located in a prime position to exploit steppe resources, the possible geographical barriers (e.g. River Orontes) separating the Homs Basalt from steppe lands may have meant that this region had little to take advantage of in relation to these economic practices, being unsuited to the herding of very large groups of animals (see Chapter 7.5 and 9.4). Moreover, given the increasing powers of influence held by centres such as, Mari and Ebla during this period (e.g. Archi, 1996, Bonechi, 1998, Bunnens, 2007: 47, Peltenburg, 2007: 15) it may be that the regions to expand, at least initially, were those which had already been integrated into the wider socio-political networks of these sites.

This broad overview of 4th-3rd millennia BC settlements trends has indicated the presence of three main phases of expansion, intensification and agglomeration. However, more importantly, it has demonstrated the variable scale and intensity at which such developments took place across the Levant. Rather than these phases being seen as contemporary in all areas, there appears to have existed patchworks of development across the region. These findings emphasize the importance of both local trajectories of settlement and the role of broader networks of socio-political and economic factors. With this in mind, I shall now turn to a critique of subsistence and economy during the 4th-3rd millennia BC, questioning the potential role of new developments in agro-pastoralism during this period.

9.4. Subsistence, Economy and the growth of specialisation

One of the key issues in reconstructing past subsistence practices is the tendency for archaeologists to apply modern concepts of economy and production to the past. Studies linking modes of production/subsistence with specific social organisations i.e. nomadic pastoralists and tribal society (e.g. Porter, 2004: 70) are widespread. Moreover, such research often relies upon concepts which are not necessarily applicable to ancient societies [i.e. the inherently 'unstable' nature of pastoralism as opposed to the stability of agriculture (Fleming, 2004: 35, Lyonnet, 2004: 25, Porter, 2004)]. The following discussion aims to critique these studies and question the role of both pastoralism and agriculture within ancient subsistence practices. It will then turn to a consideration of the evidence for both multi-resource economies and aspects of specialisation during the 4th-3rd millennia BC.

9.4.1. Pastoralism, economy and status: Animal herds as a route to power?

Pastoralism has played an important role within sub-optimal zones for thousands of years (e.g. Abdi, 2003). However, our approaches towards the study of this form of subsistence have been misleading with many scholars viewing specialised pastoralism and agriculture as dichotomous entities (e.g. Bar-Yosef and Belfer-Cohen, 1989, Barfield, 1993, Cribb, 1991b, Fortin, 2001, Rosen, 2002a). Investigations have emphasized the pursuit of a mixed economy based on both agriculture and animal husbandry during the 4th-3rd millennia BC (Amiran, 1980: 23, Ben-Tor, 1992: 84, Esse, 1991: 159, Gonen, 1992: 61, Wilkinson, 1998: 168). It is also clear that in areas with marked seasonal and environmental variability, the movement of livestock to exploit various different ecological niches is of major importance for regulating and ensuring a supply of food (Dyson-Hudson and Dyson-Hudson, 1980: 17). Even within the single designation of a tribal group the movements of individual flocks and herds may differ (ibid: 18). As such, we not only have to consider variation in subsistence methods and practices between sub-optimal zones, but also from group to group during the past. The seasonal and variable nature of resources (e.g. Lancaster and Lancaster, 1991: 128) in some regions also highlights the need to consider the ability of groups to fluctuate between a variety of subsistence strategies on an annual basis. Within such a scenario it may be suggested that designations such as agriculturalist, hunter-gatherer and pastoralist have very little relevance. As Lancaster and Lancaster (1991: 136) have argued, the ability to be flexible may have been a key factor in the ability to operate within sub-optimal landscapes.

The development of pastoral nomadic societies has been attributed to a number of factors involving environmental change, human adaptation and the development of urban centres (Abdi, 2003, Levy, 1983: 31, Rosen, 1988: 503, 1992). Several researchers have argued that the adoption of a pastoralist lifestyle, centred around animal herding, can be seen as a reaction to economic, environmental and social stresses (Finkelstein, 1995: 37, Joffe, 1993: 81-2) developing concomitantly with the emergence of large central settlements, facilitating the exchange of goods between the settled and nomadic (e.g. Finkelstein, 1995: 67, 73-5). Others interpret nomadic pastoralism as a distinct cultural trajectory occurring at the periphery of the settled heartland (Rosen, 1988: 499). Rosen (2008: 119) has suggested that during the 7th-6th millennia BC a gradual process which replaced hunting and gathering with a way of life based upon the tending of domestic herds can be seen across the Negev. Groups exploiting the steppe during this period exhibit a degree of autonomy in terms of lithic production, as well as subsistence strategies (e.g. Baird, 1994, Rosen, 2008: 119). Abdi (2003: 397), in his review of the emergence of pastoralism within the Zagros Mountains, emphasizes the transition between the short-range village based herding and long-distance nomadic pastoralism. This process, in his interpretation, represents a major social transformation which occurred over several centuries. Indeed, it could be argued that prior to the introduction of the camel, the scale and nature of nomadic pastoralism that we recognise ethnographically, was absent from the archaeological record (e.g. Cole, 1975).

Village based and short-range pastoralism involves the movement of herds into pasture surrounding settlements, with animals returning to shelter within the village during the evenings or winter months. In other cases, shelters and pastures are at some distance from the village/settlement with groups travelling to pasture and remaining there with the animals, returning only periodically to the village (Abdi, 2003: 400-1). Transhumant pastoralism (vertical and horizontal) involves the movement of a herd at certain times of year, either to take advantage of particularly fertile pasture elsewhere (e.g. in the case of transhumant pastoralism at higher elevations), or to remove herds from agricultural lands at times of planting and germination of seeds (e.g. Abdi, 2003: 402-3). A key element shown by all of the above strategies is the relation to the tending of crops, whereby, the movement of herds is in some way linked to the practice of agriculture within/around settlements. In contrast, Abdi (2003: 403-5) argues that long-range pastoralism, characterised by a periodic movement between pastures over the course of a year, can be seen as representing a shift between a primary focus upon agriculture to subsistence practices largely dependent upon herd management. Abdi's (2003) overview is useful; however, it fails to draw-out the potential blurring of subsistence strategies and the ability for groups to adapt and alter their primary emphasis, season to season and year to year. Robb (2007: 139), in his analysis of Mediterranean village economies, emphasizes the different requirements, in terms of fodder and conditions, held by different animal herds (e.g. cattle require around ten times more pasture than caprines). Such an analysis is particularly relevant considering the evidence for differing economic strategies within the sub-optimal regions reviewed in Chapters 7-8. It highlights the need to consider the relationships between traditions of animal management and the local environments in which those traditions can be seen. Moreover, as Robb [(2007: 144) my emphasis] suggests, it is important that we consider these strategies, not merely as subsistence methods but as '*long-term social projects*'. In other words, groups, especially those dwelling within sub-optimal/arid regions, were making a continual investment in animal herds planning for years of famine and feast. Society would have to be able to maintain adaptability, as well as the ability to strategically plan ahead to deal with such events. The complex relationships that this would entail with domestic herds should not then be viewed merely as a subsistence relationship, but as a way of life for those involved.

9.4.2. A Mediterranean economy

The development of a Mediterranean economy during the 4th-3rd millennia BC has been viewed by scholars as representing one of the key elements in the foundation and consolidation of urban civilisation (Ben-Tor, 1986: 5). Concomitant with such a development are ideas of storage, linked to the production of olive oil, wine and secondary animal products, as well as trade and a more settled way of life (Grigson, 1995: 259). The association of these activities solely with sedentism is debatable. Moreover, evidence for storage of food products in silos has been suggested from as early as the proto-Neolithic at sites such as Hallan Çemi (Rosenberg and Redding, 2000: 47) and Dhra (Kuijt, 2000: 81, 2009).

Continuity in subsistence practices between the Chalcolithic and EBA can be seen in many cases; however, the use of animals as plough-teams represented a clear elaboration of previous practices (Amiran, 1985: 110, Sherratt, 1981, 1997: 169, Figure 6.4, 2006). This elaboration was viewed by Sherratt (1981, 1997, 2006) as part and parcel of wider developments occurring during the 4th millennium BC, the so-called 'secondary products revolution'. This 'revolution' is now beginning to be unpacked, with research revealing evidence for the utilisation of secondary products prior to the 4th millennium BC [(e.g. Evershed *et al.*, 2008, Lovell, 2007) and see section 9.4.2. for further discussion]. However, the implications of such a development are still profound. Not only would this provide the possibility of increased cultivation, as well as an increased yield of goods, but it also offers the opportunity for the use of animals to transport goods (Ben-Tor, 1986: 6-7). Given the difficulties associated with traversing landscapes, such as the Homs Basalt and upland Jaulan, domestication of animals, such as the donkey, would have greatly facilitated movement across these regions. These developments would also have profoundly changed the human-animal relationship.

Donkey nomadism is mentioned within Ur III and Mari texts (e.g. Dever, 1985: 129). However, domestication of this species for use as pack animals appears to have occurred earlier, with the first clear pictorial/figurative representation of these animals within the archaeological record being seen in the 4th millennium BC (Epstein, 1985c: 59, Figures 9, 11a-b, Grigson, 1995: 258). Investigations at sites such as Tell Nebi Mend and Arjoune, have shown evidence for the presence of articulated limb bones of equids in contexts dating to the 4th millennium BC and later (Grigson, 2003: 220). Grigson (ibid.) suggests that whilst equid bones recovered from earlier deposits at the site of Arjoune appear to have been broken and dismembered, suggesting their use as food, those from later phases at Tell Nebi Mend and also from 4th millennium BC strata in Trench VI at Arjoune were articulated suggesting the use of these animals for other purposes. At Arjoune there also appears to be a relative increase in this species over time (ibid.). When this evidence is viewed in conjunction with figurative representations of goats, sheep and donkeys as beasts of burden dating to the late 4^{th}-3^{rd} millennia BC (e.g. Epstein, 1985c), the use of domesticated animals for this purpose seems compelling. One possible implication of such a transformation may have been to increase the social importance of domestic species which could be used as beasts of burden and plough animals. Indeed, it is possible that the appearance of such animal figurines during this period (e.g. Epstein 1985c: 59) is related to their increasing role in the demonstration of status. Such status may not necessarily have been linked to specific individuals but instead may have had a communal focus. Thus, groups during this period would have been able to demonstrate their status through the ability to support, maintain and rear animals which could be used for more than merely their food potential.

Alongside evidence for domestic animals being used as beasts of burden, the role of wool bearing sheep during the 4^{th}-3^{rd} millennia BC has been highlighted. Whilst, dating the earliest use of woollen fibres for textile production is problematic (Breniquet, 2008: 54), it has been argued that throughout the 4^{th} millennium BC the importance of wool-bearing sheep as an economic commodity greatly increases (Breniquet, 2008: 93, Grigson, 1995: 257, Vila, 1998: 111-112). At many sites both a general increase in caprines (e.g. Grigson, 1995: 260, Table 1, 2003: 220, Stein, 2002: 152, Figure 15) and a specific increase in sheep relative to goat species can be seen over the course of the 5^{th}-4^{th} millennia BC (Grigson, 1995: 263, Table 2, 2003: 189) and may be related to the increasing focus upon this species for wool production (Grigson, 1995: 257). One of the key problems in assessing these hypotheses and dating the first appearance of woollen products is the lack of surviving fibrous material in the archaeological record. The first definitive evidence we have for woven woollen cloth dates to the Chalcolithic period at the site of Nahal Mishmar (Bar-Adon, 1980). The woollen cord found at Çatalhöyük is suggested by Breniquet (2008: Table III, 55-57) to date to the PPNB, although the dating of this is unclear [see (Burnham, 1965, Helbaek, 1963, Ryder, 1965) for further details]. Sudo (2010) has argued that indirect evidence exists for the exploitation of wool in 5^{th} millennium BC contexts. These include the clay animal figurine from Tepe Sarab, which possibly depicts crimp wool via v-shaped incisions on its side, spindle whorls and also tabular scrapers which have been experimentally linked to wool-shearing (Henry, 1995: 372-73, Sudo, 2010: 170). However, whilst wool production may be documented in the 5^{th} millennium BC, the production of wool (and the evidence for it) appears to become much more extensive in the 4^{th} millennium BC (Sudo, 2010: 170). The lower percentages of caprines, prior to the 4^{th} millennium BC at sites such as Arjoune (Grigson, 2003: 220), does not necessarily suggest that wool production was not occurring prior to this period. Rather, it indicates that this period represents the first attempt to maximise its production through the introduction of new herding strategies (ibid: 207).

Concepts of land, inheritance and ownership have been strongly associated with the development of fixed-plot cultivation and the Mediterranean economy (Flannery, 1972, Sahlins, 1972). However, such notions can play an equal role in pastoralist practices, with the ownership of animals, organisation and access to them being an element of the political economy of the 4th-3rd millennia BC (Grigson, 1995: 248-9). In addition, despite arguments concerning the importance of aspects of ownership and land tenure, especially within the city states of Northern Syria, it appears that such notions were neither static nor uniform with ownership and concepts of ownership varying over time (e.g. Magness-Gardiner, 1994: 44). The presence of pig species in 4th-3rd millennia BC contexts at sites, such as Arjoune (Grigson, 2003: 208-212, 229), Tell Abu al-Kharaz (Fischer, 2006: 307-8) and Shuna (pers comm. Philip 2010) has been seen as indicative of sedentism, linking with concepts of territory and land ownership (Grigson, 2003: 229, 2007: 100). Only areas moist enough to support dry-farming could have sustained pig populations (Grigson, 2007: 108). However, the presence of pigs at sites does not negate possibilities of at least a component of the settlements' population being mobile and engaging in pastoralist activities. Indeed, the seasonal nature of the pig cull at Arjoune has been highlighted by Grigson (2003: 229), leading her to suggest that a degree of seasonal movement may have been present, although she rules out pastoral nomadism.

The specialisation linked with the developments discussed above have been emphasized by Nicolle and Braemer (2001: 202) and see section 9.4.2. for further discussion] who argue for a gradual adoption of specialised economies within the Bronze Age, with pastoralism being practised on the steppe, cereal agriculture on the Jordan plateau and valley, and arboriculture within the Jaulan, Galilee, Samaria and Ajlun areas. Indeed, it has been suggested that in areas where particular limiting factors existed alongside permissive factors, conditions may have been conducive to specialisation (Greenberg and Porat, 1996: 18, Rice, 1984: 49). Contrary to such arguments, others have suggested that investment in large-scale horticultural production of fruit trees and vines is characteristic of a settled and stable way of life, thus specific to sedentary society (Grigson, 1995: 259). Indeed, it has been hypothesised that it is only with the onset of urban society, associated with aspects of a Mediterranean economy or specialised agriculture production, that the dichotomy between nomad and settled becomes distinct (Hanbury-Tenison, 1986: 64). Ultimately, it is argued that there is a link between the methods of feeding animals, the way in which they are used, the practice of agriculture and the levels of mobility in society (Ben-Tor, 1986: 248). Having said this, it would appear that archaeological evidence from sub-optimal regions during this period suggests a greater emphasis on the diversification of activity and subsistence strategies.

The presence of mixed agro-pastoral dry farming, possibly combined with the tending of garden-plots and orchards, has been illustrated in a number of regions (Epstein, 1993, LaBianca, 1990: 36, Lewis, 1987: 190). Moreover, as recent research by Alizadeh (2008: 89) within the highlands of Iran has emphasized, the majority of subsistence strategies can be seen as multi-faceted, with mobile pastoralist tribes in this area relying on dry farming and taking advantage of arable lands in both summer and winter pastures. In these cases members of the tribe often remain behind to harvest the crops or alternatively local workers can be hired by the tribes to carry out harvesting. The concept of complementary zones is interesting in this respect, with Steele (1990: 12, 25-6) suggesting that the Kerak Plateau and *Ghor* can be seen to be paired units during the EBA due to the appearance of plant remains such as olives, almonds and peaches in the latter. These crops cannot be grown within the *Ghor* and thus it has been suggested that the two regions were economically linked. This observation raises an interesting possibility, that different segments of the same overall group were separated from one another for a large period of time. Such a situation has been suggested in relation to villagers residing in the Jordan Valley and practising distant pasture husbandry in areas such as the Jaulan and eastern Galilee (Esse, 1991: 161). Furthermore evidence from a number of sites, such as 4th millennium BC Arjoune, suggests that rather than increasing specialisation, a slight diversification may have occurred. At this site goat numbers appear to decline at the expense of cattle and sheep exploitation, a scenario which may represent a domestic strategy aimed at obtaining wool, milk and meat (Grigson, 2003: 220).

9.4.3. Hydrological manipulation and control

The areas discussed in Chapter 8 all share common features, in that, their exploitation necessitates or encourages a degree of hydrological manipulation and control. Across the different study regions this manipulation varies from built hydraulic features, such as dams and barrages (e.g. Avner, 1998: 175, Braemer *et al.,* 2004: 248-258, Newson, 2000: 92-7), to the exploitation and adaptation of local seasonal resources (e.g. Betts and Helms, 1989: 3, Braemer *et al.,* 2004: 247-8).

Simple methods are still used within Middle Eastern communities with '*birket*' present in many villages, ensuring supplies of water into the summer months when other 'natural' sources may have dried up. Clearly, these facilities would have allowed settlement for a large part of the year, if not all year round by groups in areas such as the Hauran and Jaulan (Epstein, 1998: 230-5, Newson, 2000: 99). Such a scenario has been considered in regard to settlements such as al-Namara and Qasr Burqu' (Braemer, 1996: 1, Newson, 2000: 88) where evidence of barrages, canals and dammed lakes exists alongside features dating to a range of periods (Newson, 2000: 92-7). Similar evidence exists within Eastern Jordan where natural lakes, enhanced through the construction of run-off canals, in addition to wells and artificial pools can be seen (Betts, 1993, Betts and Helms, 1989: 3, Betts *et al.*, 1990, Betts *et al.*, 1991). In the 'Uvda Valley investigators have identified a series of dams along small side wadis in the vicinity of 5th-3rd millennia BC sites (Avner, 1998: 172), although the dating of such structures is particularly difficult. The city of Arad, located within the semi-arid Negev, also shows pre-planning in relation to water management, both through its location on a hill facilitating the natural collection of water, as well as via the apparent division of settlement on the basis of function [(Amiran, 1970b: 92-5, 1978: 114) although see Chapter 8 for a more detailed discussion on the layout and features at Arad]. Similar features can be seen at sites, such as Labweh (Al-Maqdissi and Braemer, 2006: 117, Figure 3). The impressive system of shafts leading to springs at the eastern edge of the site of Khirbet es-Zeraqon (Genz, 1996) has not been definitively dated. However, the fact that the site was never re-occupied after the EBA indicates that this system is likely to date to this period. As such it emphasises the logistical competence of societies during the past, with tunnels leading for more than 200m under the site, excavated through bedrock (ibid). These examples offer clear evidence for groups within the Levant being able to sustain sizeable settlements without the need for perennial or easily accessible water sources (Gonen, 1992: 29).

Water management schemes may also exist in regions, such as the Jaulan, where rainfall is sufficient for year round settlement. Excavations of "stone heaps" in this region led to investigators interpreting them as features designed to manage surface water flow (Epstein, 1978: 32, 36). Epstein fails to explain how such features may have actually worked. Moreover, the presence of similar features in the Negev has prompted extensive debate concerning their use. In the latter region structures have been interpreted as relating to clearance activities designed to facilitate surface flow and thus accumulation of sediment and water in terraced fields (Bruins, 1990: 92-93, Kedar, 1957, 1964, Tadmor *et al.*, 1958). Thus, the stone mounds, rather than being a specific feature designed to manipulate water flow, are merely a by-product of clearance activity and represent a sensible way of gathering material following the clearance of stones (Bruins, 1990: 93). The presence of mounds on slopes surrounding cultivable fields emphasizes this possible function (Kedar, 1957: 185), although experimentation has demonstrated that in the majority of cases following a primary initial increase in erosion, water run-off would not have been significantly affected (Shanan, 1975, Shanan *et al.*, 1969). Alternative explanations have also been offered for these structures, with local Bedouin groups referring to such features as *'el'anab'* (grape mounds) leading some investigators to suggest their role in tree crop cultivation (Bruins, 1990: 92, Mayerson, 1959, 1960, Yair and Shachak, 1987, Yair *et al.*, 1978). Experiments and the location of these features on hillslopes has suggested that by creating a 'mini-catchment' around the trees, water can be funnelled into these areas and thus, retain moisture (Bruins, 1990: 92). With these hypotheses in mind it is difficult to suggest that these features relate to a single function. Instead it becomes apparent that such structures may have been used in contrasting ways and for different functions in different areas. Thus, whilst their general appearance might be similar, their location and specific morphology is perhaps more variable than previously thought.

The majority of the above irrigation/water management systems cannot be dated, however, those from sites such as Jawa (Helms, 1981: 139-40) and Khirbet al-Umbashi (Braemer *et al.*, 2004) are 4th-3rd millennia BC in date. These examples demonstrate the level of organisation and complexity seen at a number of sites and argue against sub-optimal areas simply being regarded as peripheral and less complex from the outset. Moreover, the dated examples highlight the fact that these features relate to a broad range of periods with a potentially substantial selection dating to the Chalcolithic-EBA.

How then might we go about characterising subsistence strategies seen across the Levant during the 4th-3rd millennia BC? To what degree do these tally with a hypothesis based around multi-resource communities and what is the evidence for economic specialisation?

9.4.4. Patterns of Subsistence in the 4th-3rd millennia BC

9.4.4.1. Multi-Resource Strategies

The evidence presented in chapters 2, 7 and 8 indicated that communities in the sub-optimal regions of the Homs NSA, Hauran, Jaulan and Negev were engaged in *multi-resource* subsistence strategies during the 4th-3rd millennia BC. Whilst local trajectories of specialisation and economy were present, groups could not be strictly defined as either nomadic pastoralists or sedentary agriculturalists. Instead it was argued that subsistence during this period, at least within these regions [although note the arguments for a possible higher degree of specialisation in the Negev (see chapter 8.4)], were based around a flexible economic strategy, designed to maximise potential production and exploitation.

Investigators argue that continuity can be seen in subsistence practices throughout the Chalcolithic and Early Bronze Age, with a variety of plant and animal species being exploited (e.g. Chesson *et al.*, 2005: 45, Grigson, 1995, Lovell *et al.*, 2007: 133, 111, Figure 6b). Despite this, clear variations are present across the region. Rather than the Mediterranean economy and '*multi-resource*' systems being adopted as a package, it appears that different regions adopted and exploited aspects which suited their local conditions or needs (e.g. Chesson *et al.,* 2005: 41; Danti and Zettler, 1997: 164). Moreover, the exploitation of different species appears to have varied to some extent over time. Research at the site of Teleilat Ghassul has revealed evidence for the adoption of aspects of a Mediterranean economy e.g. intensive fruit cropping by the Middle Chalcolithic (Bourke *et al.,* 2007: 69, Meadows, 2005). At the same time there appears to be an increasing importance of ovicaprids, with a decline in neonatal deaths and more animals being kept to maturity, perhaps suggesting an increasing focus on secondary products (Bourke *et al.*, 2007: 69). Having said this, the patterns of exploitation cannot merely be seen in terms of an onwards and upwards spiral towards specialisation. Indeed, the fact that animals such as, gazelle, increase dramatically in later Ghassulian phases [e.g. from 2% in 'Classic Ghassulian' contexts to 17% in later phases (ibid.)] suggests a more adaptable and perhaps opportunistic economic trajectory.

It has been argued in relation to the Tell Sweyhat region that, due to the location of this area on the edge of dry farming (200-300mm rainfall isoyhet), pastoralism can be viewed as an environmental adaptation (Danti and Zettler, 2007: 164). Having said this, the integration of this practice into an economy, which also exploited upland valley systems for local agriculture (e.g. Danti, 1997: 85), emphasizes the potential *multi-resource* base of communities during the past. Direct archaeological evidence for such a system is limited, partly due to the limited amount of research in the upland zones surrounding Sweyhat. However, Danti (1997: 92) has argued that the annual flooding of the Euphrates would have posed a very high risk to agriculture in the lowland embayment region suggesting that similar to relatively recent practices, the upland steppe may have been used for dry-farming (ibid: 85). In addition, the high proportion of wild steppic plants found in fuel remains, and interpreted as deriving from manure, has been seen as indicative of these areas being exploited for pasture (Miller, 1997: 128).

The adoption of a *multi-resource* economy, as part of a risk-reducing strategy, has also been suggested in relation to EBA on the Kerak plateau. Here Chesson *et al.* (2005: 42-3, 45) have argued that it was necessary to adopt aspects of both pastoral and agricultural production in order to reduce the impact of environmental variability and instability. In addition, the specifics of economies may have varied in relation to local conditions. Ancient populations would have recognised the potential limitations and advantages offered by different eco-niches. This accounts for the differential adoption and to some degree specialisation of economic strategies in regions such as the Jaulan and Hauran, during both recent history and the past [e.g. grazing in the Jaulan and cereal agriculture in the Hauran (see chapter 2.2.2-3 for further discussion)]. Such adaptations can be seen elsewhere. Excavation at the EBA sites of Lejjun and Khirbet el-Minsahlat (Kerak Plateau) have demonstrated the adoption of a mixed agro-pastoral economy, characterised by species such as, olive, grape, pea, chickpea, lentil, emmer and barley. Animal species include goats, sheep and cattle (Chesson *et al.,* 2005: 41). Given the evidence for pigs elsewhere in the Levant during this period [(e.g. Grigson, 2007) and see above for further discussion], their absence at these sites has been associated with the aridity of the local environment (ibid.). Indeed, variation in the exploitation of ovicaprids indicates a sophisticated understanding of local conditions across this region. For example, both Lejjun and Khirbet el-Minsahlat in the Kerak plateau show higher percentages of goat in relation to sheep species. In contrast, sites on the Mediterranean coast, where better access to good grazing exists, show higher percentages of sheep. Given that goats are more suited to marginal food sources and arid environments, the differential percentages of these species demonstrate an economic adaptation to local resources, aimed at maximising potential gain and resource return (ibid.). The presence of both domesticated animals, as well as plant species such as, emmer wheat, hulled barley, bitter vetch, lentil and pea at sites apparently geared towards the production of olive oil [e.g. Wadi ar-Rayyan (Lovell, 2007: 463)] indicates the necessity of integrating even specialised economies into a broader *multi-resource* subsistence base. Moreover, the evidence from kill patterns at sites in this area [e.g. al-Khawaij (Lovell *et al.,* 2007: 111, 133, Figure 6b)] indicates that animals were apparently being processed on site and presumably herded close by with evidence for hide processing areas and boiling sites suggesting a wide range of activities occurring within the settlement.

9.4.4.2. Specialisation: The Origins of Nomadic Pastoralism?

As discussed above, arguments concerning the origins of nomadic pastoralism are hotly debated (e.g. Abdi, 2003, Alizadeh, 2008, Finkelstein, 1992, Levy, 1983, Sherratt, 1981, Wilke, 2007). Moreover, as investigators have highlighted, different aspects of the Mediterranean economy appear to have been developed and specialised over the course of the 4^{th}-3^{rd} millennia BC. Such specialisation relates to not only economies centred on one specific subsistence strategy [i.e. herding (Levy, 1983)], but also *multi-resource* communities which appear to have taken advantage of new opportunities, engaging in production of food and resources in particular ecological zones [i.e. olive oil production and tree crops at WRAP sites (Lovell *et al.*, 2007: 138)]. The question which emerges from this however, is the extent to which such specialisation can be seen purely as a 4^{th}-3^{rd} millennium BC development.

New opportunities, species and economies clearly develop during the 4th millennium BC (see above discussion of the development of Mediterranean economies). Indeed, these developments encouraged or in other cases facilitated expansion and developments in sub-optimal regions, such as the Homs Basalt. However, the extent to which this can be seen as a purely 4th-3rd millennia BC development can be debated. Arguments for the emergence of animals as beasts of burden have centred on the domestication of species such as the donkey in the 4th millennium BC [(Amiran, 1985: 110) and see above for further discussion]. However, Wilke (2007: 418-9) has suggested that domestication of species such as goat, at sites dating to c. 8000 years ago, offered the potential for the use of pack-animals in earlier periods. Recent evidence suggesting that milk production may date to at least the 7th millennium BC in Anatolia (Evershed *et al.*, 2008) also indicates that elements of Levantine economies may have been present thousands of years before their widespread adoption. Isotope analyses ($\delta^{13}C$ and $\delta^{15}N$) from the site of Çatalhöyük have identified evidence for changing practices in animal herding over the course of the Neolithic (Pearson *et al.*, 2007: 2171). In this case the variety in isotope values across animal populations was seen to indicate the increasing trajectory towards specialisation, with animals being herded in a wider range of locales and across a broader geographical area over the course of the Neolithic (ibid.). The presence of complex grain storage systems at sites such as Ghassul, Abu Hamid, Pella and Sahab indicate the production and storage of resources above that produced by an average household (Bourke, 2008: 146). Can all this evidence be seen as indicative of organised specialisation? The flexible and piecemeal adoption of different resources strategies, mobility in relation to grazing lands and storage of resources by a heterarchical community, as part of a risk-management strategy, are as equally likely. Moreover, even if aspects of specialisation are occurring, there is the potential for these to be integrated into broader *multi-resource* subsistence strategies.

What then is the evidence for communities either focused on one specific resource strategy or producing products above and beyond that required for local consumption during the 4th-3rd millennia BC? It has been suggested by Lyonnet (2004: 27) that particular environmental conditions are suggestive of specialised nomadic pastoralism. He argues that settlement in areas such as the Negev and Sinai, where human settlement/activity is apparent but agriculture is impossible, represents clear evidence for the practice of nomadic pastoralism (ibid: 26). Given the evidence discussed in chapters 2 and 8 for the localised exploitation and practice of agriculture in these regions such arguments can be disputed. However, this is not to suggest that such regions were not predominantly exploited and used for pastoral economies, rather that groups within such regions may have had more than one avenue of subsistence open to them (see chapters 2 and 8 for further discussion). The silos and storage units at sites such as Raqa'i and Atij, during the mid-3rd millennium BC, have been argued to represent local food stores for nomadic pastoralists (Hole, 1991; Lyonnet, 2004: 30-1). Similar features at the site of Tell Hajji Ibrahim have been interpreted as storage units for winter fodder, rather than food for human consumption (Danti, 1997: 89-91). Both hypotheses are possible; indeed, it may be that we are dealing with storage structures designed to conserve food supplies for both humans and animals. Either way, such storage would have facilitated specialist herding activities, for at least part of the year, by part of the population. Having said this, storage facilities could be of equal importance for a *multi-resource* subsistence base, allowing different groups to be engaged in different elements of production and economy throughout the year.

Epstein (1993) discusses the presence of specific vessels relating to the production and distribution of olive oil during the Chalcolithic, whilst Lovell's (2007) work in the region of Wadi ar-Rayyan has revealed evidence for the exploitation of olives beyond the household level. It has been argued that the increasing focus and intensification of production of crops, such as grapes and olives during EB II-III, may have been one impetus for the expansion into upland regions during this period and see section 9.3.3.2. for discussion of associated settlements (e.g. Chesson *et al.*, 2005, Kaptijn, 2009: 414-5)]. Indeed, the evidence for sites with specialised functions [e.g. mortuary (Tell Banat (Porter, 2002) and see section 9.6 for further references) and storage (Akkermans and Schwartz, 2003: 218-222, Fortin, 2000, Hole, 1991, McClellan, 1999: 416, Ur, 2010: 403)] may indicate the intensification and increased specialisation of specific aspects of previously *multi-resource* subsistence strategies.

The evidence discussed above ranges from ambiguous to compelling. Moreover, it is apparent that the adoption of aspects of specialised economies was not a simultaneous development across the region. Rather aspects emerged at different points, potentially as early as the 7th millennium BC in some areas. Whilst a number of areas/sites may have taken advantage of the potentials offered by specialisation, others chose not to. The development of new aspects of subsistence which required long-term investment (e.g. tree crops), as well as material investments (e.g. large animal herds and individuals dedicated to their management) offer clear potential for the growth and demonstration of status and power. However, as the above examples demonstrate, rather than seeing subsistence developments during the 4th-3rd millennia BC as a single linear trajectory towards specialisation, different adaptations and approaches may have been adopted at different times in different places. In these situations populations may have had multiple identities, seeing themselves as belonging to more than one group. Thus, it is perhaps more appropriate during this 4th-3rd millennia BC period to view such power and status being linked to a wider community (see section 9.6. for further discussion of this in relation to burial and memorialisation). As Robb (2007: 140) argues, demographically stable animal herds go beyond that which is manageable by a single family grouping. Thus, at least in some areas, we ought to be dealing with a communally managed animal herd. Such a strategy would facilitate not only the maintenance of herds, less prone to disease (ibid: 140), but would also have allowed different groups from the community to be involved within different subsistence practices (and see Chapter 7 for discussion of this in relation to the Homs NSA). Such differential approaches towards production and specialisation may have been related to a range of factors such as, the proximity to local resources, access to the best routes of distribution, community size and organisation and possibly even human choice and preference. As such, it appears that during the 4th-3rd millennium BC we can characterise the economies of the Levant as belonging to a broad tradition of *multi-resource* subsistence which was adapted, enhanced and rejected as deemed locally appropriate.

9.4.4.3. Expansion and Pastoralism in the later 3rd millennium BC?

As already discussed in relation to settlement patterns, the latter half of the 3rd millennium BC represents a phase, at least in some regions, of expansion, intensification and possible specialisation of economic practices. Groups during this period appear to be linked into different subsistence networks and traditions, with animal herds at this point becoming reliable routes to power. In contrast to the village-based herding, seasonal mobility and *multi-resource* economies discussed above, pastoralism mentioned in the Mari texts reflect a state driven form of animal herding, with reference to 'royal flocks' (Matthews, 2002: 54). Such a differing scale, in terms of ownership and spatial mobility would mark a profound transformation in the relationships between human groups and animal herds. Texts referring to flocks administrated by the central authority of Beydar during EJ IIIB refer to around 7400 sheep/goat divided into 30 flocks (Sallaberger, 2004: 20, Wossink, 2009: 107). The movement of flocks (c. 250 animals per flock) of this size would not have been possible within the Homs basalt, in part due to the limited nature of resources, as well as the stony nature of the landscape limiting mobility, especially during the winter season when grazing is at its most bountiful. It may be that populations, previously resident/exploiting the NSA, abandoned this region in pursuit of new opportunities further east (see chapter 7 for further discussion). At the end of the 3rd millennium BC we also appear to have textual evidence specifically mentioning 'nomadic' groups [e.g. donkey nomads of the Ur III dynasty (Fleming, 2004: 35-6)]. Terms referring to the concept of a pastoralist encampment emerge (Matthews, 2002: 59), alongside evidence for specialised herding contracts (e.g. Adams, 1966: 69, Matthews, 2002: 101-3). Moreover, specific individuals/groups now appear to have distinct identities and are given occupational titles and designations (e.g. Matthews, 2002: 59, 98, 140, and 179).

Despite these changes and the evidence for decline in settlement in regions such as the Homs NSA, we should not necessarily illustrate this transition towards more specialised behaviour as a complete disjuncture, leading to the total abandonment and decline of regions. Instead, as in the earlier 4th millennium BC, those individuals who had perhaps always been to some extent engaged in pastoralist activities may have taken advantage of these new opportunities. Indeed, the apparent increase in settlement at the eastern edge of the SHR region during EB IV (i.e. along the western edge of the steppe zone) may indicate that populations from the NSA were actively involved in seeking new opportunities for economic development further east. Moreover, evidence from sites such as Al-Rawda, suggests that whilst pastoralism played an integral role in this area, the adaptation and exploitation of natural water resources in the area may have facilitated cultivation (Barge and Moulin 2008: 22-3). The Mari archives also provide important evidence suggesting the strong level of integration (whether willing or un-willing) between predominantly agricultural and pastoral groups (e.g. Matthews, 2002: 132-137). As such, whilst certain groups/individuals during the latter 3rd-2nd millennia BC may have held an increasingly specialised economic role, others may have been still practising elements of both agriculture and pastoralism.

The review of subsistence practices presented above has emphasized the sheer diversity in economies seen throughout the 4th-3rd millennium BC. It has illustrated that the adoption of the Mediterranean economy did not occur as a 'package' and instead was adopted and adapted in different regions, at different times and in different ways. Elements of economic specialisation are visible in this region prior to the 4th millennium BC and whilst this appears to increase at the end of the 3rd millennium BC, not all regions were equally involved or embedded within this process. Similar to the arguments presented for settlement, we then appear to have a complex patchwork of economic trajectories developing across the Levant during the 4th-3rd millennia BC.

9.5. Materiality and networks of shared culture

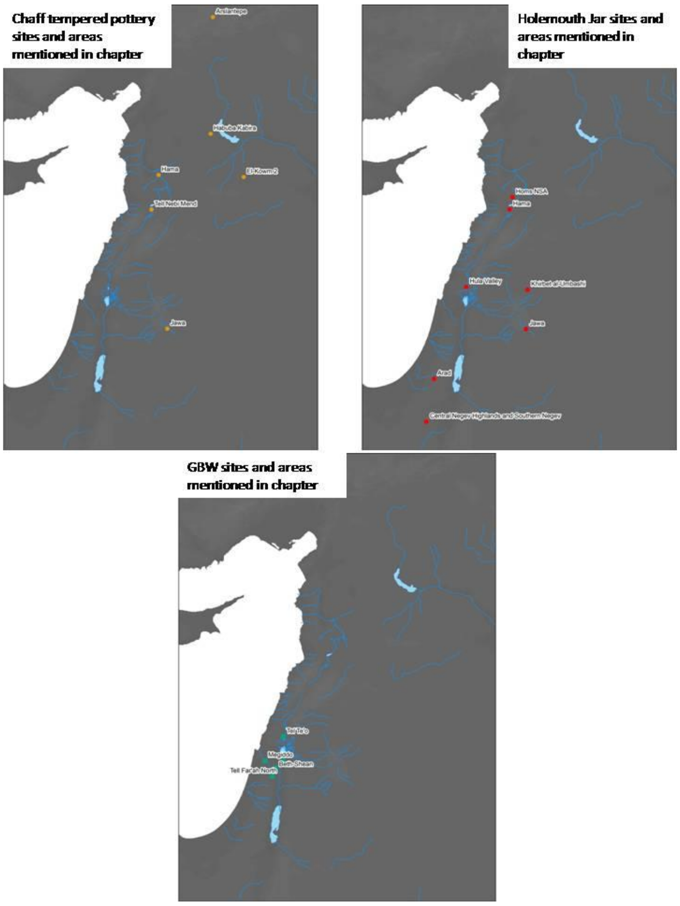


Figure 9.6. Main Sites and areas mentioned in the text illustrating the basic spread of material culture styles [Chaff tempered wares, Holemouth Jars and Grey Burnished Wares] in the Levant region

The poor chronological resolution of material in regions such as the Homs Basalt (see chapter 7), as well as within regions which have benefited from both excavation and intensive survey [e.g. Tell Sweyhat embayment (Danti, 1997: 89)] has led to many settlements falling under a broad umbrella of EBA or Chalco-EBA. Moreover, whilst ceramic chronologies in areas such as the Syrian Jezirah and Euphrates are becoming clearer, they are not fully comparable to those from the rest of the Levant (e.g. Marro and Hauptmann, 2000). For example, Lebeau's (2000) work defined chronology based on a local sequence termed Early Jezirah (0-V). This section will critique and advance some of the evidence for these broader patterns, questioning to what extent processes such as elite emulation can be seen across the entire region and what this may mean in terms of our understanding of society and culture during the 4th-3rd millennia BC in both 'optimal' and 'sub-optimal' regions.

9.5.1. Patterns of Connections and Mobility

During the 4th millennium BC, chaff-tempered fabrics appear across much of the Northern Levant (Cauvin and Stordeur, 1985: 193-5, Figure 6, Helms, 1991: 106, Mathias, 2000: 419, Schwartz, 2001: 237-241, 245). Whilst this fabric appears in localised variations, it can still be seen as part of a broader tradition. Investigators have suggested that this fabric form and its association, in many regions, with everted rim vessels (e.g. Matthias, 2000: 419-422, Figure 23.3.15-32) can be seen as indicative of movement towards mass production and new traditions of consumption and serving of food (e.g. Akkermans, 1988: 127, Trufelli, 1994: 247). However, this ware also appears to be present in areas with little evidence for mass production [e.g. Orontes Valley (Thuesen, 1988: 54; Philip, 2002: 214; Mathias, 2000: 425-6). As Philip (2002: 214) has pointed out, wheel-made ceramics at sites such as Tell Nebi Mend and Hama, are only seen in the last quarter of the 4th millennium BC (Thuesen 1988: 54; Mathias 2000: 425-6), lagging well behind development at sites such as, Arslantepe and Hacinebi further North (Stein *et al.*, 1998: 165-6). Moreover, chaff tempered vessels remain hand-made at the site of Tell Nebi Mend (Mathias and Parr, 1989: 21). The different socio-political units and craft practices, which appear to show evidence for the adoption of chaff-tempered fabrics, emphasize the need to study the adoption of this material contextually. Its appearance in the Homs Basalt, where there is no evidence for mass production and the majority of wares are hand-made (see chapter 7.2) indicates that its use, importance and meaning within society may have been variable across the Levant. What we can conclude however is, similar to other aspects of society such as economy and a settlement practice, the adoption of this fabric form was subject to human choice. Groups may have adopted the techniques and knowledge of fabric production whilst utilising the technology in a completely different manner from societies and groups elsewhere. It is interesting to note that the Homs area appears to be one of the most southerly points in the distribution of chaff-tempered wares. There is no reference to such material from sites in the Beka'a (Marfoe, 1995), Hauran (Braemer, 2002, Braemer *et al.*, 2004) or Jaulan (Epstein, 1985a, 1998, 2001) or the southern Levant, where grit-temper is the norm. Its appearance at Jawa (Helms, 1991: 106) appears to be somewhat of an anomaly and at present there is a limited understanding of how this material might fit with the wider networks of chaff-tempered material.

Examination of the ceramic sequences of Tell Nebi Mend and Hama indicate a lack of material similarities between central Syrian pottery assemblages and those from further south (e.g. Philip, 2002: 215). Moreover, despite the proximity of this region to potential routes, via the Homs-Tripoli gap, to the coast and sites such as Byblos, few parallels are visible. Instead, sites on the Lebanese coast such as Byblos, appear to be orientated in terms of their ceramic traditions to more southern sequences [(Philip, 2002: 216, 218-9) for contra. see (Contenson, 1992: 182) who suggested that red-slipped and 'metallic wares' in the Ras Shamra IIIB sequence (north of Byblos) were intrusive]. This is in direct contrast with evidence from the Homs Basalt. The latter region appears to show evidence of both broad northern and southern regional similarities, as well as localised traditions [(Philip and Bradbury, 2010); see Chapter 7 for further discussion]. Of particular note is the predominance of holemouth jars (see chapter 6-7). Whilst this form is indicative of south Levantine traditions, holemouths have occasionally been found as sites further north, such as Hama (Thuesen, 1988: 118, Figure 59) and the Amuq sequence (Braidwood and Braidwood, 1960: 235-236, Figure 176: 1-4), albeit in limited quantities. Holemouths from Tell Afis in Northern Syria have been interpreted as dating to EB IV (Mazzoni and Gianessi, 1998: 31, Figure 16.7-8) and thus, are not directly relevant for this discussion. Debates are emerging considering the degree of variation shown by such vessels. Based on the distinctions between round and flat based forms, Greenberg (2006: 43) has suggested that their differential use is indicative of variations in food preparation techniques and possibly even cuisine. The most northerly region where such vessels have been found in any quantity is the Homs Basalt. Almost no holemouths are known from post-Neolithic strata in the Orontes Valley region at sites such as, Arjoune and Tell Nebi Mend (Campbell *et al.*, 2003; pers comm. Campbell 2010; pers comm. Kennedy 2010, Mathias, 2000, Mathias and Parr, 1989). The presence of holemouths and chaff-tempered pottery in the NSA suggests the existence of a number of interacting ceramic traditions. However, these traditions do not appear to have been adopted as a package. Instead, similar to economic developments in the Levant, groups within this area appear to have adopted ceramics which fitted with their lifestyle and daily needs. We do not see in assemblages from the NSA the broad range of ceramic forms and fabrics present from other regions. At present this area appears to have a regionally specific ceramic sequence which remains little known.

One of the most discussed Southern Levantine ceramic forms dating to EB I is Grey Burnished Ware (henceforth GBW). This material is known from sites, such as Megiddo, Beth-Shean and Tell Far'ah North (e.g. Amiran 1970: 47, Plate 10), as well as sites in the Hula Valley [e.g. Tel Te'o (Eisenberg *et al.*, 2001: 117)]. Various debates have arisen concerning the typological and technological characteristics of this ware. Original studies by Wright (1937, 1958) led to the suggestion of four broad shape variants being present across the region, an approach which has been adopted by a number of researchers [e.g. (Goren and Zuckerman, 2000) although for the contrary see (Braun, 1985, Miroschedji, 1971) who suggest that only Wright's Type 1 can be seen as GBW]. Recent investigations at Tell Te'o suggest that this material, whilst being produced using the same fabric (and firing) as other pottery, was distinguished by specific forms and decorative techniques [slip and the presence of tapered protrusions on vessels (Goren and Zuckerman, 2000)]. Tel Te'o (Eisenberg *et al.*, 2001) is one of the most northerly sites where such material has been found, with assemblages also being known from Iktanit in Lebanon (Amiran, 1970a: 49) and a number of other Hula Valley sites (Eisenberg *et al.*, 2001: 118). GBW represents an important example of a form of material culture which does not appear across the broader Levantine region. Its absence from other regions such as, the Homs NSA indicates divergent traditions of serving and consumption. Many of the forms classed as GBW appear to be associated with consumption practices, characterised by wide bowls, carinated deep bowls and pedestalled varieties. Preliminary analysis from Tell esh-Shuna suggests that GBW vessels at this site may be linked to communal food-sharing (pers comm. Philip 2010). Bowls form over half of the EB I assemblage at Shuna (Baird and Philip, 1994: 125). The forms seen from Tel Te'o (predominantly carinated and hemispherical bowls) also appear to indicate an association with food service and consumption. The absence of the traditions of decoration and surface finishing associated with GBW from the Homs NSA may relate to local properties of the clay. However, the relative lack of deep bowls, pedestalled vessels from this area may be related to the fact that within the Homs NSA traditions of serving and consumption were less structured by material culture. As such, the same vessels used for food preparation i.e. holemouths, may have also been used for serving and consumption practices. Having said this, it should be noted that no GBW forms have been found from Tell Nebi Mend Trench VIII (Mathias, 2000, Mathias and Parr, 1989, pers comm. Philip 2010) possibly suggesting the absence of GBW from the Homs area is related to regional traditions of pottery manufacture and utilisation.

9.5.2. Elite Emulation and processes of specialisation

The impact of new cultural horizons, such as that of the 'Uruk' within Northern Syria has been strongly debated in recent years [(e.g. Rothman 2001b) and papers therein]. It is now clear that whilst certain sites, such as Habuba Kabira show evidence of Uruk influence, or in this case colonisation (D'Altroy, 2001: 459, Frangipane, 2001: 323), some reflect the continuation of local cultural sequences over a lengthier period of time [i.e. Tell Afis (e.g. Jamieson, 1993: 39, Philip, 2002: 210)]. Others demonstrate evidence for well established local traits and complexity prior to the Uruk expansion [i.e. Arslantepe (Frangipane, 2001: 327)]. Perhaps one of the most of widely discussed developments in ceramic history, occurring during the Ubaid/Uruk transition (late 5^{th}-4^{th} millennia BC), is the emergence of mass production beyond household level manufacture (Algaze, 1993: 86-91, Frangipane, 1993: 155, Lupton, 1996: 19, Philip, 2002: 212). This debate is strongly tied to the development and spread of particular forms of material culture such as Bevelled Rim Bowls [see (Nissen, 1970, Pollock, 1999: 94-5) and further references therein] and also chaff tempered ceramics (as discussed above). However, to what degree can aspects of specialised production and distribution be seen in other forms of ceramics and material culture?

Investigators have argued that in many regions, ceramic production remained localised and based at a household level throughout the 4th-3rd millennia BC (Philip, 2002: 214-5). However, we cannot rule out the fact that whilst production was based at a community level, specific groups/households may have been undertaking this task. Such hypotheses, without the discovery of specific pottery workshops, would be difficult to prove. However, from at least the 5th millennium BC there does appear to be evidence in some areas (e.g. Beersheva Valley) for a degree of specialised production in relation to materials such as lithics, metals and stone vessels [(e.g. Amiran and Porat, 1984, Braun, 1990: 95, Kerner, 1997: 424-5, Rowan and Levy, 1994) and see Chapter 8 for specific examples)]. The movement of both raw materials, as well as manufactured objects, throughout the 4th-3rd millennia BC can be documented across many regions [(Abadi-Reiss and Rosen, 2008, Adams, 2002: 23-5, Rosen, 2003: 755-6, Rutter and Philip, 2008) and see chapter 8 for further discussion]. However, the extent to which such activities can be seen as predominantly associated with specifically elite/specialist/high value goods can be debated. It could be argued that particular artefacts such as tabular scrapers, basalt vessels and metal artefacts in later periods were of specific importance within society, being used for particular tasks or within certain social activities/events. As such, it may be that specialised production was geared towards certain artefact forms and materials. These observations fit well with the evidence of specific raw materials and artefacts, such as obsidian, shells and metal being traded across long-distances (e.g. Ben-Tor, 1986: 3, Crawford, 1978). Rowan and Levy (1994) have highlighted the potential specialised 'elite' production of Canaanean blades in the late 5th-early 4th millennia BC. Using data from the site of Gilat, they argue that flint blades from Chalcolithic contexts, which showed clear analogies to EBA Canaanean blades, can be interpreted as earlier "proto" versions linked to prestige functions. At Gilat these implements appear to have been produced using a high quality brown flint (1994: 172-3). The selection of certain materials for the production of specific artefact forms is paralleled elsewhere during this period [e.g. Fan scrapers (Noy 1998: 275) from the Jaulan; EB II-III platters from Dabab (Braemer *et al.*, 2004: 326)]. In addition, the quantities of obsidian and flint at sites such as, Tell Brak in Northern Syria, have lead investigators to suggest specialised production beyond the household level (Khalidi *et al.*, 2009, McMahon and Oates, 2007: 590-1). Materials such as obsidian from the Homs basalt and shell and stone beads, as well as a limestone macehead, from Umbashi suggest that throughout the 4th-3rd millennia BC (and possibly 5th millennium BC) these regions were integrated into wider networks of exchange and material transmission. However, the nature of that exchange and material transmission still needs to be considered.

Evidence of specialised production and the adoption of material forms can, in some cases, be linked to elite aggrandisement. Ur (2010: 394) has suggested that the obsidian, marble and bitumen vessel dated to LC2-3 from Tell Brak must have been associated with an individual of status, whose power and role within society would have been communicated through the use of such a vessel in public. Given the evidence from Brak for corporate burial (see section 9.6.) it may be possible to associate such practices with group, rather than individual status. The stone maceheads found in the vicinity of the VS4.10 building at Khirbet al-Umbashi represent a collection of specialised objects, whose parallels with similar materials from sites, such as Ebla (Matthiae *et al.*, 1995: 343; no. 138) and Hama [(Thuesen, 1988: 164) Level K10] might indicate an elite function. However, the fact that they were not found interred in a specific tomb may challenge arguments concerning their use within individual practices of aggrandisement. Rosenberg's (2010) recent review of maceheads from PPN-Chalcolithic contexts in the southern Levant highlights the varied debates concerning the function of these objects, as well as their use of over the longue durée (Golden, 2010, Gopher and Orrelle, 1985: 72, Levy, 1995). Moreover, he suggests that the majority of Neolithic-EBA maceheads have been found in domestic, rather than burial contexts (Rosenberg, 2010: 213) [although note the examples from Ebla (Matthiae *et al.*, 1995: 343; no. 138) and also Bab edh-Dhra (Beebe, 1989) which are from burials]. This example emphasizes the need to consider artefact forms and material culture contextually. The way in which objects were used and understood may have differed over time, but also from group to group. Evidence from the Orontes region has suggested that the lack of Uruk styles within this area could be associated with groups having little need for elite paraphernalia and thus, failing to emulate the traditions and specialist production represented by these wares (Philip, 2002: 215, 224). The use of ceramics within aspects of elite consumption and representation is something which has been emphasized by Mazzoni (2003). She argues that within the urbanised regions of the EB II-IV Levant, intensity in ceramic production, specialisation and standardization can be seen in terms of the ideological needs of the elite for the consumption of food, on an everyday basis, as well as occasions of conspicuous consumption (Mazzoni, 2003: 187). Elite emulation may have been pivotal within this process, facilitating the spread of styles and traditions (ibid.). Specialisation and material emulation can take on a range of forms, varying in levels of concentration, scale, context and intensity (Kerner, 1997: 425). Moreover, it is clear that the intensity of emulation and adoption of material culture elements varied across the region and throughout the 4th-3rd millennia BC. For example, the Homs region appears to have taken advantage of the opportunities offered by chaff-tempered ceramic forms and holemouth jars, whilst choosing not to adopt forms and traditions geared towards communal consumption practices (e.g. GBW, platters and large bowl forms). Instead of these material culture forms emerging as packages throughout the 4th-3rd millennia BC, it is possible to suggest a situation whereby groups were only adopting the specific cultural elements which were useful to them (e.g. Rothman, 2001a: 14).

How then can we characterise the transmission and adoption of material culture during this period? Moreover, what are the possible implications of certain groups not adopting aspects of material culture? Crawford (1978), in her review of the processes of Neolithic obsidian trade and exchange suggested the possible role of nomadic groups within this practice. She argued that ethnographic parallels for such activity existed and that in some cases these materials may have been used by nomadic groups within ceremonial exchanges designed to secure rights to pasture animals (ibid.). Given the debates (section 9.4.) concerning the nature of pastoralism, the association between this material and mobile groups is limited. Despite this, the role of pastoral nomads within informal trading networks should not be simply dismissed (e.g. Anfinset, 2004: 68, Lyonnet, 1998: 184). For example, Ben-Tor (1986: 8-9) has suggested that prior to EB II non-urban dwellers in Palestine may have had a much larger role in trade relations than those residing within cities. Moreover, Crawford's (1978: 130) analysis is important for emphasizing the variable economic role of such groups. In addition she highlights the wide range of perishable goods (i.e. salt, bitumen) which may have been traded alongside or separately from durable items. How the trade of such perishable goods could ever be recognised archaeologically is problematic. Indeed, given the textual and ethnographic references to regions such as the Hauran being the 'grain basket' of Syria, it is interesting to debate how such regional specialisation would ever be seen within the archaeological record [(e.g. Ball, 2000: 238, Epstein, 1936: 597, Scholch, 1981: 40) see chapter 2]. Where evidence for trade and exchange is apparent the nature of that exchange and its importance in facilitating co-operation or connectivity between different subsistence and social groupings (Anfinset, 2004: 62, Sherratt, 1981) is not always clear. Despite this it has been argued that the exploitation of resources within sub-optimal and marginal areas led to the development of complex trade networks and urbanisation (Finklestein, 1990: 45). Elsewhere, the specific foundation of settlements in order to engage in trading networks, in the case of Mari (Archi, 1996: 17), or production and mining activities in the case of the Southern Negev and Sinai settlements, has been hypothesised (Haiman 1996: 20). The concept of a shared ideology facilitating these interactions and exchanges is also highlighted, with such systems being viewed as a *'…symbiosis of groups of different adaptations and specialisations…'* (Anfinset, 2004: 69).

Given the above suggestion it may be that the adoption of material culture elements in regions such as the Homs Basalt was restricted by the lack of shared ideology between this area and groups using material such as, GBW. Indeed, it has been argued that the distribution of basalt pillar figurines within the Chalcolithic Jaulan was limited to groups who shared similar beliefs centred on anthropomorphic and zoomorphic deities (Epstein, 1988: 208-9). Evidence for processes of emulation at sites such as Arslantepe, centre on the presence of 'Uruk' style vessels produced using local materials and techniques, as well as the adoption of some form of Uruk style social organisation. Evidence for this derives from depictions of a chiefly figure on a cattle driven sledge (VI A period) which parallels evidence from Mesopotamia and has been interpreted as a city-ruler (Algaze, 1999: 542, Frangipane, 1997: Figure 16). However, it may be that this figure held different roles with contrasting importance at Arslantepe and Uruk. Moreover, given the evidence for pre-Uruk social complexity at Arslantepe (Frangipane, 2001; Rothman, 2001a: 6) it may be that such depictions were being employed within locally derived concepts of power and organisation. Elsewhere, it has been argued that the adoption/spread of specific elements of social organisation, belief and material culture may have been restricted due to the role of geographical barriers (Peltenburg, 2007: 8-7). While this may play a role in some cases, it does not sufficiently explain the piecemeal adoption of different elements of material culture. The environments of the Homs basalt and regions such as the Jaulan clearly limit movement, at least during the winter months, and thus possible contacts. However, the presence of materials such as obsidian within the NSA emphasize that material networks, of some form, were present. Similarly, whilst lack of water and food resources may have restricted movement in the Negev during summer months, the networks of metal trade and exchange visible from at least the Early Bronze Age [(II-III) and see chapter 8.4.3.2. for further discussion)] indicate the broad range of material links present between this region and areas further east and south. As such, rather than suggesting a situation whereby differing social organisations, beliefs and geographical location impacted negatively or precluded the adoption and transmission of material culture, we can perhaps place a greater emphasis on social choice. Geography, environment and contrasting social organisations cannot be fully dismissed. However, the evidence presented above, similar to that of settlement and economy, appears to suggest a flexible and variable process of material adoption, one which was ultimately driven by choice and social needs.

9.6. Burial, 'ritual' and Memorialisation

Over the past few decades a great deal of research has focused on the investigation of mortuary rituals and funerary events as seen in the archaeological record. Central to such investigations has been the assumption that the characteristics shown by the deceased in life will be symbolically represented in death (Baker, 2006, Baxevani, 1995, Carter and Parker, 1995, Harrison, 2001). Items interred in graves are seen as symptomatic of the status of the individual, as well as representative of the social norms and relations embodied within communities (Palumbo, 1987: 44). This would be an ideal situation, however, as Ucko (1969) has highlighted the complexity of past burial customs and traditions should not be under-rated. In some cases highly stratified societies may leave little in regards to grave goods, while individuals may be marked out due to reasons completely unrelated to status (ibid.). More recent attempts have been made to highlight the importance of mortuary rituals to the living, specifically as an arena for the negotiation of identity (Chesson, 1999: 137, 2003: 95). However, death is still seen as a finite event, understood and experienced through reverence and ritual behaviour (e.g. Chesson, 1999, Cooper, 2006: 202). Within ethnographic investigations death has been highlighted as a transitional practice, strongly connected to other events throughout the life cycle of an individual and society (De Coppet, 1981, Metcalf and Huntington, 1991). As such, it is only when burial, monuments and 'ritual' activity are examined contextually, as part of not only the 'ritual' realm, but also the everyday, that the full importance of these practices can be realised. Moreover, as Hanbury-Tenison (1986: 245) has suggested burial monuments, such as cairns and dolmens, "...are the most written about and least studied monuments in the Levant.".

The initial widespread appearance of cairns and dolmens within the Levant dates to the 4^{th}-3^{rd} millennia BC and as discussed above, is broadly concomitant with developments, such as the emergence of complex society; regionalised pottery traditions and the intensification/specialisation of economic traditions (see sections 9.1-5). However, as chapters 3 and 4 illustrated, these monuments do not suddenly appear at 4000 BC. Instead, there appears to be a mélange of development with different regions displaying evidence for such monumental constructions at different times over the course of this 2000 year period. In some areas it is clear that such constructions have a much greater longevity, possibly dating back to 7^{th} millennium BC (e.g. Avner, 1984: 117). In these cases, monuments constructed during the 4^{th}-3^{rd} millennia BC can be seen as an intensification and elaboration of activity which had been occurring on a localised basis for thousands of years previously. Elsewhere, it is clear that such constructions continued to be built and re-used for thousands of years [(e.g. Conder, 1889a: 134) and see chapter 4].

The differential presence/absence of burial forms across the Levant was highlighted in Chapter 3. Indeed, one of the key questions within the Homs region yet to be addressed is associated with our lack of knowledge of pre-Islamic burial within the Southern Marls. Despite important research into the role of burial monuments and cultic constructions for the deceased/living within European (e.g. Barrett, 1988, Bruck, 1995, Chapman, 1994, 2000b, De Coppet, 1981, Fleming, 1973, 2005, Humphreys and King, 1981, Robb, 2008, Whitley, 2002) and Near Eastern archaeology [of which the newly founded postgraduate school 'Symbols of the Dead' at the University of Tubingen represents a good example (http://www.promotionsverbundao.uni-tuebingen.de/index.html, 2010)], simplistic associations between architecture, burial forms and religious practice are still made (e.g. de Miroschedji, 1993: 216). In his review of cult and religion in Chalcolithic-EBA Palestine, de Miroschedji (ibid.) argued for a system of ideology based around the concept of a house of the god, or in this case goddess whose main role was as a water and fertility deity. Based on the notion of a chiefdom society it was argued that access to the god/goddess may have been restricted (ibid: 211, 213). This interpretation was largely reliant on extrapolating data from areas such as, Mesopotamia, as well as later periods and using them for the interpretation of cultic buildings and artefacts in Palestine. Moreover, Miroschedji's (1993) interpretations were based on the hypothesis that cultures at similar levels of development would have had similar traditions of cult and religion. Given the debates concerning the role of chiefdoms within ancient society (see Chapter 9.2), as well as the critique of the use of analogies from Ancient Mesopotamia for the interpretation of society in the Levant (see Chapter 9.1) these theories are flawed. Instead, as this thesis and in particular this chapter has demonstrated whilst shared aspects of material culture and architecture may exist, the ways in which they are conceptualised and used within society may be distinct across time and space.

The lack of excavation and poor preservation often associated with monuments, such as cairns and dolmens, has been a major hindrance to studies concerning the nature of burials and internments within these structures (Zohar, 1989: 18). A variety of burial methods and practices can be seen throughout the Levant. Examples of tumuli excavated in the Jaulan have revealed evidence for single secondary interments composed of scatters of bones and material deposits (e.g. Epstein, 1985a: 57). Elsewhere, tumuli were used for multiple interments [(e.g. Braemer *et al.*, 2004: 194, Steimer-Herbert and Braemer, 1999: 185) and see Chapter 3 for further discussion]. Research within the Homs area has yet to involve full excavation, however, the sheer variety in the number of cists (ranging from one to seven) present within tumuli suggests a range of burial forms and approaches being used (see Chapter 5 and 7.3.). Moreover, research has revealed evidence for grave circles and burial monuments at sites, such as Mezad Aluf, containing no material, whilst interment of artefactual deposits without associated human remains is seen in others (e.g. Levy and Alon, 1982: 54). This absence of skeletal material has been observed elsewhere within the Levant and cannot be solely a product of looting and grave robbing (e.g. Haiman, 1992a: 37).

Perhaps key to addressing some of the reasons for these differences is to challenge current perceptions surrounding death and burial. Within modern Western cultures, death is conceived as a cessation of life, the last step within an individual's life cycle. Such an impression has often been imposed upon the past, with the loss of a member of society being seen as a sudden and abrupt event, damaging the social organization of a community (Chesson, 1999: 137). Death represents a transformation of a living entity into a new type of person, substance or element; however, there is a huge range of associated cultural practices and beliefs. These may identify death as part of life, linking funerals with other events within a person's life cycle (Fowler, 2004, Humphreys and King, 1981, Metcalf and Huntington, 1991). The concept of death as a transition or rite of passage was first discussed during the early 20th century by van Gennep (1909, 1960) and Hertz (1907). Their investigations examined a range of ethnographic cultures who viewed death as a lengthy *process*, involving the transition from one state to another through the occupation of a liminal or transitional stage [my emphasis (Hertz, 1907, Metcalf and Huntington, 1991, van Gennep, 1909, 1960)]. More recent anthropological work, building upon that of van Gennep and Hertz, highlights the importance of such transitional and liminal locations within funerary practices. In addition to this, the importance of concepts such as regeneration and substance/life flows within funerary customs have been highlighted, emphasizing the strong ethnographic parallels between funerals, births and marriage (De Coppet, 1981, Forman, 1980, Fox, 1980, Metcalf and Huntington, 1991, Turner, 1967, Turner, 1969). Such concepts have begun to see discussion within European archaeology (Bruck, 1995, Chapman, 2000a, Chapman, 2000b, Chapman and Gaydarska, 2007, Fowler, 2004, Fowler and Cummings, 2003), however, little consideration has been given to them within Near Eastern research. These issues are pivotal not only to our analysis and interpretation of mortuary practices, but also to our very understanding of concepts of identity and personhood in the past (Fowler, 2004: 79).

9.6.1. Collective interment: An illustration of heterarchy?

The collective interment of skeletal material within Late Chalcolithic ossuary burials has been interpreted as relating to the veneration of memory, rather than that of the body (Hanbury-Tenison, 1986: 217). It is also interesting to note that at burial caves, such as Azor, where ossuary deposits are present there is also evidence for the scattering of human bones around the ossuary vessels, rather than exclusively within them (Gilead, 1968: 21). Elsewhere the presence of collective burial practices have been interpreted as family interments (e.g. Jean-Marie, 1990: 316, Peltenburg, 1999: 431). Investigations at the site of Bab edh-Dhra have led to the suggestion of collective burial within charnel houses representing an attempt to promote the notion of communal and collective identity based on the importance of competing households (Chesson, 1999, 2003: 96). The White Monument at Tell Banat is an interesting structure in this sense. Located 200m NE of the main tell, it is a mound constructed of layers of packed earth, gravel and marl, containing discrete deposits of human and animal skeletal material, as well as pottery (McClellan, 1998, McClellan, 1999, Porter, 2002).

Porter (2002: 167-168; 2004) has suggested that during the 3rd millennium BC, Tell Banat may have been part of a regional economy based on tribal organisation and ideology. Such a 'tribal' identity would have been facilitated by the presence of a collective burial structure, with groups pasturing their flocks in the steppe and returning to Banat at certain times in the year to re-affirm their connection with the ancestors (Fleming, 2004: 28-9). Similar interpretations have been offered for non-burial structures, such as Kranzhugel, with Meyer (1997) arguing that these sites represented locales of ancestor worship for semi-nomadic 'tribal' groups [although this interpretation has been disputed see (Lyonnet, 2004: 32) and 9.3. for further details]. The presence and manipulation of human skeletal material at Tell Banat indicates deliberate selection and placement, with the line between deposition and construction being blurred. At the same time, it is possible to argue that the individual appears to be of little relevance within this monument. Not only are the deceased being transformed into an altered state through a lengthy rite of passage, involving removal from their original burial place and disarticulation, but perhaps their lifecycles are also being subsumed into that of the monument. Such a process does not necessarily have to be associated with either a 'tribal' or 'pastoral' society. Indeed, the heterarchical and collective nature of society during the 4th-3rd millennia BC has also been suggested in relation to 'sedentary' groups (Chesson, 2003). Perhaps in the case of Tell Banat, it was the interaction and negotiation of several lifecycles which was important. These would have included those of the living who constructed the mound, removed the remains from the primary burial place and then interred them elsewhere. By embedding a social collective, who were perhaps meant to be representative of the entire group within the actual monument construction, important statements of ownership could be made. Whether this practice was carried out by agriculturalists/pastoralists; sedentary/semi-nomadic, or as suggested in section 9.3 *multi-resource* groups, can be debated. It is interesting to note that this monument appears to broadly date to the early-mid 3rd millennium BC, concomitant with the appearance of walled settlements in areas, such as the Jordan plateau and Jaulan (e.g. Bourke, 1997: 99, Kochavi, 1989, Nigro, 2008: 9). Thus, as has been suggested in relation to dolmens (Kaptjin, 2009: 418), it may be that this structure represents merely another potential method for the material representation of social power, in this case based around the collective.

Having emphasized the 'collective' nature of the White Monument at Tell Banat, it is interesting to note that the collection of partially articulated individuals from Brak, dated to the LC3 period (McMahon and Oates, 2007: 155-163) have been interpreted as remains originating from a massacred local population and brought to the edge of the settlement and thrown away with other debris (Karsgaard and Sołtysiak, 2007: 163). In this case, despite the collective nature of the deposition, it has been suggested that this mass burial (for want of a better term) and destruction event at Brak can be related to processes of local aggrandisement and competition, which ultimately led to the destruction/burning of parts of the settlement during this period (Ur, 2010: 397-8). As the investigators acknowledge this collection of skeletal material may represent standard mortuary practice during this period (Karsgaard and Sołtysiak, 2007: 158, Ur, 2010: 397). This is an interesting hypothesis, especially given our current lack of knowledge of burial traditions in areas, such as the Jaulan during the Chalcolithic (Epstein, 1998). It raises the possibility of mortuary practices which leave limited archaeological traces, or are less likely to be discovered whilst our attention remains centred on the excavation of settlements and monuments. Such an interpretation would also fit well with the lack of infants found in the deposit at Brak, an observation seen in other burial contexts, particularly during the Chalcolithic [(e.g. Nagar and Eshed, 2001) see below for further discussion]. In addition, the lack of hands and feet and partially articulated nature of the remains may be associated with the material being exposed or left to be de-fleshed by scavengers [(Byers, 2005: 393) five stages of scavenging occur and can result in a mix of disarticulated and articulated remains]. The specific treatment of skulls at Brak strongly parallels evidence discussed above from Bab edh-Dhra, as well as 3rd millennium BC practices from the Euphrates (e.g. Jerablus Tahtani, Tomb 302). With these hypotheses in mind, it may be that rather than the expanding population and growth at Brak leading to the development of social hierarchies (Ur, 2010: 398), we are instead dealing with concepts of corporate identity, grounding the collective into the landscape. Furthermore, the burning mentioned at Brak and Hamoukar and interpreted as destruction events, may instead be linked to local social traditions, akin to that of the burning of LBK houses (e.g. Bradley, 1998:

46). Having said this, the possibility of violence does at least need to be acknowledged. If this is the case, rather than conceiving of such events as emerging from socially aggrandising individuals, we perhaps need to view this as corporate level of competition and social tension (contra Ur, 2010: 398).

Considering the disarticulated remains found within many of the Early Bronze Age tombs under discussion, the deliberate selection of human skeletal material is highly important. Within the EB I burials at Gadot, crania and long bones are predominant (Greenberg, 2001: 82), while the EB IB and early EB II charnel houses of Bab edh-Dhra show discrete piles of human bone and crania being placed up against the walls of the structures (Chesson, 1999: 149). Such selection of skeletal parts may be influenced by preservation following primary burial and the disarticulation process (e.g. Byers, 2005: 393, Duday, 2009: 89). However, yet again this custom does not suddenly emerge within the archaeological record. Earlier traditions of skull removal and plastering seen at sites such as Kfar HaHoresh during the PPNB (Goring-Morris, 2000: 107-115) show clear parallels and suggest the longevity of practices involved in the manipulation of the deceased. Such manipulations can be viewed as specific rituals designed to aid the continuation and transformation of the deceased through various stages of the rites of passage involved with death.

9.6.2. The ‘Individual’ within the burial sphere

Despite evidence dating to the 4th-3rd millennia BC for collective burial practices, primary inhumations and specialised treatment of individuals also played an important role during this period. It is interesting to note that in a review of Mesopotamian and Syrian burial practices both Akkerman and Schwartz (2003) and Pollock [(1999: 196-217) and see Figure 9.7.] offer no evidence or discussion of 4th millennium BC traditions. Such a gap highlights our limited knowledge of burial during this period, at least in the northern Levant. Having said this, as the example discussed above (Tell Brak) illustrates it may be that archaeologists have failed to recognise evidence for mortuary ritual during this period, due to the presence of pre-conceived perceptions. As outlined in Figure 9.7 evidence for burial in the 5th and 3rd millennium BC mainly derives from cemetery contexts. Instead it may be that, similar to the southern Levant, we have a much more diverse range of burial practices during the 4th millennium BC in the northern Levant (and Mesopotamia). These would have involved the selection, manipulation and movement of human remains across the landscape, with the placement of these remains in the ground being only one part in a series of complex rituals and not necessarily involving the use of discrete/sacred burial locales or monuments.

Period	Date	Sites	Type	Age	Location	Individuals per grave	References
5th millennium BC	Late Ubaid	Eridu, Susa, Ur etc.	Cemeteries	Adult, Children	New' ground in towns and mountain valleys unconnected to settlements	1-2, rarely more	after Pollock 1999: Table 8.1
5th millennium BC	Late Ubaid	Susa, Jaddarabad etc.	Other Sites	Children and infants (rarley adults)	Abanoned houses	1	after Pollock 1999: Table 8.1
3rd millennium BC	EDI	Kheit Qasim	Brick Tomb	Mostly adult	Cemeteries	usually 1, possibly 2-3	after Pollock 1999: Table 8.3
3rd millennium BC	EDI	Ahmad al-Hattu	Brick Tomb	Adult, infant (rarely child)	Cemeteries	1-2, but up to 11	after Pollock 1999: Table 8.3
3rd millennium BC	EDI-II	Kish 'Y' graves	Brick Platform under vault OR pit with brick coffin	unknown	Cemeteries	unknown	after Pollock 1999: Table 8.3
3rd millennium BC	JN(EDI)-ED II	Ur Jemdat Nasr cemetery	Earthern Pit	Adult, rarely child	Cemeteries	1, rarely 2-3	after Pollock 1999: Table 8.3; Crawford 2004: 141
3rd millennium BC	EDI-III	Al-Ubaid	Earthern Pit	unknown	Cemeteries	1, occasionally 2	after Pollock 1999: Table 8.3
3rd millennium BC	EDIII	Kish 'A' graves	Earthern Pit	Adult/child infant	Cemeteries	1, rarely 2	after Pollock 1999: Table 8.3
3rd millennium BC	EDIII	Ur Royal Cemetery	Earthern Pit, occasional brick and/or stone tomb	Adult, rarely child	Cemeteries	usually 1, but up to 75	after Pollock 1999: Table 8.3

Figure 9.7. Burial during the 5th-3rd millennia BC in Mesopotamia (after Pollock, 1999: Table 8.1, 8.3)

Despite these difficulties, the appearance of burial practices predominantly centred on the individual broadly correlate with the 3rd millennium BC (e.g. Philip, 2008: 193-196). This appears to be true for both the northern and southern Levant. Having said this, across large areas of the Levant (and in particular in the Southern Levant) burial practices, emphasising the collective rather than the individual, are still apparent throughout the 3rd millennium BC. It is argued that from EJ I-III Mesopotamia the beginnings of social stratification in burial assemblages can be seen (Akkermans and Schwartz, 2003: 223-4, Ur, 2010: 402). At this point evidence for individual inhumations becomes visible [see Figure 9.7 and (Amiran and Haas, 1973)] and there is possibly concomitant evidence for increased individual aggrandisement via objects such as maceheads [although see chapter 8.2.2.2. and 9.5. for further discussion of these artefacts, their possible variable dating and interpretation (Braemer *et al.*, 2004: 296)], as well and through the use of monumental architecture [e.g. Tell Banat Tomb 7 (Figure 9.8.) which consists of five chambers connected by passages which lead to a dromos and shaft (Porter, 2002: 157)]. The pinnacle of such individual differentiation can be seen at sites such as the Royal Tombs of Ur, where practices surrounding the burial of corpses have been linked to concepts of kingship and social differentiation (e.g. Cohen, 2005). As mentioned above, elements of corporate identity are still readily apparent across the region. The Bab edh Dhra charnel houses continue in use until the end of EB III (Schaub and Rast 1989: 23, 204). Moreover, whilst there is no evidence for the use of charnel houses in EB IV, tombs with multiple internments continue and in some cases contain both adult and child inhumations [e.g. Tomb A52 contained up to 7 individuals, identified as both adults and children (Schaub and Rast

1989: 474-5, Figures 271-3)]. Whilst identified as a 'rich' assemblage, Tomb 302 at Jerablus Tahtani yielded a collection of disarticulated remains, rather than single inhumations. Moreover, it has been argued that multiple successive tombs were still favoured in Palestine during EB II-III, with individual inhumations only becoming the predominant burial form in EB IV (Palumbo, 1990: 125, Philip, 1995: 152). Individual articulated inhumations are also known from earlier periods [e.g. Tel Te'o (Eisenberg *et al.*, 2001: 207)], although in this case it is interesting to note that the two individuals recovered from Chalcolithic deposits were found under settlement floors and were a 50 year old woman and a young child (see below for further discussion). Two further burials, comprising of a number of adult bones were found. These were interpreted as either secondary burials or primary burials, from which remains had been removed for burial elsewhere (ibid.).

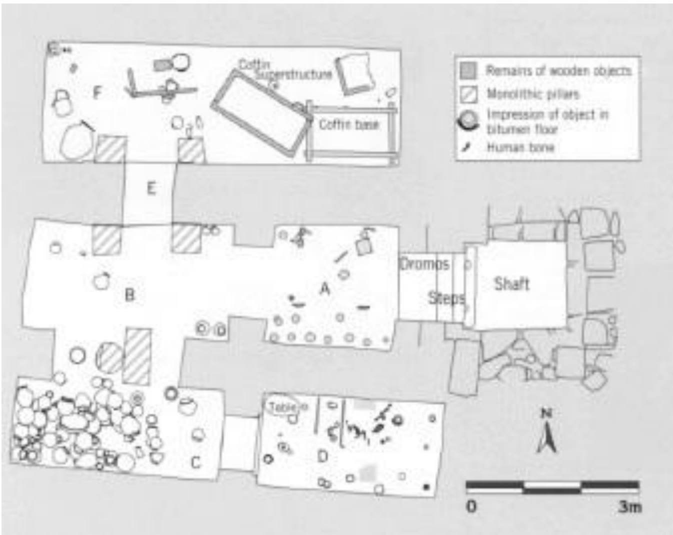


Figure 9.8. Tell Banat Tomb 7 (Porter, 2002: 156)

Examples of individual inhumations, especially those relating to the 4th-early 3rd millennia BC can often be distinguished in some manner. Moreover, given the above discussion it is clear that whilst individual burial is present in EB II-III contexts, this does not become the predominant burial form, at least in the Southern Levant, until the EB IV. It is also apparent that different socio-cultural groups may have been treated differently in relation to manipulation of the corpse during this period. Excavation of tumuli at the site of Umbashi revealed the presence of an infant whose hands were placed across its chest, with a small basalt stone within its mouth (Braemer *et al.*, 2004: 197). In many EBA contexts, children and infants appear to be treated in a contrasting manner to adults, such as in the case of the infant pithos burials at Jerablus Tahtini (Peltenburg *et al.*, 1995). Moreover, a study of Chalcolithic burial practices in the Southern Levant has lead to arguments for age-dependent mortuary traditions during this period (Nagar and Eshed, 2001). Nagar and Eshed (2001: 32) have suggested that the limited numbers of infants from cave, ossuary and tomb contexts dating to the Chalcolithic period suggest their lesser, rather than increased, significance within society. Their lesser importance can be debated. Indeed, given the examples presented by Nagar and Eshed (2001: Table 2) and the fact that infants (under the age of three) are only found in dwelling areas during this period, it could be that there was a greater emphasis of maintaining the relationship between the infant and the household. Despite debates concerning the significance and interpretation of this practice, it is clear that specific treatment based on age does exist. 2nd millennium BC texts referring to children merely as 'small people' suggest the differing conceptions concerning children which may have continued to have been held (Asher-Greve, 2002). There is a danger of over interpretation, with later texts being used to impose meaning on earlier contexts. However, the notion of androgyny throughout the life cycle is important, especially considering the disarticulated remains found within many 4th-3rd millennia BC mortuary contexts. Not only could such a transformation into an un-gendered collective embody the rites of passage involved in death, but they could also have allowed the deceased population to be re-integrated into new and different life cycles, changing the very conceptions of personhood surrounding them.

9.6.3. Manipulation and interaction between the living and deceased

Despite the contrasting explanations, chronology and spatial distributions of these differing burial methods, one aspect seen across the region is post-mortem manipulation of human remains. Ethnographic and archaeological examples for secondary rituals, such as disarticulation of bodies (Chesson, 1999, 2003, Schaub and Rast, 1989) and secondary funerary feasts which can take place several years later (De Coppet, 1981) are well known. Excavations at the Dhra cairn tombs revealed a number of enclosures, suggested to relate to mortuary practices involving open air excarnation (Clark, 1978/9). The identification of these enclosures has led investigators to suggest that the Nahal Mishmar crowns represent models of funerary excarnation enclosures (Bourke, 2008: 143). The broad range of enclosures, platforms, wall-lines, monoliths and monumental constructions found in association with dolmen and cairns throughout the Levant indicate the potential use of such features within extra-funerary activities [e.g. (Bradbury and Philip in press) and further references therein]. Yassine (1985: 64), in his study of the Damiyah dolmens, suggested that cists containing skeletal material may have been built below dolmen platforms prior to the construction of the monuments. Moreover, evidence for the primary and secondary burial of disarticulated remains, as well as possible burning of skeletal material, indicates a lengthy funerary process taking place (de Vreeze, 2010: 88-89). As such, it is clear that the events surrounding funerals were highly complex, offering the potential for the negotiation of identity, but also the marking of time and the life cycle of an individual and society. The employment of events such as feasting, at specific times of year, are seen within many cultures and even in modern western societies' traditional celebrations such as Christmas. These events provide a potential link between the deceased and living, whilst also highlighting the concept of death as a social event (De Coppet, 1981).

Direct evidence for feasting within the archaeological record is limited. However, the presence of vessels such as bowls, juglets and narrow-necked jugs within mortuary contexts (e.g. Bab edh-Dhra) do suggest their use in consumptive practices (e.g. Philip, 2008: 196). The Gadot tomb contained three ceramic stands, as well as a kernoi vessel (Greenberg 2001: 83-8), with the EBA tomb at Asherat also containing a range of cups and jars (Smithline, 2001: 56-8). Analysis of the wear patterns on pedestalled cups from Tomb 302 at Jerablus Tahtini has led to suggestions for their sole use within funerary feasting (Conroy and Campbell, 2006). While depictions and records of such funerary feasts or '*kipsu*' are not seen until the later 3rd millennium BC (ibid.) the presence of such vessels within the mortuary domain is undoubtedly important. Excavation of tumuli at Umbashi has revealed traces of burning alongside crushed remains of cooking pots [Tomb 317, Western Necropolis (Braemer *et al.*, 2004: 207)]. Moreover, the ellipsoid structures found on the edge of the western necropolis containing ceramics, ash and human remains [see chapter 3 for further discussion (Braemer *et al.*, 2004: 141)] could relate to post-mortem cremation practices and/or feasting events. The cemetery near Hacinebi Tepe revealed evidence for banqueting activity via the presence of pits containing stone sherds, flint tools, animal bones and braziers in dense ash deposits (Sertok and Ergec, 1999: 88-9). Discrete groups of human, animal bones and ceramics mixed within the encasing layers of the White Monument B at Tell Banat (Porter, 2002: 161, 164-5) could also be interpreted as indicative of mortuary feasting practices. Meanwhile, the skeletal material from Tell Brak (discussed above) was found in association with layers of occupational debris, with more than 30 sheep and 10 cattle being found in a disarticulated state above the human remains. Due to the largely complete assemblage, consistency of butchery patterns and lack of gnawing on the animal bones, it was suggested that these remains indicated that a feasting event had taken place over the dead (Weber, 2007: 167-168). The most unequivocal evidence for in-situ feasting derives from the LBA royal tomb at Qatna (Pfläzner, 2004: 20). Here it is argued that groups would have been able to feast with the dead in the tomb structure (ibid.), emphasizing the potential range of locations and social spheres in which feasting could take place. Funerary feasts not only allow the celebration of the life of the deceased and ancestors, but also the articulation of identity among the living, allowing the legitimisation and negotiation of power relations within society (Peltenburg, 1999: 429). Through such events, especially those taking place in the years following the funeral, a link between the living and the deceased could be maintained. This would have allowed the relationship of the two to be continually negotiated through marked events within their overlapping lifecycles.

This very brief overview of burial practice and traditions during the 4th-3rd millennia BC, in both 'optimal' and 'sub-optimal' zones, has demonstrated the broad parallels (e.g. evidence for post-mortem manipulation and funerary feasting) which are extant across this region. However, as with the other elements of society, economy and settlement discussed in this chapter, it has also emphasized the diversity in practice. A general process towards the aggrandisement of the individual through burial from the 4th-3rd millennia BC is visible. However, this cannot be seen occurring across all regions at the same time. Indeed, there is evidence for earlier 4th millennium BC single inhumations [e.g. Tel Teo (Eisenberg *et al.*, 2001 207)], as well as 3rd millennium BC collective internments [e.g. the White Monument at Tell Banat (Porter, 2002: 160-161) and Tomb 302 at Jerablus Tahtani (Peltenburg, 1999)]. In addition, complex practices involving certain groups (e.g. children/infants) were being carried out, although again this practice varies across time and space. Given the co-existing presence of pithos burials [not only containing children/infants but also adolescents/adults (Cooper, 2007: 59, Peltenburg *et al.*, 1995)], monumental 'elite' burials [e.g. Tomb 7 at Tell Banat (Porter, 2002: 158)] and collective monumental burials [e.g. Tomb 302 at Jerablus Tahtani (Peltenburg, 1999) and the White Monument at Tell Banat (Porter, 2002: 160-1)] all of which can be dated to the 3rd millennium BC, the complexity of burial practices, beliefs and traditions become apparent. Such differential burial forms cannot be easily explained by differences in cultural or ethnic identity [(contra Cooper, 2007) and see chapter 3 for critique of burial typology as indicative of socio-cultural groupings]. Instead, they are representative of simultaneous burial practices, indicating perhaps a belief in more than one conceptualisation of the body and society. We appear to be dealing with a variety of evidence from across the region for both the aggrandisement of the individual, as well as the promotion of the collective, particularly during the 3rd millennium BC. Thus, as Cooper (2006: 63) suggests we may be dealing with more than one form of socio-political structure during this period, with group organisation and affiliation varying not only from site to site, but also within sites. Such a hypothesis complements the arguments for *multi-resource* economies and identities outlined above. It highlights that during the 4th-3rd millennia BC a much more fluid, or at least potentially fluid, concept of identity, society and social belonging was in place. This does not negate processes of aggrandisement, hierarchy and individual differentiation, but rather suggests that groups and individuals may have had the potential to associate themselves with more than one social/cultural/ethnic or economic group as the need or desire arose.

9.7. Summary and Conclusions

This chapter has outlined and critiqued both current theory regarding social organisation and settlement, as well as subsistence, material culture and burial practice during the 4^{th}-3^{rd} millennia BC. In doing so it has highlighted a number of key elements (e.g. the emergence of the Mediterranean economy, domestication of pack animals, adoption of wheel-made ceramics and presence of corporate heterarchical identities) which may have facilitated and encouraged the expansion and intensification of settlement and activity into previously under-utilized regions during the 4^{th}-3^{rd} millennia BC. It has also illustrated that these developments were not adopted at the same time across the entire region. In some cases and in some areas they may have never been adopted at all. Following a period of dispersal and intensification (4^{th} millennium BC), this chapter has outlined the existence of a broad phase of agglomeration and expansion (early-mid 3^{rd} millennium BC), which again can be seen to have been differentially adopted across the area and facilitated by emerging concepts of group aggrandisement and power. Finally, a phase of specialisation and expansion (late 3^{rd} millennium BC) has been suggested and linked to the increasing role of the individual within society. This phase appears to be seen in some areas, whilst not in others. The impact of these developments upon the sub-optimal zones discussed in this thesis is highly varied. This variability has been pivotal for the critique of approaches which tend towards overarching explanations for social change (e.g. Levy, 1986b) and argue for the adoption of new developments as part of a 'package' (e.g. Sherratt, 1981; Ur, 2010: 389). They have offered a potential dataset through which it has been possible to re-assess evidence for society, economy and cosmology within the wider Levant during the 4^{th}-3^{rd} millennia BC. Bearing this in mind, this thesis will now turn to its final conclusion and consider the outcomes of this research in relation to the hypotheses set forth in chapter 1 and the potentials offered for further research.

CHAPTER 10: 'LANDSCAPES OF BURIAL?' FUTURE RESEARCH IN SUB-OPTIMAL LANDSCAPES

Introduction

This thesis aimed to examine the hitherto un-recognized remains from the Homs Basalt, preliminarily dated to the 4th-3rd millennia BC. It aimed to assess the role of an area which appeared to show limited evidence for 'tell settlement' during this period. Cairn monuments, to some extent, dominate this landscape. However, rather than considering such structures as a unique phenomenon, that could be studied in isolation, it has been argued that they need to be integrated into a wider understanding of the utilisation of the landscape during the past (chapters 6-9). Moreover, it has been suggested that these monuments are indicative of use over the longue dureé (see chapters 3-4). The principal limitation of this thesis is that it is primarily based upon survey, restricting conclusions and interpretations concerning the precise chronology of features within this region.

Research was based on a number of key hypotheses, developed in reaction to perceived gaps/flaws in our understanding of the 4th-3rd millennia BC Levant. The successful (or un-successful) application of these will now be assessed.

10.1 Aims and Objectives: Evaluating their success

10.1.1. Landscapes of Burial? The Homs Basalt, Syria in the 4th-3rd millennia BC

a). Can the Homs cairns be dated to the 4th-3rd millennia BC or alternatively do they represent multi-period and multi-functional activity? If the latter is correct how we can we develop a methodology to understand and interpret these monuments in relation to their utilisation in different historical contexts, as well as for different activities. b). What is the value of typological classifications of cairn monuments in the Homs NSA and wider Levant? As preliminary evidence collated during the applicants MA demonstrated, these monuments show considerable variety. Thus, it is possible to suggest that a methodology based on the recording of subtle morphological variations in relation to the wider landscape and potential chronological context of monuments is more appropriate for the interpretation of these structures.

As illustrated throughout, the cairns and burial structures of the Levant are just one fragment of a complex network of settlements, activity locales and landscapes. Chapters 3 and 6 demonstrated that typological assessments show limited potential within the Homs NSA and wider Levant region. In part this may be related to the broad palimpsest of activity, obscuring any patterns in morphology that may be visible across the area. However, as outlined in chapter 3 the potential for the same monuments to be interpreted and recorded using different terminologies, by different researchers, emphasizes the limitations of this approach. Moreover, as discussed in chapters 4, 6 and 9 it is clear that monuments can be altered over time, taking on new 'typologies', which change our interpretation of their use and construction. As such, without the broader context of society, subsistence, landscape and settlement, the role of these constructions cannot be understood and theorised. An assessment of the chronology and function of cairn monuments within the NSA has been limited due to the lack of surface material and poor preservation of remains. However, as outlined in Chapters 3, 4, 6 and 8 there is clear evidence, not only from the Homs NSA, but also elsewhere in the Levant, for the longevity of this monument form. These monuments had the potential to be used for a wide variety of functions over long periods of time. It is also no longer possible to assign these monuments strictly to the 4^{th}-3^{rd} millennia BC. Having said this, their initial widespread construction does appear to date to this period. Thus, in order to elucidate one fragment of the use and conceptualisation of cairns in the NSA, a decision to focus on the 4^{th}-3^{rd} millennia BC was made. The thesis has examined evidence for occupation and activity in four main case study regions: the Homs Basalt, Hauran, Jaulan and Negev (see chapters 5-9). In doing so it moved away from the study of cairn monuments to a much broader consideration of the nature of 4^{th}-3^{rd} millennia BC activity in sub-optimal landscapes. Due to this, whilst the initial section of the thesis (Chapters 3-4) was primarily focused on the chronology, distribution, morphology and interpretation of these monuments within the Levant, section 2 (Chapters 5-9) aimed to illustrate their broader context. The thesis has thus answered the ultimate question which it posed; *'Landscapes of Burial?'* As has been demonstrated, the cairns of the Homs region and indeed those throughout the Levant are not solely associated with burial practice. Chapters 3-4 illustrated that their utilisation and conceptualisation is much more multi-faceted. Whilst the density of cairn structures is a striking and visible element of the Homs NSA, it should not be seen as its defining factor. On the contrary, the region shows a wealth of evidence for archaeological activity, the initial burst of which can be dated to the 4^{th}-3^{rd} millennia BC (see chapters 5-7). The cairn monuments in this region are a palimpsest of human activity and whilst the majority may date to the main periods of occupation [(i.e. 4^{th}-3^{rd} millennia BC; Graeco-Roman) and see chapters 5-7] their use in intervening periods and even into the modern era cannot be overlooked.

10.1.2. The importance of connectivity in a sub-optimal landscape

c). The current models concerning core/periphery and the role of 'complex society' within arid/sub-optimal regions are inadequate and need to be refined, in light of developments in archaeology and associated disciplines over the past couple of decades. With this in mind, is it possible to develop new models and interpretations in order to fully assess and understand how 'sub-optimal' landscapes may have been utilised and conceptualised within the past?

Throughout this thesis the importance of employing theoretical frameworks and methodologies from different disciplines and geographical regions (e.g. Chesson, 2003, Chesson and Philip, 2003, Horden and Purcell, 2000, Ingold, 2000, Robb, 2007) has been highlighted. The adoption of such methodologies has facilitated a departure from traditional 'typological' approaches to monuments and settlements, instead advocating an analysis which examines the way in which structures may have been employed and understood within past societies. It has also allowed the author to consider how the use and understanding of features may have changed over time. As chapter 7 illustrated, utilising such concepts enabled the author to present one possible scenario of 4th-3rd millennia BC activity within the Homs NSA. This scenario, rather than characterising the region as a peripheral zone, emphasized its 'connectivity' and the role of both local and regional factors in facilitating and encouraging pulses of activity and settlement within the region. In chapters 8-9, the wider applicability of such discussions were considered via the presentation and critique of 4th-3rd millennia BC evidence from three comparator regions (Hauran, Jaulan and Negev) and also the wider Levant. It was argued that whilst traditional models of chiefdoms, social complexity and the origins of the urban state could be maintained whilst research remained focused within the core regions of Northern Syria and Mesopotamia, such models were not directly applicable to evidence within the Central and Southern Levant during the Chalcolithic-EBA. Indeed, even within the core regions, their utilisation and applicability could be questioned (see chapter 9). This thesis does not offer an absolute solution to the study and interpretation of the 4th-3rd millennia BC in the ancient Near East. However, it has instead illustrated the necessity of building an adaptable model which allows for discussions of groups, whose material remains show evidence of both aspects of *heterachy and hierarchy*, *group and individual aggrandisement*, *pastoralism and agriculture* and *sedentism and mobility*. By employing theory from a range of different disciplines, it has been illustrated that the areas discussed in this thesis cannot be interpreted as supporting either strictly sedentary agriculturalists or nomadic pastoralists. Indeed, it has been suggested that such designations may have had little relevance within the 4th-3rd millennia BC. Instead, the Hauran, Jaulan, Homs Basalt and to some extent the Negev during this period can be interpreted as sub-optimal zones, in which local populations pursued a *multi-resource* subsistence strategy geared towards the local environmental, socio-economic needs and local constraints and possibilities.

10.1.3. The role of sub-optimal landscapes in the 4th-3rd millennia BC

d). If we argue that the Homs region is not unique, but instead represents a uniquely preserved (until recently) area [e.g. a 'landscape of preservation' (Wilkinson 2003: 41-2)] what does comparison with other 'sub-optimal' study regions (see below) indicate? Can the Homs Basalt be seen to have unique aspects/elements or does it represent a typical example of the exploitation of a 'sub-optimal' region during the 4th-3rd millennia BC?

As Chapters 5-9 have demonstrated the Homs region is comparable with areas such as the Jaulan and Hauran and, to some degree, the Negev. However, this region cannot be viewed as a carbon copy of any of the above and instead represents one possible social, economic and cultural scenario during this period. The fact that recent projects (e.g. Braemer, 1984, 1988, 1991, 1993, Braemer, in press, Braemer *et al.*, 2004, Castel, 2007, Castel *et al.*, 2005, Castel *et al.*, 2004, Geyer *et al.*, 2007, Ibáñez *et al.*, 2004-2008, Rosen, 2002a, Rosen, in press) working in sub-optimal regions have uncovered such a wealth of settlement and activity, dating to a range of periods, is a testament to the importance of such landscapes during the past, as well as to the success of the projects themselves. In addition, such work emphasizes the fact that activity and occupation within the Levant does not solely consist of lowland 'tell' based settlement. Instead, the richness and diversity of the archaeological record needs to be highlighted. Non-tell based activity and occupation in sub-optimal, non-optimal and indeed optimal zones comprises a substantial percentage of the overall settlement universe. This has profound implications for our understanding of 4th-3rd millennia BC settlement patterns and reconstructions, which have tended to rely on the centrality of the 'tell' based settlement record (see chapter 9 for further discussion). This does not mean that during the 4th-3rd millennia BC tells and lowland based river valley sites did not make up a substantial or even predominant percentage of settlement. Rather, it argues that further texture is needed if we are to fully understand activity and society during this period.

This thesis has illustrated the variability of activity in such regions (Chapters 5-9). A distinct 'sub-optimal package' cannot be identified and it is clear that each region shows evidence of localised trajectories and traditions. Parallels do exist and point towards the integration of such regions into broader networks of 'connectivity'. Indeed, it has been argued that it is perhaps these broader networks which facilitated or encouraged expansion, intensification and exploitation [see chapters 7 and 9 (Philip and Bradbury, 2010)]. Contrary to previous arguments such 'connections' did not take the form of state, elite or hierarchical power networks (see chapter 9.1-2), and for the most part seem to have developed on a localised basis, with already existing populations taking advantage of the new opportunities offered or now available to them (see chapters 7-9). Whilst the lights appear to have been 'switched on' in many regions during the same broad period (e.g. 4th-3rd millennia BC), it is clear that the intensity and duration of occupation/activity varied greatly. Moreover, exploitation and occupation in regions, such as the Jaulan and Negev, is obvious prior to this period. Thus, rather than offering a model for life within a sub-optimal landscape during the 4th-3rd millennia BC, this thesis has demonstrated the complexity of regions outside the zones of lowland 'tell' settlement. In doing so it has challenged both the traditional dating of structures and monuments found within such areas (e.g. cairns) but also emphasized the importance of these regions for our broader understanding of society, culture and economy within the ancient Near East.

10.2. Methodological Problems

Considering the differing scales of data with which this thesis was working, relatively few methodological and technical problems were encountered. However, several posed serious issues (or avenues for further research) and are worth outlining in relation to the conclusions offered in Chapter 9. Firstly, the large scale bulldozing which is now taking place within the Homs Basalt has, in many cases, prevented a first-hand (by the author) assessment to be made of the remains and structures within the region. In other cases, the survey methodology has had to be adapted due to the destruction of cairns intended for survey (see chapter 5). Whilst spatial analyses of these remains are possible via 1960s Corona imagery, the corroboration of possible patterns using field data has not always been possible due to their destruction. As outlined in Chapter 3 whilst detailed records exist for some areas and some sites, others lack this resolution. Moreover, it is clear that much of the survey work carried out across the Levant has been biased by either specific research questions/focus e.g. period or morphology, rather than adopting a more holistic approach. As such projects, akin to the *Homs Regional Survey*, *Vanishing Landscapes* (Philip and Bradbury, 2010) and the *Archaeology to the west of Homs (Syria)* (Ibanez et al. 2004-8) are of vital importance for placing structures and features within their broader context. Primary data from the Homs Basalt is based on survey and as such, only represents a preliminary interpretation of activity within the region. Without excavation our understanding of the utilisation of structures and monuments, such as cairns, remains limited. At the Levant wide scale, the geo-correction of maps and data sources will have involved numerous errors. Moreover, analysis has been limited due to the nature of already existing data sources. For example the geological maps employed in Chapter 3 were not particularly useful for making an archaeological assessment of monument location. It is hoped that some of these inadequacies in data will be addressed in the future. Accessibility of resources has also been problematic, in some cases due to language (i.e. reports written in Hebrew) and in others due to the fact that material is as yet un-published. Much of the data in Chapter 8, and particularly in Chapter 8.1 will be subject to change in the next year or so. Despite these issues what this thesis has done is illustrate the potential for study in sub-optimal regions and some potential avenues for further research.

10.3 Future Research

10.3.1. Excavation

As mentioned above (10.2) the key to future research within the Homs NSA lies with excavation. Not only is such work pivotal at this time due to the wide scale destruction currently occurring within this landscape, it would also greatly add to our understanding of the use of sub-optimal regions during the past. At present possible excavations at enclosure sites and cairns within the Homs basalt are being considered.

Excavations would aim to address several issues raised by this thesis:

- *The collection of a large and stratified sample of material culture*: This would enable further analogies between material from this region and excavated sequences, such as that from Trench VIII Tell Nebi Mend to be made. Given the possible continuity in material culture throughout the late Chalcolithic-EBA in the Homs Basalt and other regions [see chapters 5, 7 and 8], an excavated sequence would allow subtle variations in typology to be discerned. Tying such a typological sequence into a radiocarbon framework would greatly facilitate our potential understanding of the material culture of this region.

- *Utilisation of the landscape*: Possible botanical and faunal samples would allow questions concerning environment, subsistence, seasonality and land-use to be posed. This could be analysed in light of current work compiling data from the Trench VIII Tell Nebi Mend sequence. The ability to compare data from neighbouring, yet environmentally and culturally distinct, regions would greatly add to our understanding of economy and society during the 4^{th}-3^{rd} millennia BC. It would also allow some of the interpretations presented in this thesis, concerning subsistence in the Homs Basalt, to be assessed.

- *Society, Materiality and connectivity*: A larger stratified sample of material would not only aid in the broader understanding of the chronology of this region, but would also allow more definitive statements to be made concerning the connectivity between this and other areas. Whilst at present, using survey data, it is possible to point towards potential material connections (and non-connections) between the Homs Basalt and both the southern and northern Levant, excavated data would allow quantifiable analyses to be made. In turn, this data might aid in broader discussions concerning the distribution of forms of material culture (i.e. holemouths) during the 4th-3rd millennia BC, thus impacting upon our interpretation of data from both survey and excavation in other regions.

10.3.2. Survey

In addition to the potential offered by excavations in the Homs Basalt, further survey and aerial reconnaissance is also timely. As mentioned in Chapter 8.3, a preliminary analysis of Google Earth imagery from the Jaulan has revealed the presence of structures, akin to those found within the Homs NSA. Due to the nature of these remains, as well as the inaccessibility of the region for non-Israeli archaeologists, the best method for the identification of these structures may be via high resolution satellite imagery. Whilst dating these monuments via satellite imagery analysis is not possible to a high degree of certainty, combining such research with the development of a broader understanding of the location of already known 4th-3rd millennia BC sites would reveal potential relationships and patterns of distribution. In addition, the identification of such features across the wider Levantine region would emphasize both the necessity of further field survey, as well as our present fragmentary understanding of settlement across this region.

Further satellite imagery analysis would also be designed to assess specific questions raised by this thesis. For example, are the gaps in the distribution of structures and cairns identified in Chapter 6, archaeological realities or do they relate to aspects of visibility and the limitations of desk-based assessment? Such work would not only add to our knowledge concerning the distribution of ancient settlement but would also have repercussions for our use of satellite imagery. For example, if it could be identified that features did exist within the upland areas to the west of the Homs Basalt, but could not be seen on some types of imagery [e.g. Corona (see chapter 6 for details)], this would have clear implications for the use of such imagery within other 'hilly' landscapes. Given that there are current projects compiling and rectifying Corona imagery for the whole Levant [Fragile Crescent Project; CAMEL Lab (http://oi.uchicago.edu/research/camel/about_remote.html, 2010: accessed December 1st 2010)] such findings would have profound implications and may suggest that other forms of satellite imagery need to employed more widely within archaeological investigations.

10.4. Summary and Conclusions

This chapter has illustrated the ways in which the main aims of this thesis have been either successfully attained, or the ways in which the difficulties faced during the thesis have been mediated. In doing so, it has attempted to demonstrate the necessity of further research concerning subsistence and dwelling practices within sub-optimal zones. Moreover, it has how a strategy of excavation and satellite imagery analysis would greatly enhance our knowledge of the utilisation of such zones across the Levant. As the thesis has demonstrated, without any attempt to understand sub-optimal zones and landscapes, which are not characterised by tell settlements, it is clear that we will only be understanding a fragment of the whole settlement universe of the 4th-3rd millennia BC.

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APPENDICES

VOLUME THREE: LIST OF APPENDICES

APPENDIX 8.1: LIST OF SITES DISCUSSED IN CHAPTER 8: SEE ATTACHED DVD AND PAGES 746-775

8.1.1. Jaulan and Hauran

8.1.2. Negev

APPENDIX 8.2: WORKING CALCULATIONS FOR CHAPTER 8: SEE ATTACHED DVD

8.2.1. Hauran

8.2.2. Jaulan

8.2.3. The Negev

APPENDIX 8.3: POTTERY FORMS FROM THE HAURAN, JAULAN AND NEGEV (CHALCOLITHIC-EB IV): SEE ATTACHED DVD

APPENDIX 8.4: JAULAN_GOOGLE-EARTH KML FILE: SEE ATTACHED DVD

APPENDIX 8.5: SUMMARY OF DISCUSSIONS FROM CHAPTER 8: PAGES 776-779

APPENDIX 1.1: GLOSSARY OF TERMS AND DATA SHEETS USED IN CHAPTER 1

Term	Definition
Cairn	Man made construction consisting of piles of stone (and earth). Structures can be associated with various features i.e. chambers/cists, monoliths. Their function varies across time and space (see Appendix 3.2. for further description and illustration).
DEM/DTM	Digital Elevation Model/Digital Terrain Model. A 20m DEM has been generated for the SHR region using map derived contour data.
Geo-correction	System within ArcGIS (or similar) whereby an image or data source with no co-ordinate system has to be geographically located and given a co-ordinate system. This can be done in a number of ways (see Appendix 1.2.).
Irregular Clustered Structures (ICS)	Clusters of irregular and sub-circular structures, these features vary in size, density and distribution. In general they are found in tight clusters, with individual structures varying in number from around a dozen, to clusters which contain up to 40 or more structures. The individual structures which form a cluster range between 10 to 20 m in diameter, and are usually quite tightly packed: there is little evidence to suggest that the structures were arranged around a central open area. While the overall impression is that the structures are laid-out an irregular manner, a number of do appear to show a loose linear arrangement (see Appendix 8.8. for a list and individual description of each of these sites).

Khirba (خرب ا)	Place name meaning '*Ruin*'. This place name is often found on maps in association with Roman/Islamic settlements in the Homs NSA. It is a good indicator of possible archaeological remains.
NSA	Northern Study Area, Homs Regional Survey Project. This region in actuality covers a section of Marls to the East of the River Orontes. However, it has been used within this thesis to refer to the area of Basalts within the SHR study region.
PDA	Personal Digital Assistant
Re-projection	This is a process whereby data in one co-ordinate system can be put into another co-ordinate system (see Appendix 1.2.). In order for data to be cross-comparable the same co-ordinate system has to be used for all material.
SHR	Homs Regional Survey Project
SRTM	Shuttle Radar Topography Mission. Using the data acquired through this mission the Homs SHR project has generated a 90m DEM. This is referred to throughout the thesis as the SRTM in order to differentiate it from the 20m DEM.
Tell (ذل ل)	Settlement Mound traditionally formed through the continual occupation of one locale over time and the construction, decay and re-construction of mud-brick architecture. These sites are often marked on maps. In the Homs NSA these mounds are created via basalt architecture and thus, the processes of decay and re-building are not exactly the same as those of mud-brick tells.
VL Project	Vanishing Landscape Project

WGS 1984 [World Geodetic System 1984 (http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm?TopicName=About_geographic_coordinate_systems)]	This is a geographic coordinate system (GCS) which uses a 3-D spherical surface to define locations on the earth. It is defined using an angular unit of measure, a prime meridian, and a datum (based on a spheroid).
WGS 1984 UTM [World Geodetic System 1984, Universal Transverse Mercator (http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm?TopicName=About_projected_coordinate_systems)]	This is a project co-ordinate system which is defined on a flat, two-dimensional surface. It has constant lengths, angles, and areas across the two dimensions. Projected systems are always based on geographic spheroids, in this case WGS 1984 (see above).

Database Records (data types recorded during survey-see Appendix 5.1 for details)

Geography and Identification and Survey Methodology				Cairn Measurements						Cairn Preservation	Landscape location			Cairn Morphology													
ID	Cluster Number	Category of Associated Feature (e.g. what is the cairn in proximity to?)	Pick-up attempted (0=No; 1=Yes)	Length	Length including boulders/tail	Width	Width including boulders/tail	Height	Area	Preservation	Hydrology	Topography	Current Landuse	Associated Archaeological Structures/Features (1=Yes; 0=No)	Cairns with associated features	Cairns without associated features	Pick-up attempted (0=No; 1=Yes)	Platform	Monoliths	Internal Chamber/Cists	External Paving	External Revetment	Enclosure Wall	Building Material	Number of Features	Re-Use	

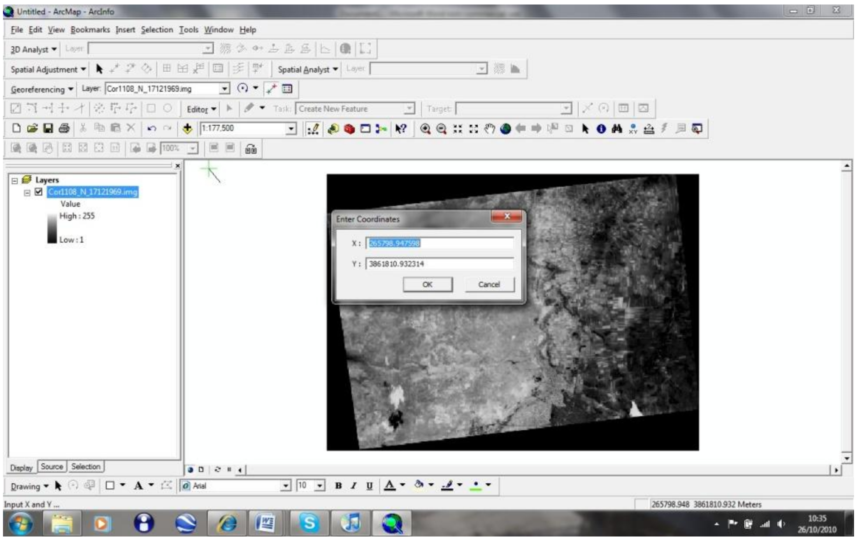
APPENDIX 1.2: METHODOLOGIES OF ANALYSIS

1.2.1. Co-ordinate Systems and GIS

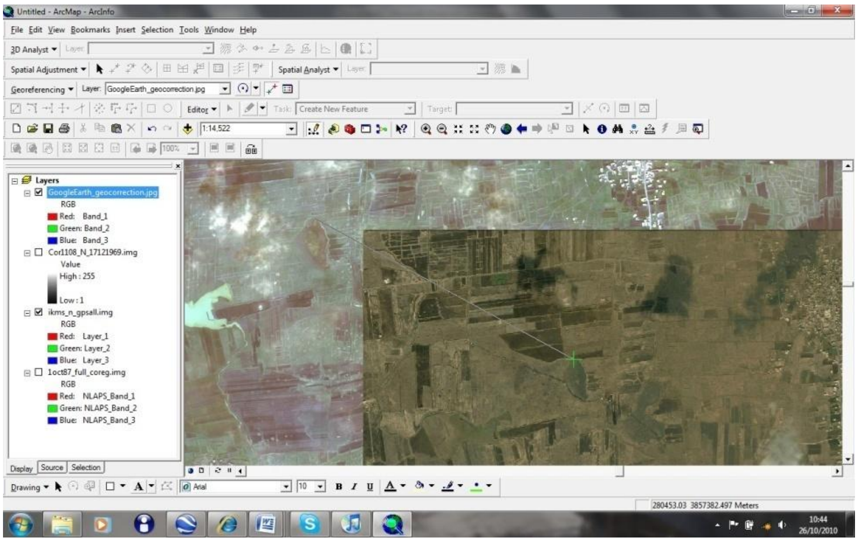
Geo-correction

Geo-correction within this thesis has been carried out in several ways.

1). Where the image/map has a co-ordinate system recorded, the local co-ordinates e.g. Lat/Long have been used as anchors, with known geographical properties. The image has then been given a co-ordinate system using these anchors.

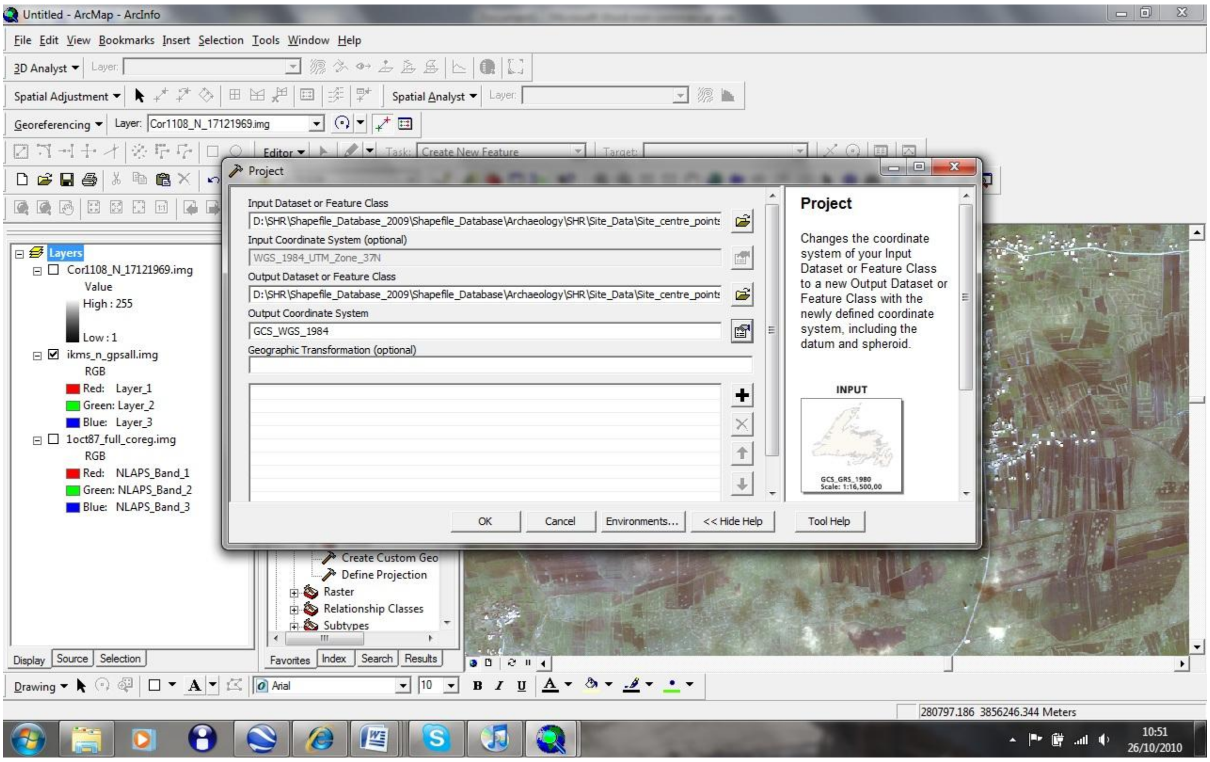


2). Where no pre-existing co-ordinate system is present e.g. Corona imagery, aerial photographs it has been necessary to use an image based geo-correction process. This involves trying to identify features on imagery/maps/data with an already defined co-ordinate system which can also be identified on the un-geo-corrected imagery. This process is subject to human error. However, it most cases imagery can be geo-corrected to a few metres error.



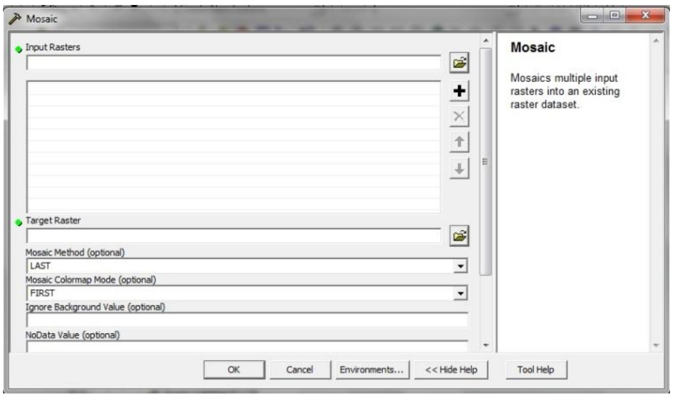
Re-projection

Re-projection has been carried out using the ArcGIS re-project function. This involves the computer changing the data between two co-ordinate systems, whose properties are already defined. Re-projection within this thesis has been predominantly used to convert data local co-ordinate systems into UTM. In addition, it has also been used to convert data from WGS 1984, which is a geographic co-ordinate system to WGS 1984 UTM, which is a projected co-ordinate system.



Mosaicing Rasters

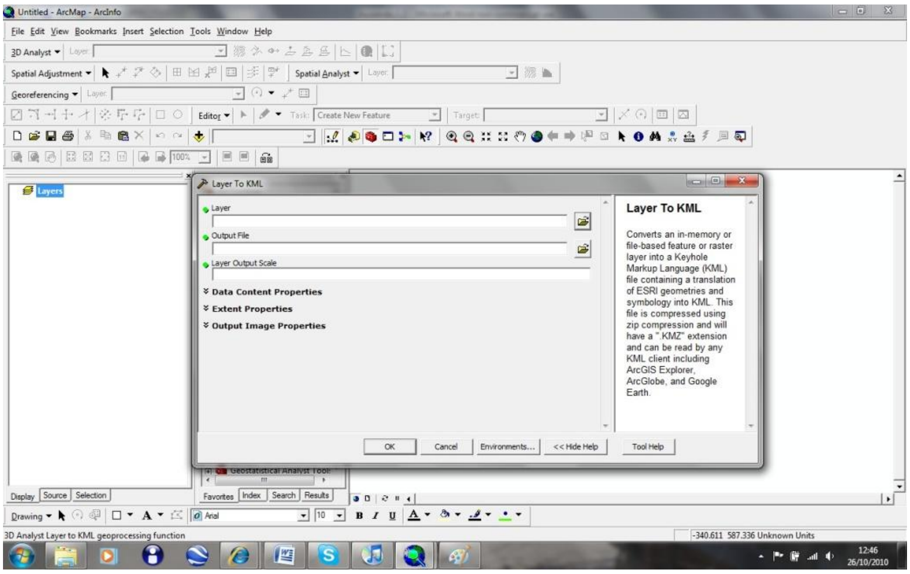
Rasters can be mosaiced using both ArcMap 9.3 and Erdas Imagine. The techniques employed by both programmes are similar and allow the user to choose the method of mosaicing and whether data values are blended or averaged etc. The intended use of the raster mosaic will influence what method is chosen. For example, if the raster is intended largely for display then blending is the preferable option as is produces a more even image. However, if quantified values are to be extracted then averaging in preferable. In the majority of cases, raster values have been extracted for individual scenes, rather than mosaiced data.



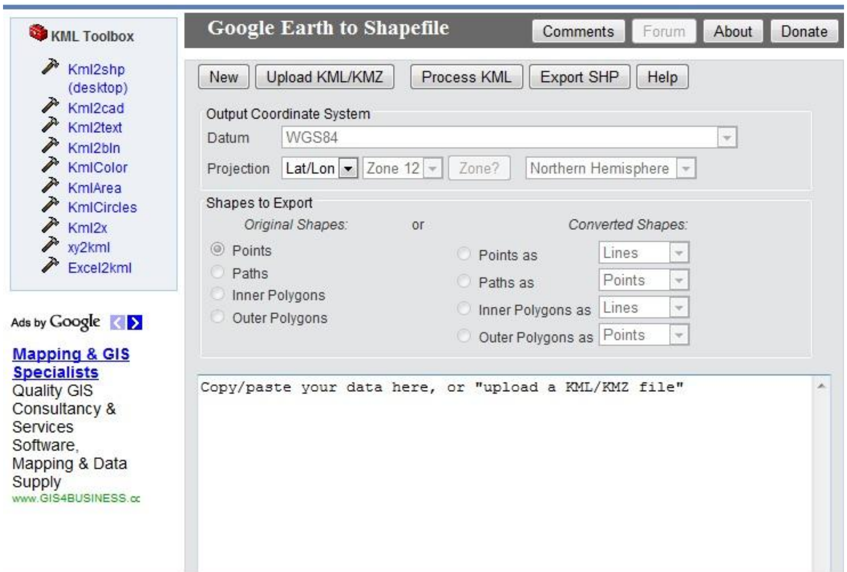
Kml conversion

Conversion of shapefiles to .kml data, compatible with GoogleEarth software took place in order to facilitate the viewing of site data in GoogleEarth. In addition, .kml generated in GoogleEarth also had to be converted to shapefile format, in order to facilitate their use in ArcGIS.

1. *Shapefile to .kml: This process was carried out in ArcGIS using the conversion toolbox, which allows you to select a layer/shapefile dataset and convert all the data into .kml format.*



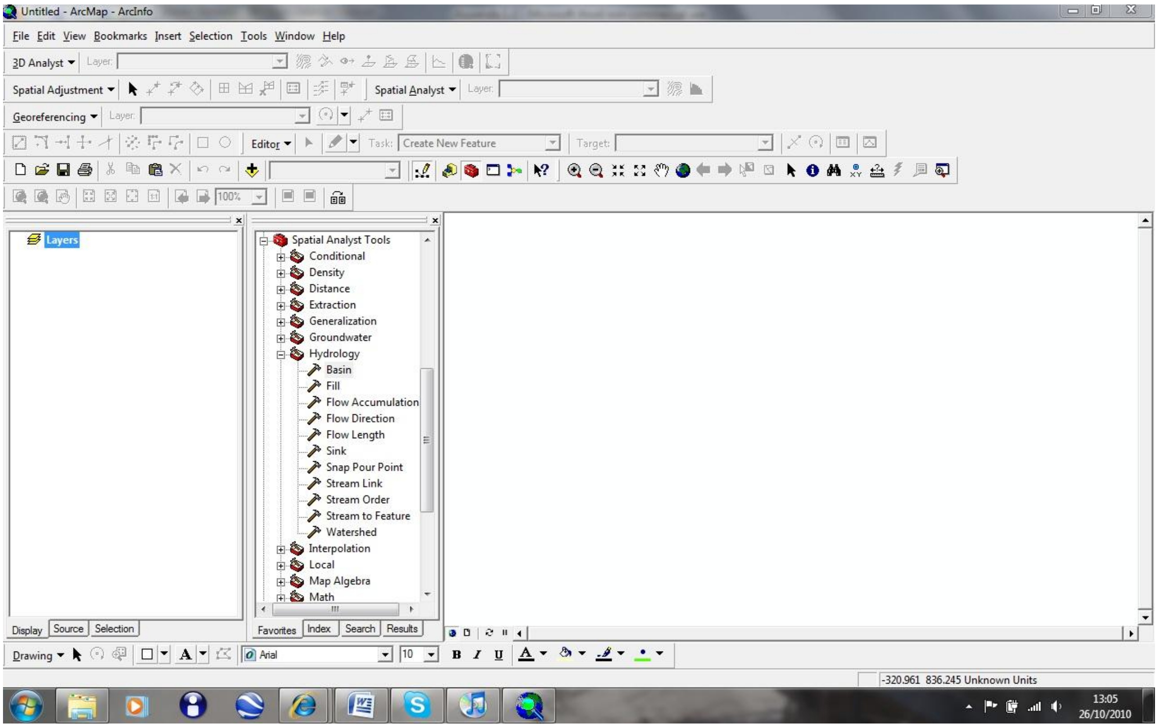
2. *.kml to shapefile: This process was carried out using online conversion software from http://www.zonums.com/online/kml2shp.php. The conversion requires you to upload saved .kml files and define the projection/co-ordinate system being used prior to converting files into shapefiles.*



1.2.2. Hydrology, Topography and Landscape Analysis Feature

Wadi and Water sink Generation

Using the already generated/downloaded DEM (20m) and SRTM (90m) data for the Homs and Levant region it has been possible to develop a model of theoretical water flow and sink areas across this region. The generation of these is *not based on actual water flow*, but instead represents areas of *likely water flow and collection* based on the local topography. This analysis was carried out in ArcGIS using the Spatial Analyst Hydrology toolbox. It involved several stages:



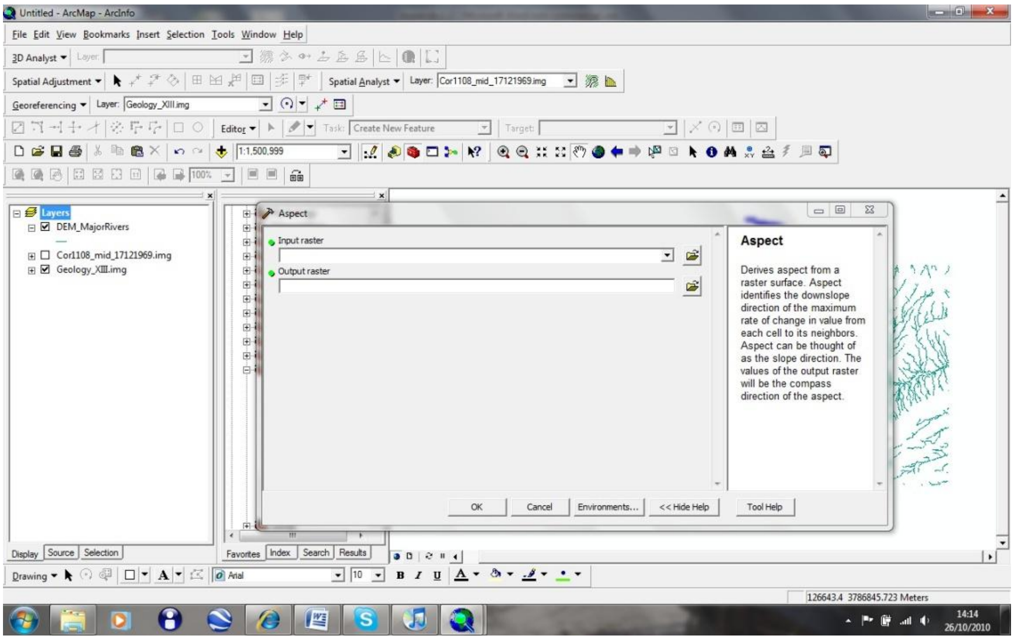
1. *SRTM/DEM Clip*: this process selects the area where you want to generate the wadis/water collection areas
2. *Sinks*: This process identifies ‘sinks’ e.g. potential areas where water would flow/collect within the DEM/SRTM
3. *Fill*: This process fills the above ‘sinks’ and prepares for the generation of potential flows of water within these sinks.
4. *Generate Flow Direction*: This process calculates based on the local topography the hypothetical flow of water across this landscape.
5. *Generate Flow Accumulation*: This process calculates using the above direction analysis, as well as the information derived from the sink and fill data of the hypothetical amount of water flowing through the system and can identify where water is likely to be accumulated and at what different levels this is going to occur throughout the system.
6. *Define Flow Accumulation*: This final stage allows the analyst to define the properties of the systems of water flow they are interested in. By using the *Raster Calculator* function it is possible to either include/exclude wadis with limited flow. This is something which can be carried out multiple times.

Elevation

Using the data which is embedded with a DEM/SRTM (i.e. height data) it has been possible to extract this data to the points of cairns within the Vanshing Landscape area. This data was compiled using the Extract to Point function within ArcMap (see below for further details).

Aspect

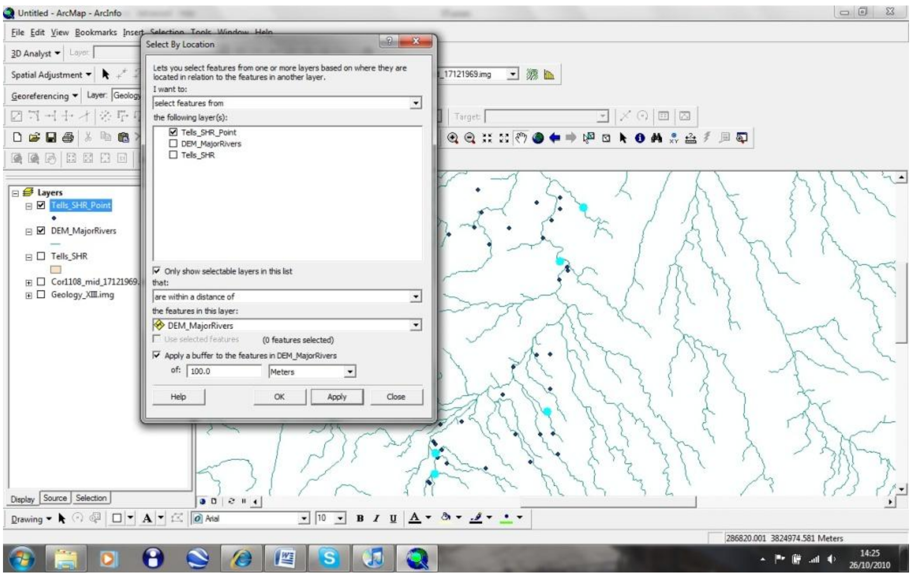
The aspect tool (Spatial Analyst surface toolbox) allows an assessment of the directionality (measured in degrees angle in ArcMap) of land using the input of DEM/SRTM data. This data is output as a raster from which site/locale specific data can then be extracted (see Appendix 7.1. for working tables).



1.2.3. Density and Distributions

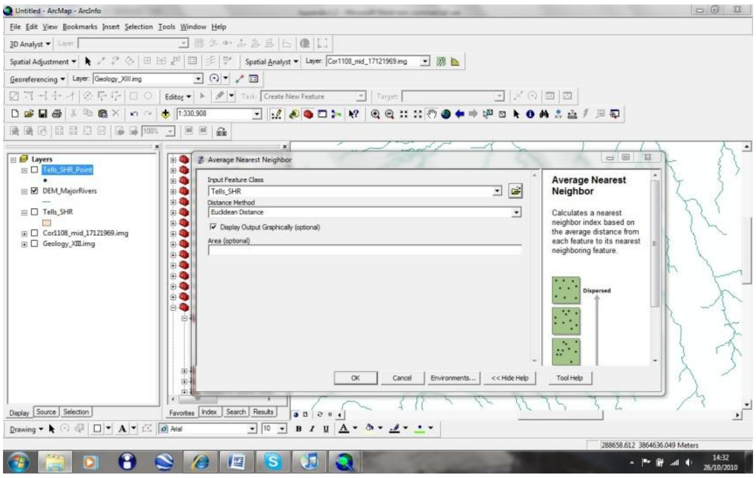
Buffering/Distance calculations

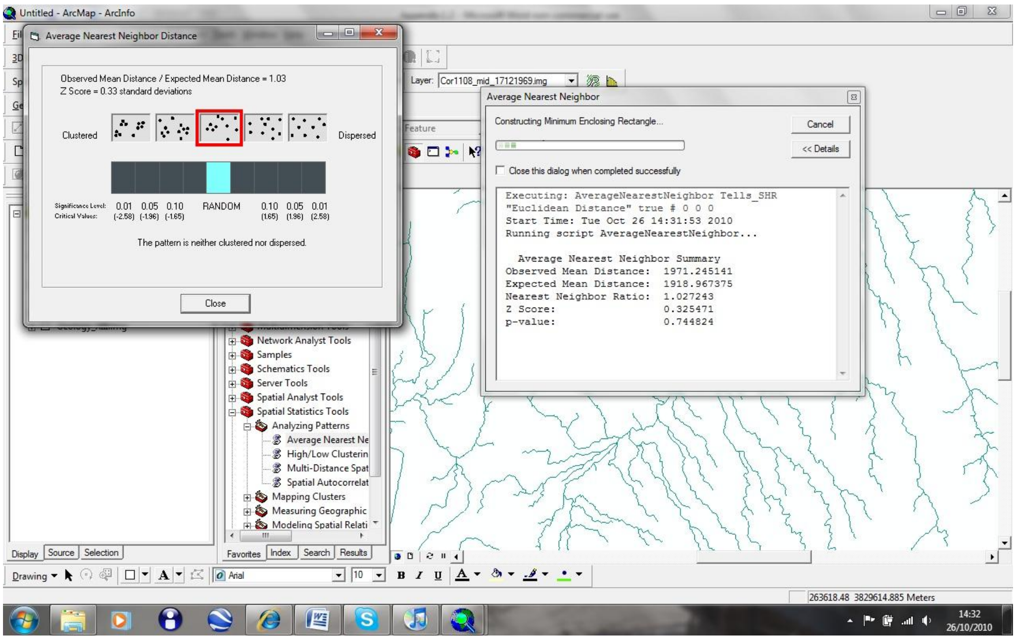
Simple calculations relating to the distances between digitised features can be carried out using the *Select by location* analysis feature in ArcMap 9.3. This allows you to select features around which to place a buffer e.g. 100m buffer around wadis. Another feature can then be selected e.g. Tells and the number of these features within the buffer area can then be calculated.



Nearest Neighbour Analysis

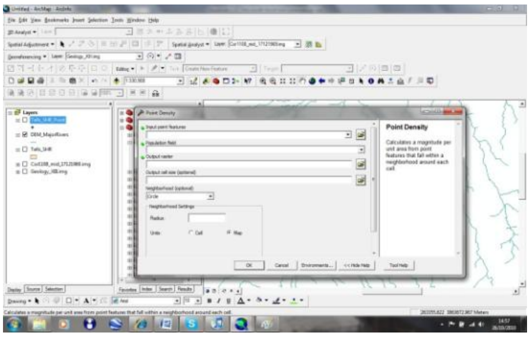
In order to evaluate the levels of clustering present within a dataset, a nearest neighbour analysis (Spatial Statistics Analyzing Patterns toolbox) can be used. This function in ArcMap 9.3 calculates the distance between each digitised feature e.g. each cairn within a shapefile layer and then assesses the level of clustering suggested by the average distance between each feature and its closest neighbouring features. A graphical depiction is then returned suggesting a value between dispersed and clustered.





Density Calculations

Basic density calculations can be carried out in ArcMap 9.3 using the Spatial Analyst Point density toolbox. This allows the density of a shapefile/feature group to be assessed within a pre-defined spatial unit/population area. For example there can be an assessment of the density of cairns per square kilometre.



This data can then be graphically represented as a raster, which allows centres of clustering to be visually identified.

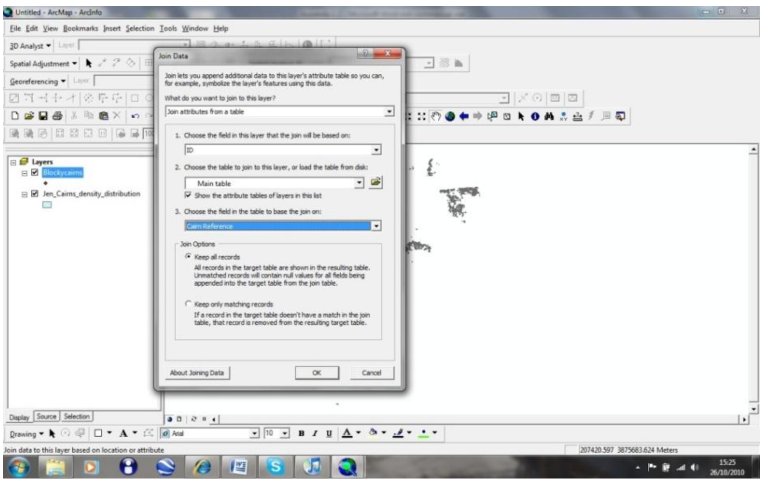
Density Display

Using a programme called Hawthe's Tools (http://www.spatialecology.com/htools/, 2010) it is possible to produce a visual display illustrating the density of a shapefile based on a defined spatial unit. In other words the tool, using the input of a shapefile [e.g. points representing cairns (see Chapter 6.2)] and a predefined spatial unit (e.g. 100x100m) counts the number of points within that unit and displays this information. In combination with the other density calculations discussed above it can be used to illustrate patterns in distribution and clustering.

1.2.4. Analysing Field Data in ArcGIS

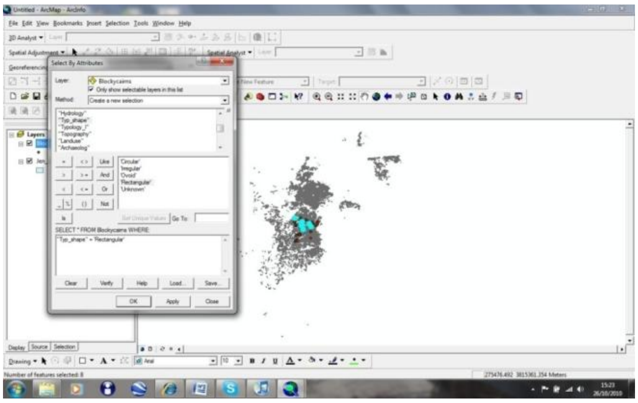
Database and ArcGIS joins

In order to allow an analysis of field data to be carried out in ArcMap, the data stored in the thesis's Access database had to be linked into ArcMap. This was carried out by joining data tables present in Access into ArcMap. Joins work on the basis of a matching unique ID being present in both the Access (field data) and shapefile (geographical information) data tables. In this case every cairn and site had a unique ID which was the same in both programmes and thus, joining data across was possible. By integrating the tables this data could then be search, filtered and analysed in ArcMap.



Selecting by Attributes

Using the integrated field data, specific attributes of cairns/sites can be selected using the Select by Attribute tool within ArcMap 9.3. Such analyses can also be carried out by performing queries within Access. However, their completion in ArcMap allows further analysis of patterns (in terms of location, distribution etc.) of sites/cairns with specific features to be carried out through a combined use of the *select by attributes* and *select by location* functions.



APPENDIX 2.1: SUMMARY OF ENVIRONMENTAL RECONSTRUCTIONS AND DATA

Reference	Methods Used	Source	Local/Regional	Period	Main Trends	Problems
(Alley *et al.*, 1997)	Greenland ice core proxies (GISP 2 cores) studied in order to assess the magnitude of the 8.2 ka event. Analysis of the gases trapped in ice below the surface. It is suggested that these gases are well mixed in the troposphere on a decadal time scale and thus are a good way of assessing changes in climate.	GISP 2 core	Regional	Holocene (focus in this article on period around 8000-8400 years ago)	* Main activity around 8.2ka, e.g. c.7500 ^{14}C BP suggests that a cold dry dusty event was associated with low methane levels. All of the variables tested seem to demonstrate this (see diagram). *Greater variation in terms of factors which might influence local conditions e.g. temperature and snow accumulation, rather than factors which show a more regional focus e.g. dust, wind-blown.	* Analysis of data uses averages of 50 year, although uncertainty over dating can range up to 75 years, thus using 50 year averages misleading. * Uncertainty over age of trapped gas in relation to ice, although argued that less than 75 years difference. * Number of variables have to be corrected for in dating samples e.g. changes in snow accumulation, local temperature variations, changes in atmospheric circulation of gases. * Whilst 8.2ka event suggested to be seen worldwide, this data seems to suggest that local factors also played a role. Thus, have to question to what extent any data be regional rather than locally indicative.
(Riehl, 2008, Riehl *et al.*, 2008, Riehl *et al.*, 2009)	Cross comparison between patterns seen from archaeobotanical data dating to EBA-MBA from across the Levant and North Syria. Archaeobotanical information compared against $\delta^{13}C$ data in plant remains which is suggested to be strongly indicative of water availability, based on carbon fractionation in C_3 plants.	Levant	Regional	EBA-MBA (c. 5000-3000 BP)	* Analysis based on hypothesis that $\delta^{13}C$ in grains is largely determined by the water availability during the grain filling period. On this basis it is assumed that modern conditions (40-50 days from anthesis to maturity between April-May) present in the past. * Decreasing $\delta^{13}C$ over time derives from environmental change, rather than localised anthropogenic action. Low $\delta^{13}C$ seen in MBA contexts indicates an arid/semi-arid environment.	* Publications from which data extracted of varying quality. As such cannot discuss small-scale variability, instead focus on broad trends. * Acknowledged that changing seasonality can effect stable isotope readings, possible that different seasonal cycles in past, in addition the assumption that grain filling periods for archaeological remains may be similar to modern species could be debated. * Analysis uses a MCM (macrophysical climate model) in order to test relationships between $\delta^{13}C$ and precipitation. These models are based on pre-determined climatic values. A study considering the different results obtained using both a MCM and modern values would be useful.

(Riehl, 2009)	138 sites examined in relation to archaeobotanical data. Mapped using GIS and analysed for patterns of crop selection and development in relation to climatic factors. Data derived from '*The Archaeobotanical Database of Eastern Mediterranean and Near Eastern Sites*' (Riehl and Kümmel 2005)	Levant and Northern Mesopotamia	Regional	EBA-Iron Age (c.5000-2500 cal BP)	* General trend towards increasing aridity from the Middle Holocene onwards. * Crop patterns show evidence for 4200 BP event seen elsewhere (e.g. Soreq Cave). * These patterns are shown by the choice to cultivate specific crops e.g. increase of barley (drought-resistant species) into MBA with a decrease in water demanding crops e.g. flax and garden pea. * In part, this can be related to cultural reasons (e.g. shift from flax to wool production), however, also argued that this could be climatically linked.	* The quality of the archaeobotanical data is highly varied, as such often proportions of crop taxa rather than ubiquity has been used and as figures show this has a profound effect on distribution maps, thus many of these results can be misleading. * Despite Riehl suggesting that there are a complex range of factors influencing the cultivation of different crop taxa her analysis only really works if the research maintains that climate is the strongest factor influencing agricultural change, this is not necessarily the case. *The work is partly influenced by which sites are included in the analysis, site preservation and traditions of excavation * Whilst there does seem to be a decline in certain taxa e.g. pea from EBA to MBA interesting to note that sites where pea taxa found in both EBA and MBA do not seem to show any change in ubiquity between the two periods.
(Stevens *et al.*, 2001)	Calcareous sediments samples via 2 cores (63J and 70B) respectively in 1963 and 1970, studied via stable isotope analysis with radiocarbon dates being used from the original 1960s and 1970s data.	Lake Zeribar, Iran	Local	c. 10.5ka-4ka BP	* Examination of δ18O values suggested to shows number of trends: 1) c.10.5-6.5ka BP increased moisture and temperature (humid) suggested by δ18O values (low values) argued that winter snows probably providing moisture. 2) c.6.5ka-4.5ka higher δ18O values suggest summer precipitation with a moisture climate than phase 1. Rapid shifts can be seen in the δ13C data, which are interpreted as being representative of variations in lake productivity, possibly linked to lake level and presence of spring precipitation. * Drier conditions are suggested from c.4ka BP onwards.	* Whilst the use of dates from 1960s/70s should not necessarily be seen as indicative of problems, they should be treated with caution. *The sequences for 70B and 63B do not match and given the above point it is not clear whether this relates to dating problems, or possibly variation in preservation, accumulation zones etc. * The authors note the presence of variations in the sediment lithology relating to vegetation change-due to this it is not clear whether this relationship is indicative of vegetation changing in relation to lithology, or alternatively the preservation of the pollen changing.

(Cullen *et al.*, 2000)	Core from Gulf of Oman studied and dated via 8 AMS Radiocarbon dates (AMS dates from foraminifera). Argued important location due to being in the Mesopotamian dust trajectory	Gulf of Oman	Regional	Specific focus on period 4025-3625 BP	* Argued that eolian deposits in core at depth c. 56-70cm correspond to 400 year period c. 4025+/- 150 years when see onset of arid conditions in Mesopotamia. * Suggested on the basis of radiogenic analysis of eolian deposit that derived as dust from Mesopotamia.	* The core highlights the importance of local trajectories i.e. The authors mention that the stable isotope information from Soreq Cave shows a decrease in precipitation between 4200-4000BP however this event is not seen in this core from the isotope data despite the investigators suggesting that an arid event can be detected in the eolian deposits. *Considering an association is being made between a 400 year arid event identified in the core and the collapse of the Akkadian civilisation, an error range of +/- 150 years might suggest that further evidence is needed before such conclusions can be made. * The id of the eolian deposit deriving from Mesopotamia is also misleading, as the sample appears to fall in the middle of groups samples from Mesopotamia, the Indus and the Zagros region (Cullen et al. 2000: Figure 3).

(Pustovoytov *et al.*, 2007b, Riehl *et al.*, 2008) and for dating methods described in detail see (Pustovoytov *et al.*, 2007a)	Examination of the stable isotopic data in thin pedogenic carbonate lamina ($\delta^{13}C$ and $\delta^{18}O$). Samples taken from archaeological contexts, with the youngest, middle and oldest microlayers all being examined and values compared against fresh primary limestone outcrops and also the $\delta^{13}C$ of soil carbon from 5 profiles at the site. Pedogenic carbonate dated via ^{14}C AMS.	Göbekli Tepe	Local	10,000-4,000 cal BP	* Two main phases of pedogenic carbonate formation visible 1). 10,000-6,000 BP-inverse relationship between $\delta^{18}O$ and $\delta^{13}C$, decrease in $\delta^{13}C$ coincides with increase in δ18O suggesting trend towards higher temperatures; 2). 6,000-4,000 BP-increased rate of coating growth with both $\delta^{18}O$ and $\delta^{13}C$ reaching maximum values, more humid and warmer than period 1. * After c. 4000 BP secondary accumulation of pedogenic carbonate appears to cease suggesting a shift towards a more arid climate. * General trends towards more positive $\delta^{13}C$ values from the first half of the Holocene suggests that the patterns identified via the pedogenic carbonate coatings relate to palaeoclimate, rather than more localised anthropogenic shifts	* Methods based on hypothesis that pedogenic carbonate forms in equilibrium with soil CO_2 and thus suitable for ^{14}C dating; however, re-introduction and dead carbon and re-crystallisation (during pedogenesis) can be a problem. Also have to deal with varying rates of carbonate accumulation during soil formation (Postovoytov et al. 2007: 318-9). * In part these are resolved as good correlation between ages of oldest lamina from different stones within a single context, as well as decreasing RC ages (as would be expected) from oldest to youngest lamina. * As authors admit there are still variations which may be related to differences in the timings of carbonate accumulation and accumulation rates which on the basis of the small number of RC dates cannot be solved at present.
(Tskuda in van Zeist and Bottema, 1991)	Examination of pollen sequences from Ghab Valley. This article focuses on the earlier parts of the sequence (e.g. Late glacial-early Holocene sections)	Ghab Valley	Local/Regional	c.16,250-7400 BP	* This article focuses on earlier part of the sequence suggesting that a number of LPAZ can be identified. * Zone A1 (16,250 +/- 200 BP) is characterised by AP; with a mix of oak as well as grasses and other herbs; * Zone A2 is suggested to correlate in part with Younger Dryas with a rapid rise and then decline in oak values (no RC dates); * Zone B (9770 +/- 200 and 7700 +/- 200 BP) characterised by oscillating oak values and increasing presence of other tree species; * Zone C1 (7400 +/- 160 BP) sharp increase in other trees	* See Meadows for general debates concerning the dating of this sequence; however, it should be noted that the close correlation in trends between Yasuda et al. (2000) Ghab core and this core are apparent, suggesting that whilst dating may be problematic the general trends discussed in this article are present in more than one sequence. * Possible problems might exist due to the varying lithology of the sequence.

(Yasuda *et al.*, 2000)	Re-examination of Ghab pollen sequence in reference to the impacts of anthropogenic deforestation. In this article, nine ^{14}C dates obtained from freshwater molluscs suggest that no real correction is needed, as the Younger Dryas is identified by a peak in Chenopodiaceae, which correctly linked with the dates for this phase.	Ghab Valley	Local	c.14,820 BP-present day	* A number of anthropogenic influenced trends are suggested: 1). Large scale anthropogenic deforestation as early as c. 9000 ^{14}C BP, with decline in oak values and pine forest replacing this (clearly visible in pollen diagram and also associated with a peak in charcoal remains); 2). Suggested clearance of Lebanese cedars from c. 7770 ^{14}C BP with continued clearance through to c.4900 BP by which time almost completely disappeared; 3). Expanse of olive groves at the expense of deciduous forest	* See Meadows record for more general debates concerning validity of this data * Whilst a number of trends e.g. decline in oak and peak of pine can be easily seen in pollen sequence, the decline of Lebanese cedar is perhaps less visible, with this decline appearing to have lasted over a fairly lengthy period of time and starting earlier than the 7,000 BP suggested. However, it is interesting to note that a peak in olive pollen can be seen at the same time as the evidence for cedar within the sequence appears to have disappeared. *It should also be noted that the lithology of the sequence is varied possibly suggesting that differential preservation of species may be an issue.
(Fiorentino and Caracuta, 2008, Fiorentino *et al.*, 2008)	21 samples of botanical material from Qatna studied, 11 processed by AMS to obtain both ^{14}C dates and $\delta^{13}C$, whilst 10 of the $\delta^{13}C$ of the remains examined via IRMS Mass spectrometry in order to make direct analysis of $\delta^{13}C$ in carbon dioxide by burning the sample.	Qatna	Local and suggested by authors Regional	Samples collected from Late Chalcolithic-EB IV contexts	* Suggested that several important regional events could be identified 1) c.2800 BC suggested that increasing aridity, which matches well with evidence at Soreq Cave and 2). Suggested that $\delta^{13}C$ value rapidly decreases suggesting a wet period, followed by a long period of aridity. * Links are made between political and military events at sites such as Ebla, Mari, Kish and Akkad and climatic events	* Considering only 21 samples taken from Qatna very premature to associate with possible trends at Soreq Cave, especially as the dating of the later is problematic. * Only $\delta^{13}C$ has been considered, however, what about $\delta^{18}O$? * The dates calculated for the samples range between cal. 2670 BC-2450 BC and 1610-1390 BC, ranges of 220 years, which is substantial especially if attempts are being made to correlate climatic events with military, political and destruction events.
(Valsecchi, 2008)	Pollen examined from lacustrine laminated deposits found in N and W ditch at Qatna, 1 in particular (549 cm long) selected for study as good preservation and thick organic layers. 4 AMS ^{14}C dates (3 from macroscopic charcoal; 1 from plant macrofossil).	Qatna	Local	c.2000-800 cal BC (oldest ^{14}C date c. 1980 cal BC and youngest c. 800 cal BC; top 100cm of core not appropriate for sampling as represented a local soil profile)	* Number of LPAZ's identified, with the possible species present in the local area being considered. Of main interest here are the trends seen in earlier half of the core. * Presence of Juniper species in core (c.1950-1700 cal BC-species very easily corroded) suggests the presence of a local juniper forest with the decrease in this species and increase in quercus pollen c.1680 cal BC suggesting that a more open landscape was developing i.e. intensifying land use in this area.	* Good example of how a pollen sequence can be used to construct local vegetational histories for sites-however important to be aware of how localised these patterns are e.g. are the results indicative of land use directly around the Tell or slightly further afield? Only method of assessing this is to compare multiple cores from different parts of the surrounding region, as well as assessing the macro-fossil remains from the site itself.

(Verheyden *et al.*, 2008)	Examination of calcite speleothems based on the collection of 150 samples along a 121.5cm stalagmite for stable isotope analysis and dating via ^{230}Th ages.	Jeita Cave, Lebanon	Local/Regional	11.9-1.1 kya	*Several main phases were identified 1). A high δ^{18}O between period of 11.9-11.2ka interpreted as associated with phase of aridity (YD), with the end of this phase covering around 500 years, suggested that slightly higher δ^{13}C values linked to soil activity; 2). 10.0-5.8ka characterised by low δ^{13}C and δ^{18}O values, although during this period there appears to have been a humid period 9.2ka-6.5ka which is linked to particularly high growth rates in the stalagmite- this phase is characterised by warm and wet conditions with a marked increase in δ^{18}O suggesting a trend towards drier conditions c.6ka; 3). 5.8-1.1ka relatively dry conditions characterised by high δ^{18}O and δ^{13}C values, however a relatively wetter period recorded between c. 4-3ka based on a slight decrease in δ^{18}O and δ^{13}C values .	*The nature of the stalagmite deposit alters throughout the sequence with growth rates varying between 0.50-2.62 cm per 100 years. Whilst no clear hiatus in growth was detected these changes may suggest that a range of different factors were involved in their deposition, rather than just those shown by the δ^{18}O and δ^{13}C. *Suggested that this caves location in Mediterranean zone and relatively close geographical location to Soreq Cave etc suggests that common isotopic response would be seen at these caves to climate and associated vegetation change-however this does not fully account for the impact of local factors in such records. Full analysis of this has not taken place. *Rather than fully considering the implications of a possible wetter phase recorded c.4.0-3.0ka (contradicting the arid 4.2ka event) the investigators suggest that the low time resolution of this stalagmite and short term nature of this event means that the 4.2ka event is merely not recorded in this sequence.

(Hajar *et al.*, 2008)	540cm long core extracted from Aammiq wetland, pollen analysis carried out at 200 year intervals. Pollen %s based on total pollen sum, with comparisons being made against modern pollen surface samples. 4 ^{14}C dates obtained from core ranging from Late Pleistocene-Holocene	Aammiq wetland, Southern Beka'a Valley	Local	c. 10, 360-3575 BP	* 8 different LPAZs identified on basis of NAP/AP ratio [number of species e.g. Aquatic and cyperaceae, junaceae (grasses) left out of pollen sum as argued they would skew results as they dominate the local landscape]. * From pollen sequence in terms of AP, *Quercus ceris* dominant species, although some variability in its presence throughout sequence. * Authors suggest correlation between high %s of fungal spores (Zones 3, 5, 7 and 9) and high %s of Cichorioideae, however, this is not always clear (compare patterns c.10, 000 BP to those around 3000 BP). * Increased levels of sedimentation from c. 6-3.4ka BP suggested to relate to more arid conditions.	* As investigators suggest there are problems with the radiocarbon calibrations due to the dates being affected by hard water effects. Suggested by authors that this was solved via the use of a linear interpolation (age/depth model) however has to be questioned whether 4 dates are really enough to carry out this method * The association between fungal spores and Cichorioideae not always clear (compare patterns c.10, 000 BP to those around 3000 BP). * Argument that limited anthropogenic impact over early Holocene can be debated as appears from sequence that whilst there is variation in the %s of Quercus ceris, there does appear to be a general decline in this species from c. 8000 BP onwards. * No consideration is given to anthropogenic activity such as clearance, leading to increased surface erosion.
(Willcox, 1999)	Examination of charcoal from three sites (Umbashi; Sia and Bosra) in Southern Syria, with it being suggested that this analysis can aid in interpretations of what being grown/brought onto each site. Basic climatic interpretations also made.	Southern Syria	Local	EBA-present (Umbashi 3100-1400 BC (EBA-MBA); Sia 200-400AD (Roman); Bosra 1400-1900 AD (Islamic))	* It is assumed that nearest ligneous species to site would have been used for fuel, possibly being imported to site in tundra/steppe landscape, although Wilcox acknowledges that certain species may have been used preferentially for different functions, some of which more likely to be imported/transported. * Basic comparison against presence/absence of different species across the sites. * EBA forest steppe taxa (quercus, pistacia and amygdalus) were found at Umbashi and are only now found in more continental upland, possibly indicating that these species were closer to Umbashi than at present.	* Major problems with the assumptions and patterns suggested, primarily due to the fact that these results are based on only three sites, which have differential levels of sampling, excavation and study. *Lack of consideration of the different environmental locations, as well as potentially the different functions of these sites. * Differential preservation/recovery of certain species, as well as across the different sites is not considered.

(Baruch and Bottema, 1999)	Examination of 16m long pollen core from Lake Hula. Dated via the use of 4 ^{14}C dates prepared from the lower section and covering final stages of Pleistocene and early Holocene	Hula Valley	Local/Regional	16,000ka-present	* On the basis of fluctuations in %s of AP, the diagram was divided into 10 main pollen zones covering the last 16,000 years. * Zones 1-2 (c.16, 000-10.500 BP) are marked by severe fluctuation from arid to humid stage with the later part of period (c.14,500-11,000BP) being the most humid period from sequence. * Zone 3 is suggested to represent the Young Dryas event (c.10.500-9,500 BP). * Within the Early Holocene a gradual return to a moister climate is hypothesised, with anthropogenic effects being seen in sequence from c.7000 BP. These are characterised by a marked by rise in olive pollen. Anthropogenic effects appear to substantially increase towards the end of Holocene.	* The authors suggest that there appears to be a mismatch between evidence from the Ghab and Hula sequence with the Holocene. Two possibilities suggesting to deal with this 1). The climatic patterns differed within the northern and southern Levant; 2). Dating inconsistencies- suggested that very un-likely dating errors in the Hula sequence, but error in the Ghab sequence highly possible (see Meadows for further discussion).
(Meadows, 2005)	Re-assessment of Hula and Ghab pollen sequences based on correction of the ^{14}C dates. Argued that both the Hula and Ghab subject to large reservoir effects. Based on modern ^{14}C content of water in Huleh Basin it is suggested by Meadows that the radiocarbon results for these sequences require a correction of up to 5500 ^{14}C years.	Hula and Ghab Valley	Local/Regional	c.18,000-7,000 BP	* Suggested that if we can identify these trends and in particular the Younger Dryas event across different pollen sequences then can correct for poor radiocarbon ages. * Rather than identifying the Younger Dryas with Phase 3 in the Hula sequence, it should be identified with Phase 1 and the dates corrected accordingly (Meadows 2005: 631-2). * Equally, Ghab sequence requires correction and consideration. Meadows suggests that features characteristic of the Younger Dryas can be seen at base of the Ghab sequence, suggesting that dates need to be corrected at a magnitude of around 4.5ka.	* This hypothesis is based upon concept that Younger Dryas seen across whole of region at the same time and reflected in exactly same trends-this is not necessarily the case. Whilst Younger Dryas does seem to be a regional event (e.g. Nikleswski and van Zeist 1970; Baruch and Bottema 1991) it is possible to suggest that the timing, or at least the local features of this event may be slightly different due to micro-environmental differences across the Levantine region. * If we have to correct the ^{14}C dates for sequences by thousands of years, to what extent are these cores/sequences valuable for study. This is particularly pertinent if, as Meadows suggests, reservoir effects in relation to the Ghab sequence varied over time.

(Horowitz, 1974)	Comparison of two cores from the Hula Valley (U.P. 6-NW margin of lacustrine marl and 15-middle of marshes north of Hula Lake, mainly peat) against 2 cores from Haifa Bay (Y.N. 1568 and 1560)	Hula Valley, Haifa Bay and Central Negev	Local (author suggests Regional)	c. 6ka-present	* The interpretation of these sources is based on an assumption that an increase in the arboreal pollen curve suggests either higher rainfall, or rainfall being more evenly distributed across the year. * Two major periods when climate appears to have been more humid than that of the present day; 1). Until c. 2400 BC, followed by a drier phase and again between 2100-1100 BC. These phases were characterised by a humid climate with the natural vegetation belt being further south than present and with higher values of plants, such as olives being seen in the natural maquis.	* Horowitz acknowledges that comparing all the records is very difficult-partly due to differing accumulation rates of sediments i.e. offshore vs. lacustrine. * Horowitz suggests similar rate of accumulation (despite marl and peat respectively) can be seen in Hula Valley; however this is based on only 2 RC dates from UP 15. * The comparison between the different cores (Horowitz 1974: Figure 4) takes place on the basis of trends in the AP/NAP curve, rather than actual values/%. As such very little is discussed or considered concerning the local impact of different environments/anthropogenic activities upon this trend. * Whilst general trends may be similar, variation in timing is clearly apparent.
(Schwab *et al.*, 2004)	Pollen from lacustrine deposits studied via three cores extracted from the southern central part of lake under a water depth of 1.5m. 18 AMS ^{14}C dates for sequence (2 from terrestrial wood; 4 from bulk sediment and 12 from aquatic macroests). Pollen taxa compared against pollen reference collection of plants of Near East and focus upon local anthropogenic influences on vegetational history.	Birkat Ram, Jaulan	Local	6.5ka-present (earlier core published by Ehrlich and Singer 1976 dated to 40ka-present but very poor dating control-not discussed here)	* Pollen zones in this analysis were based on changes in AP/NAP ratio, as well as changes in individual species, such as Quercus and Olea. * Schwab et al. suggest that the first significant human impact can be seen in the sequence c. 4500 cal BC via a decline in deciduous oak, as well as increased olea counts. * Olive cultivation at this time. * From this time there appears to be an un-interrupted sequence of human impact throughout the Chalcolithic-EBA. * By MBA/LBA-Iron Age a regeneration of the deciduous oak forest, with the next clear evidence of anthropogenic influence being seen in the Hellenistic period.	* Lack of terrestrial macrofossils in the sequence meant that most of the available ^{14}C dates obtained from lacustrine macrofossil, leading to obvious problems in terms of the reservoir effect-this is acknowledged by the authors and it is suggested that dates have to be treated with caution. * Focus on anthropogenic influences on vegetation, with little discussion concerning the role that climatic factors may have played in these developments (however see Neumann et al. 2006 for further analysis).

(Neumann *et al.*, 2007)	Re-examination of the Birkat Ram pollen sequence (see Schwab et al. 2004) to consider the relationship between vegetational history and climate within this region. Botanical climatological transfer used, with 9 taxa being chosen for analysis. Study based on used of likelihood statistics (e.g. Bayesian method) trying to correlate species with climatic factors.	Birkat Ram, Jaulan	Local	6.5ka-present	* Rather than making direct associations between plant species and climatic conditions, this study uses the likelihood of the presence of a particular species/pattern of species development being linked with specific temperatures and moisture availability. * It suggests that the analysis shows no distinctive climate change over the past 6,500 years within this region. * Argued that this is due to the orograpy of the region with Mount Hermon serving as a buffer to large scale fluctuations in precipitation in particular. * Strong fluctuations in pollen composition result of anthropogenic factors, rather than climatological ones. * Variability in winter precipitation, however, model suggests that region has always been influenced by a Mediterranean climate.	* Argued that climate and associated sub-systems are stochastic e.g. attributes and variables are not always directly or clearly related to one another-as such always hard to reconstruct climate from botanical data (Neumann et al. 2006: 332)-suggested this problem is partly mitigated by the use of random variables in the statistical analysis. * Problems in the correction of ^{14}C dates as wood and aquatic remains being used (see Schwab et al. 2004). * Not all taxa (only 9) included in analysis, argued by authors that the model is robust enough not to demonstrate misleading reconstructions-however this is not demonstrated, as such we just have to take the word of investigators.
(Baruch, 1986, 1990)	Examination of pollen sequence from Lake Tiberias. Pollen core examined spans around last 5300 years.	Lake Tiberias	Local	Late Holocene (focus in this article on period between c.3500 BC- AD 1800)	* Subzone XI is largely dominated by forest vegetation species in the 4th millennium BC, with a high % of arboreal pollen (45-60%). * The middle of subzone XI shows rapidly declining oak values and a corresponding increase in olive values. * Clearance and cultivation activities at the end of 3rd millennium BC are suggested to be marked by increase in oak.	* Species level plant taxa cannot be identified; however, general vegetational histories from this core can be identified. * Suggested that Tiberias appears to have a localised pollen sequence, however, despite this Baruch still attempts to suggest that due to the mismatch in dating between the increase in olive values from the Lake Tiberias and Dead Sea (e.g. En Gedi) cores that the later must be wrong.

(Frumkin *et al.*, 2008)	Extraction of calcite speleothems from lava tube. Stalactite lamina dated via U-Th method to marine isotope stage 7 and 5/4 (c.250ka-70ka). The uppermost lamina could not be dated due to high levels of detrital Th. No speleothems are present for the latest Plesitocene and Holocene.	Khsheifa Cave, Jawa basalt plateau, Northern Jordan	Local/Regional	c.250ka-70ka (no speleothems post this date)	For a summary of findings of this article see (Frumkin et al. 2008: 358). However, of relevance for this thesis is the fact that no speleothems were deposited during the latest Pleistocene and Holocene in this cave, which could attributed to a deficit of water.	* No clear statement can be made concerning climate in this region during the Holocene due to lack of speleothems dating to this period from the sequence.
(Bar-Matthews *et al.*, 1997)	Seven fossil speleothems examined from Soreq Cave. The samples ranged between 60-250mm in diameter and came from various locations within the cave. This article focuses on 25-7ka.	Soreq Cave	Local and Regional	25 ka to present	The main hypothesis of this article suggests that conditions up until around 7000 ka were very different from present conditions. * 10-7,000BP lowest δ^{18}O and highest δ^{13}C-suggested high rainfall e.g. 1000mm and flooding events leading to stripping of soil cover * Post-7000ka-very little discussion in this article.	* Suggested by authors that whilst dating via ^{230} Th-U method can aid in understanding of broad rainfall evolution and vegetation characteristics, less of an understanding of patterns of temperature. *Clear problems with dating, not all lamina were dated meaning that un-dated lamina and speleothems were interpreted on the basis of similar patterns identified from the dated examples. This leads to obvious circular examples. Moreover the dates all show very large error ranges (Bar Matthews et al. 1997: Table 1).
(Bar-Matthews *et al.*, 1998)	Seven fossil speleothems examined. The samples ranged between 60-250mm in diameter and came from various locations within the cave. This article focuses on Middle Holocene (e.g. 6500 BP-present)	Soreq Cave	Local and Regional	6500BP to present	Two main phases of importance for this work identified: 1). 6,500-5,400 BP Lowest δ^{18}O and variable δ^{13}C values, suggested to be very wet period (Chalcolithic-EB) 2). 5,400-3,500 BP very climatically variable acute δ^{18}O andδ^{13}C variations lowest values of both appear c. 4,200 BP which last around 200 years.	* Based on assumptions that speleothems being deposited during temperatures similar to those of present day, this is not necessarily the case. * The relationship between the δ^{18}O and δ^{13}C are not fully explained e.g. why do high δ^{18}O and low δ^{13}C, as well as low δ^{18}O and low δ^{13}C occur together.

(Bar-Matthews *et al.*, 1999)	Seven fossil speleothems examined from Soreq Cave. The samples ranged between 60-250mm in diameter and came from various locations within the cave. This article introduces refined dates for the sequence, 14 speleothems selected and 53 additional age determinations via Thermal Ionization Mass Spectrometry (TIMS)	Soreq Cave	Local and Regional	25ka-present	* 8.5ka-7ka is seen as phase of very low $\delta^{18}O$ values, suggesting very wet conditions. * A sharp decline in $\delta^{13}C$ and slight increase in $\delta^{18}O$ towards the end of this period is interpreted as a sudden cooling event. * After c.7ka values similar to present day conditions are suggested, although the investigators argue that c. 4.1-4.0ka a significant increase in $\delta^{18}O$ can be seen. * It should be noted that rather than using calibrated BP dates similarly to Bar-Matthews et al. 1998, Bar-Matthews et al. 1999 reverts to using un-calibrated ka. years ago.	*No clear relationship defined between the two variables, $\delta^{18}O$ and $\delta^{13}C$. It is suggested that the coupling of low δ18O and high δ13C could be related to increase host rock weathering and heavy rainstorms, leading to rapid movement of water through cave systems meaning equilibrium with soil CO2 not reached. However this does not fully explain why we also see high δ18O and high δ18O values associated. * Both charts presented in the publication are difficult to interpret, larger horizontal scales needed to detect co-existing changes. * The authors suggest that the Younger Dryas event at Soreq Cave appears to have lasted c. 1800 years, rather than the 1300 years suggested by ice cores. This either suggests localised trends or may indicate dating issues.
(Frumkin *et al.*, 1994)	Botanical samples found in alluvial clastic sediments in Mount Sedom Cave studies in order to reconstruct local climate and fluctuating levels of Lake Lisan/Dead Sea from differing levels of plant remains. Dating was carried out using wood samples found in association with other botanical remains	Mount Sedom	Local	c. 7100-200 BP	*Argued that Sedom Cave particularly responsive to flow regime and base level changes of the Dead Sea and Lake Lisan. * Suggested that alluvial clastic sediments washed into cave probably more indicative species found in local area as lack of wind contamination relating to pollen. * Based on levels of species in clastic sediments suggested that c. 5500-4300 BP moist period in sequence decreased with vegetation cover	* Not clear whether macro-fossils, especially those washed in to cave would be more representative than pollen studies from cave. * Equally not clear how the macro-fossils relate to climate very difficult to reconstruct based on the limited evidence present.

(Frumkin, 2009)	Subfossil Tamarix tree trunk (RC dated to c.2265-1930 BC) from Mount Sedom Cave sampled across 109 points for $\delta^{13}C$ and $\delta^{15}N$. This was compared and calibrated against values extracted from a modern tamarix shrub.	Mount Sedom	Local	c. 3810-3580 BP (c. 2265-1930 BC)	* $\delta^{13}C$ generally lower than those of the present day, suggesting that during the Holocene there was a climate wetter than today. * General pattern of drying over the course of this period (visible via both $\delta^{13}C$ (increasing values) and $\delta^{15}N$ (increasing values)) * Considerable fluctuations are visible, such as the intense drying event c.2020 BC. * Finally, a prolonged multi-year drought is suggested to have caused the death of the tree c. 1930 BC	* Based on tamarix tree swept into salt caves by runoff, thus not sure where this tree originally located and how localised factors may have affected it. *Based on recalculation of BP dates using Oxcal 4.0 and 99.7% accuracy fairly sizeable error ranges for dates extracted from tamarix e.g. max 659 years
(Goodfriend, 1990)	Study of stable carbon isotopes of organic matter in land snail shells derived from the diet of snails. Forty samples taken from road cuts, wadi cuts, pits and trenches, as well as archaeological excavations. Dating of shell carbonate by ^{14}C analysis.	Central Negev	Local	c.6700-2800 BP	* The author suggests that out of 40 samples, 13 un-ambiguous $\delta^{18}O$ results- acknowledged as a small number of samples. * Goodfriend argues that the line between C_4 and C_3 during c.6700-2800 BP was c. 20km further south that present position, indicating moister a climate further south. * Indicated by the presence of lower $\delta^{18}O$ values declining from c.10,000 BP and then increasing slowly from c. 6000 BP to present.	* Very small number of samples
(Goodfriend, 1991)	Study of stable carbon isotopes of organic matter in land snail shells derived from the diet of snails. Forty samples taken from road cuts, wadi cuts, pits and trenches as well as archaeological excavations. Dating of shell carbonate by ^{14}C analysis. Assessment of the $\delta^{18}O$ of land snail shells, in order to consider changes in the origins of rain bearing systems	Central Negev	Regional	c.6700-2800 BP (this article 6500-6000 yr BP)	* Suggested over the course of Holocene long term trends in $\delta^{18}O$ values suggest changes in isotopic composition of rainfall, thus changing origins. * Goodfriend argues that a 2‰ shift cannot relate to fluctuations in temperature. Instead, suggested that on the basis of $\delta^{18}O$ values the rain bearing systems, during the period of study, were originating from the SW and then moving into central Negev.	* Author acknowledges that impossible to assess short term changes (decadal/yearly) changes via $\delta^{18}O$ due to the inaccuracy of radiocarbon dates-however argued that the fact that this variation in $\delta^{18}O$ not seen in rodent middens (where you would expect to get most variation over short term) suggests short term stability of this variability.

APPENDIX 2.2: METHODS AND DATA FOR ENVIRONMENTAL RECONSTRUCTION

Data was collated from (Branch *et al.*, 2005, Wilkinson and Stevens, 2003)

Methods	Scale	Dating	Scale and Materials	Interpretation and Representation	Preservation
Stable Isotope Analysis ($^{234}U/^{238}U$; $\delta^{18}O/\delta^{13}C$; $^{87}Sr/^{86}Sr$)	Regional and Local	Various absolute dating technique e.g. ^{14}C.	Isotope analysis can be carried out on various materials e.g. Speleothems (cave deposits); faunal and floral material (snail shells; corals; carbonised plant remains; animal bones); pedogenic carbonate coatings	Analysis of stable isotopes is based on the assumption that the relationships between modern variables and isotope levels are the same as those within the past	Various preservation issues dependent on sampled material
Pollen records	Regional and Local	Relative stratigraphic dating of pollen sequences and possible ^{14}C	99% of pollen grains are deposited within 1km of their source (Brasier 1980; Branch et al. 2005: 68). However, there are a range of factors which can influence this including: 1). species of pollen; 2). local vegetation 3). size of basin	Issues can arise concerning the anthropogenic versus climatic influences e.g. whether the changes in the pollen sequence can be seen as the result of changing climate or human intervention or both.	Change in lithology or soil make-up in stratigraphical sequence can have effect upon the preservation of pollen and thus influence the patterns being seen in the record.
Diatoms, Ostracods and Foraminifera (Water depth and salinity)	Regional	Radiocarbon dating methods can be used to date sediment sequences from which species found	Whilst, all three can be used to interpret regional sea level changes and thus climatic fluctuations, the scale of such developments and the origins of such changes are not always clear.	Sea level alterations can be influenced by wide range of factors including both ***eustatic*** and ***isostatic*** processes, both of which can be related to climate changes.	***1). Diatoms*** cannot live in water depth exceeding 200m; 2). ***Foraminifera*** can live in exceedingly deep water, however their species distribution is highly dependent on sea surface temperature and thus, can be used to reconstruct past marine climate-also valuable source material for oxygen isotope studies; 3). ***Ostracods*** similar environment to Foraminifera although also affected by salinity
Macrofossils and plant impressions	Local	Where macrofossils are present range of chronometric dating techniques can be used (e.g. ^{14}C)	Plant remains can either be autochthonous (e.g. plants growing locally) or allochthonous (e.g. growing at an unknown distance from location of deposition).	The identification of ancient plant species is dependent upon their comparison with modern examples. .	Such remains only survive under certain conditions of charring, waterlogging etc. and the degree to which these conditions are met will influence their level of preservation and the ease of their identification. Different species have different patterns of preservation.

APPENDIX 2.3: GLOSSARY OF TERMS

Term	Category	Description
Saharo-Arabian	Geographical Area	Referring to Sinai-Arabian peninsula region can be used interchangeably with Saharo-Sindian as a vegetation zone
Aeolian	Geomorphology	Wind blown sediments
Arensols	Geomorphology	Sandy soils, derived from either in-situ weathering of quartz-rich sediments/rock and/or soils developed via recent deposition of sandy material such as dune or beach formation.
Basaltic proto-grumsol	Geomorphology	Humic rich soil derived in part from the weathering of underlying basalt bedrock
Cambisols	Geomorphology	Soils with substantial secondary accumulation of lime, often occurring in relation to calcareous parent material. These soils are widespread in arid and semi-arid locations across the world.
Dalwe basalt	Geomorphology	Local term for Lower Pleistocene basalt flows characterised by flat ellipsoidal lava cones found predominantly in the Central Jaulan and dated to c. 1.61-0.68ma (Mor 1993: 228).
En Zivan basalt	Geomorphology	Upper Pleistocene basalt flows, youngest within this sequence (c.0.32-0.12ma) (Mor 1993: 230).
Fluvisols	Geomorphology	Generically young soils in alluvial deposits, they occur within riverine, lacustrine and marine deposits (despite name suggesting otherwise).
Grumsol	Geomorphology	Black humic rich soil
Hamadas	Geomorphology	Barren rocky desert plateaus/highlands very little sand cover
Lithosols	Geomorphology	Very shallow soils, over continous rock or soils which are very stony or gravelly (also known as leptosols).
Luvisols	Geomorphology	Soils with a higher clay content in the sub-soil than the top-soil as a result of pedogenic processess.
Pale redzinas	Geomorphology	Pale interzonal soil found in grassy or previously grassy areas in regions of moderate rainfall
Pedogenic carbonate formation	Geomorphology	Carbonate formed through the processes responsible for soil development
Redzinas	Geomorphology	Relatively thin soil formed on calcareous rock, consisting predominantly of humic material
Reg soils	Geomorphology	Soils covering vast stony desert plain
Regosols	Geomorphology	Weakly developed mineral soils in unconsolidated sediments, which are not very shallow or very rich in gravels.
Solonchaks	Geomorphology	Soils with strong saline content during some point of the year. Found only in coastal or arid/semi-arid regions.
Vertisols	Geomorphology	Churning, heavy clay content soils, with large proportion of swelling clay. The soils form deep cracks throughout sequence when they dry-out.
Xeric	Geomorphology	Of, characterized by or adapted to a extremely dry climate
Xerosols	Geomorphology	Desert soil, only found in the most climatically arid regions.
Yermosols	Geomorphology	Desert soil, only found in the most climatically arid regions.
Belad el-Kameh	Toponym	Land of Wheat
Ram	Toponym/Local Name	Seasonal lake

Sharqia	Toponym/Local Name	Local arabic term for strong easterly wind storms which effect Jaulan region
Wa'ar	Toponym	A rugged stony region 'The Wild'
Wadi	Toponym/Local Name	Seasonal water channel
Local Pollen Assemblage Zones (LPAZ)	Pollen Sequence	Pollen sequence developed by identifying zones of dominant species. In particular the relationship between NAP and AP.
Amydgalus (Amygdalus communis L.)	Vegetation Type	Cultivated almond, thrives in Mediterranean-type climate although can endure drier conditions than olives and grapes. One of the earliest fruit crops to be domesticated (Zohary and Hopf 2000: 185, 187).
Anabasetea	Vegetation Type	Desert scrubland species native to areas, such as the Negev desert.
Arboreal Pollen (AP)	Vegetation Type	Tree species
Artemesia	Vegetation Type	Large and diverse genus of plants characterised by hardy shrubs and herbs
Chenoleetum arabicae	Vegetation Type	Native to Saharo-Sindian region, dwarf shrubs with small succulent leaves, shallow root systems, and high osmotic values.
Dhura (Durra)	Vegetation Type	A type of sorghum. These species are not native to the Near East/Mediterranean region and only became developed during the Hellenistic/Roman period (Zohry and Hopf 2000: 88-90).
Maquis forest	Vegetation Type	scrubland vegetation found in Mediterranean zone, composed of evergreen shrubs and small trees
Non-Arboreal Pollen (NAP)	Vegetation Type	Non tree species
Pistacia (Pistacia vera L.)	Vegetation Type	Pistachio nut, very drought resistant fuit tree species. No clear evidence of P. Vera cultivation in Near East before the classical period (Zohary and Hopf 2000: 191).
Quercus calliprinos	Vegetation Type	Palestinian oak, sub-species of Quercus cerris. Found in Eastern Mediterranean. Small tree or shrub, reaching a maximum height of 5-18m.
Quercus cerris (also see Quercus calliprinos)	Vegetation Type	Turkish oak, deciduous and native to Europe and Asian Minor. Species generally 25-40m in height.
Quercus ithaburensis	Vegetation Type	Also known as Tabor Oak, deciduous and native to Mediterranean region, found in habitatas of Mediterranean maquis and forest. Species generally up to 25m in height
White Broom (Retama raetan)	Vegetation Type	White broom, native to Saharo-Arabian region found in Mediterranean Woodlands and Shrublands, Semi-steppe shrublands, Shrub-steppes, Deserts and extreme deserts.
Rhus tipartita	Vegetation Type	Desert shrub found throughout Samarian mountains, Samarian desert, Judean desert and Dead Sea valley, Sharon, Northern Negev, Negev hills and Eilat Valley.
Sage (Salvia dominica)	Vegetation Type	Sage, strong scented shrub, native to eastern Mediterranean.
Tabor oak	Vegetation Type	See record for Quercus ithaburensis
Woody chenopod species	Vegetation Type	Types of species often found in scrubland
Xeromorphic	Vegetation Type	Plants adapted to dry or physiologically dry conditions by means of reducing water loss or storing it
Eu-Meditteranean	Vegetation zone	Vegetation zone characterised by scrubby, dense vegetation composed of broad-leaved evergreen shrubs, bushes, and small trees
Irano-Turanian	Vegetation zone	Vegetation zone characterised by discontinuous areas of semiarid open shrublands and species such as pistachio and ash.
Saharo-Sindian	Vegetation zone	Vegetation zone characterised by sparse arid resilient vegetation cover, such as acacia trees

APPENDIX 3.1: STONE MONUMENTS IN THE LEVANT

3.1.1. Known Location/Detail Records

ID	Area	Number	Form_1	Form_2	Form_3	Form_4	Possible Period	Area of burial (m) and landscape description	Reference	Notes	Geology
1	Freike	11	Rectangular tombs	Dolmens			Unknown	900m N to S	Mouterde 1940; Steimer-Herbet 2004: 36; Tallon 1958: 216-219 (plates I-IV)		Sedimentary (Limestones, marls, conglomerate and sandstones)
2	Rumeliah	6	Dolmens				Bronze Age	On Cliff edge in association with shaft and chamber tombs	Masuda 1987: 73; Steimer-Herbet 2004: 59,		Basalts
3	Homs	29,190+1	Cairn	Circle			Prehistoric, Classical and Islamic	150 square km	Satellite Imagery		Basalts

4	Hijane al-Qasrein	66	Rectangular tombs	Dolmens	Cist tombs		Unknown	Unknown	Nasrallah 1963; Steimer-Herbet 2004: 36, 59, 69		Basalts
5	Dera'a	?	Cist tombs	Cairns			Unknown	Unknown	Beaulieu 1943: 250; Nasrallah 1950: 316-322; Steimer-Herbet 2004: 69		Basalts
6	Tell al-Hunajie	1	Cist tombs	Circle			Unknown	Unknown	Nasrallah 1963: 56		Basalts
7	Khirbet al-Umbashi	1340	Dolmens				Unknown	Unknown	Braemer et al. 2004 187-218; Steimer-Herbet 2004: 59		Basalts
8	Ain Bader	?	Cairns				Prehistoric	Unknown	Beauleiu 1943: 244		Basalts

9	South of Sedjen	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 246; Braemer 1984: 240		Basalts
10	Touloul ar-Rouyan	1	Stone tomb				Unknown	Unknown	Nasrallah 1963: 56		Basalts
11	Mengez region	100	Rectangular tombs	Dolmens			EB and MB	Found on NW ward extending tongue of the plateau spread over sizeable area in different clusters	Copeland and Westland 1966: 46-7; Steimer-Herbet 2004:36, 59, Tallon 1958: 220-229; Tallon 1959		Basalts
12	Chouaghir	4	Dolmens	Platform tombs			Neolithic	Dolmens found both 1km North of village and also extending further by about 2km north parallel to river track	Steimer-Herbet 2004: 59, 90; Tallon 1959: 108-110		Sedimentary (Limestones, marls, conglomerate and sandstones) AND Basalts

13	Laboue	9?	Cairns	Rectangular tombs			4th-3rd millennium BC	Located on plateau of erratic paving North of Wadi Boura.	Copeland and Westcombe 1966: 88; Tallon 1959: 93-100	Note that Basalts are also found in this area	Sedimentary (Limestones, marls, conglomerate and sandstones)
14	Wadi al-Joz	3	Cist tombs	Platform tombs			Neolithic, EB, MB and IA material from area	Located on arid terraces sloping down towards Orontes gorge	Copeland and Westcombe 1965: 33; Steimer-Herbet 2004; Tallon 1959: 105-7,		Sedimentary (Limestones, marls, conglomerate and sandstones) AND Basalts
15	Rujm el-Hiri	100	Circle	Dolmens			Unknown	Unknown	Steimer-Herbet 2004: 58; Zohar 1989		Basalts
16	Qiryat Shemona	5 and 3	Dolmens	Circle			Unknown	Unknown	Shaked 1993; Steimer-Herbet 2004: 58; Swauger unpublished: 336		Basalts

17	Shamir	400	Dolmens				Unknown	Unknown	Bahat 1992: 91-2; Steimer-Herbet 2004: 58,		Basalts
18	Alma	50	Dolmens				Unknown	Unknown	Prausnitz 1960; Steimer-Herbet 2004: 57,		Sedimentary (Limestones, marls, conglomerate and sandstones)
19	Deir Sras	5+	Dolmens				Unknown	Unknown	Epstein 1973: 560-3,1985a: 31-2; Steimer-Herbet 2004:58,		Basalts
20	Na'aran	?	Dolmens	Cist tombs	Rock-cut Tombs		BA, Byzantine, Roman Ottoman	Dolmens scattered across the landscape un-associated with settlement of Na'aran	Dauphin and Gibson 1992: 14-16; Steimer-Herbet 2004: 58,		Basalts

21	Juffain/Pella Hinterland	700+	Dolmens	Cairns			EB I-Islamic material collected from dolmens and cairns	Cairns and dolmens have been found scattered across the foothills to the north and east of Pella. Several clusters appear to be apparent in this region. I have collated into a single record.	Baker 1996,1998	Also see Watson 1996: 74	Sedimentary (Limestones, marls, conglomerate and sandstones)
22	Dalton	50	Dolmens				Unknown	Unknown	Mader 1927: 95; Steimer-Herbet 2004: 58,		Basalts
23	Safsaf	?	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 57		Basalts
24	Qasrin	5+	Dolmens				Unknown	Unknown	Epstein 1985a: 38-9; Steimer-Herbet 2004: 58,		Basalts

25	Sanabir	1	Dolmens				Unknown	Unknown	Epstein 1985a: 37; Steimer-Herbet 2004: 58,		Basalts
26	Karkom	4	Dolmens				Unknown	Unknown	Schumacher 1889; Steimer-Herbet 2004:58,		Basalts
27	Safed	2+	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 57, Stepansky and Damati 1991		Sedimentary (Limestones, marls, conglomerate and sandstones)
28	Meron/ Hajr ed Dumm/ Khirbet el-'Alja (poss included in Meron total)	200+1	Dolmens				Unknown	Unknown	Conder and Kitchener 1881: 223; 253- 4; Guth 1890: 128; Kitchener 1878: 168; Steimer-Herbet 2004:58		Sedimentary (Limestones, marls, conglomerate and sandstones)

29	Korazim (including Horbat Berekh)	200+	Dolmens				Unknown	3km 2	Gilead 1968: 20; Stepansky 2005, Turville-Petre 1927: 309,	Note some may be on limestone as Stepansky (2005:43) notes this material being used where available-have been recorded here as on Basalt	Basalts
30	Abu Fula	4	Dolmens				Unknown	Unknown	Epstein 1973: 560-3,1985a: 28; Steimer-Herbet 2004: 57,		Basalts
31	Batra	6	Dolmens				Unknown	Unknown	Epstein 1985a: 27-30; Steimer-Herbet 2004: 58,		Basalts
32	Gamla	100	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58		Basalts

33	Ja'adan	2+	Dolmens				Unknown	Unknown	Epstein 1985a: 39-40; Steimer-Herbet 2004: 58		Basalts
34	Yahadiya	4+	Dolmens				Unknown	Unknown	Epstein 1972: 404-7, 1985a: 28-9; Steimer-Herbet 2004: 58		Basalts
35	Tell Bazuk	6+	Dolmens				Unknown	Unknown	Epstein 1973: 560-3,1985a: 35; Steimer-Herbet 2004: 58,		Basalts
36	Arba'in	2+	Dolmens	Cairns			Unknown	Unknown	Epstein 1985a: 37, 1987: 274-5		Basalts

37	Qubbet Qar'ah	1	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Epstein 1985a: 35, Epstein 1973: 560-3		Basalts
38	Leviah/ Lawiyeh	54	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Vinitzky 1992: 104		Basalts
39	Muntar	20	Dolmens				Unknown	Located on ledge of rock overlooking Wadi es-Samak covering area of c. 0.5 miles	Oliphant 1880: 259-260		Basalts
40	Rasm Harbush	2+	Dolmens				Unknown	Unknown	Epstein 1985a: 37-8; Steimer-Herbet 2004: 58		Basalts

41	Rasm el Kabash	1	Dolmen				Unknown	Unknown	Epstein 1985a: 39; Steimer-Herbet 2004		Basalts
42	Sha'abaniyeh	?	Dolmens				Unknown	Unknown	Epstein 1985b; Epstein and Gutman 1972: 276; Steimer-Herbet 2004: 58,		Basalts
43	Kusr Berdanil	?	Dolmens				Unknown	Unknown	Vinitzky 1992: 108		Basalts
44	En Tu'ein	1	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Vinitzky 1992: 106		Basalts

45	Al-Rawda	54+74+20	Cairns	Shaft tombs	Cist Tombs		Unknown	Unknown	Castel *et al.* 2005		Sedimentary (Limestones, marls, conglomerate and sandstones)
46	Tell esh Soukkar	?	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 128		Basalts
47	H.Yeroham	100	Cist tombs				Unknown	Unknown	Avner 1984; Kochavi 1967; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)
48	Mont Dimona	?	Cairns				Unknown	Unknown	Haiman 1992a: 26		Sedimentary (Limestones, marls, conglomerate and sandstones)

49	H.Zayyad	?	Cist Tombs				Unknown	Unknown	Cohen 1986: 44-5; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)
50	Be'erotayum	100	Cist Tombs				Unknown	Unknown	Cohen 1986: 10; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)
51	Ramat Matred 3	43	Cist Tombs	Cairns			Unknown	Cist tombs and cairns (7) 100x200m	Cohen 1980: 232; Haiman 1994: 23; Steimer-Herbet 2004		Sedimentary (Limestones, marls, conglomerate and sandstones)
52	H. Nafha	24	Cist tombs	Cairns	Dolmens		Palaeolithic, EB II, MB I, Iron II, Roman, Byzantine, Nabatean, Early Arab.	Unknown	Lender 1990: 21; site 198 (Hebrew section); Steimer-Herbet 2004,		Sedimentary (Limestones, marls, conglomerate and sandstones)

53	Har Arika	2	Cairns				Unknown	Unknown	Cohen 1985; Haiman 1991: record 116, 138; Steimer-Herbet 2004: 85,		Sedimentary (Limestones, marls, conglomerate and sandstones)
54	H. Hamran	?	Cist tombs				Unknown	Unknown	Steimer-Herbet 2004: 68, Haiman 1986: 16		Sedimentary (Limestones, marls, conglomerate and sandstones)
55	Nahal Mitnan	250	Cairns	Cist tombs	Platform tombs		EBA	4 square km	Haiman 1993a: 49, 1993b, 1996: 7; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
56	H. Raviv	?	Cist tombs				Unknown	Unknown	Baumgarten 1982: 83; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)

57	Har Boqer	12	Cairns				MB I and Byzantine	Unknown	Cohen 1985: 20-23; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
58	Har Horesha	15	Cairns	Platform tombs			EB II flints and pottery	Unknown	Haiman 1986: 109, 121, 129; 1992a: 39-40; Steimer-Herbet 2004: 90		Sedimentary (Limestones, marls, conglomerate and sandstones)
59	Har Harif	40	Cist tombs				Unknown	Unknown	Cohen 1986: 33; 98; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
60	H. Ramon	?	Cist tombs				Unknown	Unknown	Cohen 1986: 33; 98; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)

61	Har Oded	5	Cairns				Unknown	Unknown	Rosen 1994: 248; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
62	N. Paran	3	Quadrangular tombs				Unknown	Unknown	Avner 1997: 133; Steimer-Herbet 2004: 85		Soft Alluvial/Fluvial Deposits
63	H. Hame'ara	17	Cairns				EBA pottery	Unknown	Haiman 1992a: 32; Steimer-Herbet 2004:68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
64	Har Nes	60+2	Cairns	Cist tombs			MB II pottery	Unknown	Avni 1992: 43, 49-50, 55-57, 61, 65		Sedimentary (Limestones, marls, conglomerate and sandstones)

65	Har Saggi	4+17	Cairns	Cist tombs			EBA and MB I	Unknown	Avni 1992: 66, 68, 72-3, 75, 77, 81, 85; Haiman 1992a: 30; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
66	H. Karkom	1	Cist tombs	Platform tombs			Unknown	Unknown	Anati 1984; Haiman 1992a: 40; Steimer-Herbet 2004: 68, 90,		Sedimentary (Limestones, marls, conglomerate and sandstones)
67	H. Zuiaz	12	Cist tombs				Unknown	Unknown	Steimer-Herbet 2004: 68; Haiman 1992a: 35		Sedimentary (Limestones, marls, conglomerate and sandstones)
68	Biq'at Uvda (911)	2	Cairns				EBA and MB I	Unknown	Haiman 1992a: 30; Steimer-Herbet 2004: 68; Reich 1990		Sedimentary (Limestones, marls, conglomerate and sandstones)

69	Wadi Radaadi	1+4	Cairns				Unknown	Unknown	Avner 1984: 117, 119		Granites, quartz, schist, gneiss, mica schist, gabbros, diorites and dike rocks
70	Shiqmim (Mezad Aluf)	100	Cist tombs				Chalcolithic	800mx100m	Levy and Alon 1982: 54; Haiman 1991: 37; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
71	Raikes (Old Road Site) (Site D?)	200	Cist tombs				Chalcolithic/EBA	Area robbed-dispersal of ash and bones	MacDonald et al. 1988: 34, 1992: 250; Raikes 1980		Sedimentary (Limestones, marls, conglomerate and sandstones)
72	Edh-Dhra	30+2	Cairns				4th-3rd millennium BC	Area of tumuli around 500m by 250m	Bourke 2002: 16; Clarke 1978/9; Körber 1994: 70; Mallon 1924: 443-451; Steimer-Herbet 2004:68		Sedimentary (Limestones, marls, conglomerate and sandstones)

73	Ayn Jadidah/Wadi Jadidah	157 (162 structures recorded by Conder)	Dolmens				Unknown	Unknown	Conder 1889a: 254; Mortensen 1992; Steimer-Herbet 2004: 58	Also referred to in record 180 and as Quweijiya/el-Kueijiyeh	Sedimentary (Limestones, marls, conglomerate and sandstones)
74	Umm el Quttein	30	Dolmens				Unknown	Unknown	Glueck 1951: 385-387; Steimer-Herbet 2004: 59		Sedimentary (Limestones, marls, conglomerate and sandstones)
75	Mount Nebo	5	Dolmens				Unknown	Unknown	Conder 1882: 10, 1889a: 202-3; Jaussen and Savignac 1907; Steimer-Herbet 2004: 59		Sedimentary (Limestones, marls, conglomerate and sandstones)
76	Rujm el-Meltuf	2 and 3	Dolmens	Circular tombs			Unknown	Unknown	Mackenzie 1911; Steimer-Herbet 2004: 59, 82,		Sedimentary (Limestones, marls, conglomerate and sandstones)

77	Matabi	50	Dolmens				Unknown	Unknown	Conder 1889a: 230-236; Glueck 1951: 387-389; Steimer-Herbet 2004: 59, Swauger 1962: 5-6, 30-5	More references to this in Swauger unpublished: 358-373	Sedimentary (Limestones, marls, conglomerate and sandstones)
78	Madaba	?	Dolmens				Unknown	Located on knolls around Madaba and adjacent to main road between Madaba and Jericho	Mader 1914; 42; Steimer-Herbet 2004: 59; Tristram 1874: 319-321	Likely that included in references and totals for Wadi Jideid by Conder	Soft Alluvial/Fluvial Deposits
79	Rabbat Ammon (Amman)	17 (11 and 6)	Dolmens	Menhirs			Unknown	Unknown	Conder 1889a: 1; Field 1960: 72; Steimer-Herbet 2004: 58-9		Sedimentary (Limestones, marls, conglomerate and sandstones)
80	El-Adeimeih/ Azeimeh	100+168	Dolmens	Cist tombs			Unknown	Unknown	De Saulcy 1865: 312; Glueck 1943: 14,1951: 404; Neuville 1930; Steimer-Herbet 2004: 58, Stekelis 1935; Swauger unpublished: 357	Referred to as Adiemeih, Azeimeh, as well as Wadi Tarafa- general location within the environs of Wadi Adeimeh. Two locations along wadi used.	Sedimentary (Limestones, marls, conglomerate and sandstones)

81	Damiya/Ala-Safat/Tahounet esh-Sukkar	164; 19; 12; 2	Dolmens	Cist tombs	Circle	Cairns	Unknown	Unknown	Gilead 1968: 18-19; Steimer-Herbet 2004: 58; Stekelis 1961		Sedimentary (Limestones, marls, conglomerate and sandstones)
82	Ain Qnayeh	?	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58		Sedimentary (Limestones, marls, conglomerate and sandstones)
83	Dj. Dhalma	?	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58		Sedimentary (Limestones, marls, conglomerate and sandstones)
84	Wadi al-Yabis	200	Dolmens				Unknown	Unknown	Palumbo 1992; Steimer-Herbet 2004:59,		Sedimentary (Limestones, marls, conglomerate and sandstones)

85	Marajem	3	Dolmens	Cist tombs			Unknown	Unknown	Nicolle and Steimer 2001; Steimer-Herbet 2004: 59,		Sedimentary (Limestones, marls, conglomerate and sandstones)
86	Dj. Makhadah	20	Dolmens	Cist tombs			Unknown	Unknown	Fernandez Velasco 1991,5		Sedimentary (Limestones, marls, conglomerate and sandstones)
87	Jerash/Suf	?	Dolmens				Unknown	Unknown	Conder 1892: 197	Recorded as large group of dolmens near Jerash, north of Suf-probably the same as those recorded by Conder (1892: 251) and Finn (1882: 134-5)	Sedimentary (Limestones, marls, conglomerate and sandstones)
88	Mafraq	1	Circle				Unknown	Unknown	Glueck 1951: 1	Circle of large menhirs located next to limestone quarry	Sedimentary (Limestones, marls, conglomerate and sandstones)

89	Djebel Muttawwaq/ Tell el Meghaniyeh	2000	Dolmens	Circular tombs			EB-MB	Unknown	Fernandez Velasco 1991: 535, 1995; Swauger unpublished: 515		Sedimentary (Limestones, marls, conglomerate and sandstones)
90	Kufr Abil	?	Dolmens				Unknown	Unknown	Palumbo 1992; Steimer-Herbet 2004: 59; Stekelis 1935: 30		Sedimentary (Limestones, marls, conglomerate and sandstones)
91	Kufr Yuba	800-1000	Dolmens				Unknown	c.3 miles	Conder 1892: 251; Schumacher 1890: 169-177; Steimer-Herbet 2004: 59; Swauger unpublished: 479-484	Also referred to as the 'Ajlun area-Glueck's Khirbet Hassan (1951: 174-75) included within this group (Swauger unpublished: 476-7), as well as record for Dalma (Stekelis 1935: 33)	Sedimentary (Limestones, marls, conglomerate and sandstones)
92	Khirbet Haifa	4	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Stekelis 1961		Sedimentary (Limestones, marls, conglomerate and sandstones)

93	Irbid	100+	Dolmens				Unknown	c. 1.5 miles x 1 miles	Schumacher 1890: 149-154 & 177-8 and map.	Possible Glueck's Natfeh group inlcuded here- suggested to be located around 4.6km S-SW of Irbid and be surrounded by hundreds of dolmens	Sedimentary (Limestones, marls, conglomerate and sandstones)
94	Khirbet Menua	15	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Stekelis 1961		Sedimentary (Limestones, marls, conglomerate and sandstones)
95	Deir Abu Said	20	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Stekelis 1961		Sedimentary (Limestones, marls, conglomerate and sandstones)
96	Kafir Alma	?	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Stekelis 1961		Basalts

97	Abu al-Queim	20	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Stekelis 1961		Sedimentary (Limestones, marls, conglomerate and sandstones)
98	Azraq	?	Cairns				Unknown	Unknown	Steimer-Herbet 2004: 129, Field 1960: 85-8		Sedimentary (Limestones, marls, conglomerate and sandstones)
99	Jawa Dhuweilah and Jebel Risht	?	Cairns				Unknown	Unknown	Field 1960: 55-57		Basalts
100	Wadi Ruwaysid	?	Cist tombs				Unknown	Unknown	Betts 1993: 3-4; Steimer-Herbet 2004:69		Sedimentary (Limestones, marls, conglomerate and sandstones)

101	Shaubak	18,000	Cairns				Unknown	Unknown	Satellite Imagery and pers comm. Whiting 2006		Sedimentary (Limestones, marls, conglomerate and sandstones)
102	Leja (Chraya)	13 and 80	Circular tombs	Dolmens			Unknown	Unknown	Steimer-Herbet 2004: 82, Steimer-Herbet 2006		Basalts
103	Tell-Hadid	?	Cairns				Unknown	Unknown	Beauleiu 1943: 242		Basalts
104	Tell Djafna	?	Cairns				Prehistoric	Unknown	Beauleiu 1943: 244		Basalts

105	Oumm et-Tabiye	?	Cairns				Prehistoric	Unknown	Beauleiu 1943: 244		Basalts
106	Tell Djeni	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 244		Basalts
107	South of Soueida and North-West of Soueida	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 245		Basalts
108	Tell Mousaqlat	6	Cairns				Prehistoric	Unknown	Beaulieu 1943: 245		Basalts

109	Deir Esh-Sha'ir	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 245-6		Basalts
110	Oumm el-Qseyr	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 246		Basalts
111	South-East of Tell Khodor	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 246		Basalts
112	Edbedini	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 246		Basalts

113	NE of Orman	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 246		Basalts
114	SE of Sedjen	2	Cairns				Prehistoric	Unknown	Beaulieu 1943: 246, Braemer 1984: 240		Basalts
115	North of D'Oumm Rouaq	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 247		Basalts
116	South of Shbike	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 247		Basalts

117	North West of Rafka	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 247		Basalts
118	West of Khirbet et-'Alliqa	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 247		Basalts
119	Dedabe	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 248		Basalts
120	Tell Maqbiye	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 248		Basalts

121	Route de Soueida a Era	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 248		Basalts
122	West of 'Atil	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 248		Basalts
123	Tell Habis	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 248-9		Basalts
124	North of Tell Denama	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 249		Basalts

125	Tell Sheheb	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 249		Basalts
126	Alep-Mouslimie-Azaz: reference to region with no clear indication of precise location of monuments.	?	Dolmens				Unknown	Unknown	Gridel 1944: 82; Steimer-Herbet 2004: 59,		Sedimentary (Limestones, marls, conglomerate and sandstones)
127	Wadi Batra	18	Dolmens				Unknown	Unknown	Epstein 1972: 404-7, 1985a: 29-30		Basalts
128	Qasr Tuba	?	Cairns				Unknown	Unknown	Field 1960: 45-8; Steimer-Herbet 2004: 82,		Sedimentary (Limestones, marls, conglomerate and sandstones)

129	Jebel Haneiza and Rutba	?	Cairns				Unknown	Unknown	Field 1960: 52; Steimer-Herbet 2004: 82		Sedimentary (Limestones, marls, conglomerate and sandstones)
130	Qasr Mushetta/Al Konitra nr. Amman	1	Cairns				Unknown	Unknown	Field 1960: 74		Sedimentary (Limestones, marls, conglomerate and sandstones)
131	J. Thala-thakawat nr. Bayir Wells and Qasr Tuba	2+	Cairns				Unknown	Unknown	Field 1960: 77		Sedimentary (Limestones, marls, conglomerate and sandstones)
132	Qara Qataf	3+	Cairns				Unknown	Unknown	Field 1960: 46 and map		Soft Alluvial/Fluvial Deposits

133	Harrat ar-Rajil-Jebel Qurma	?	Cairns				Unknown	Unknown	Field 1960: 88 and map	Surveyors Cairns according to Field	Soft Alluvial/Fluvial Deposits OR Sedimentary (Limestones, marls, conglomerate and sandstones)
134	Nahal Sirpad	1 and 21	Dolmens	Cairns			Unknown	Unknown	Haiman 1993b: site 63; Steimer-Herbet 2004: 59, 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
135	Ein Qadis, Wadi Qadis	50 and dozens of bedouin graves	Cairns				EB II and recent Bedouin at Wadi Qadis	Unknown	Haiman 1986: 123-7; Steimer-Herbet 2004: 68,		Soft Alluvial/Fluvial Deposits
136	Ein Ziq	1	Cairns				MB I	Unknown	Cohen 1986: 70-82; Haiman 1992a: 26-7; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)

137	Giv'at Zafit	1+	Cairns				Unknown	Unknown	Avner 1984: 117; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)
138	Bir Main	?	Tombs	Circle			Unknown	Unknown	Haiman 1991: 36; Palmer 1871: 344-5; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
139	Kuntilla	?	Cairns				Unknown	Unknown	Haiman 1992a: 26; Palmer 1871: 336-7; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
140	Nakhel	100	Cairns				Unknown	Unknown	Haiman 1992a: 26, 36; Palmer 1871: 336-7; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)

141	Nahal 'Aqrav	41+3	Cairns				EB, Iron II and Bedouin	Unknown	Haiman 1993b; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)
142	Nahal Ela	5	Cist tombs				Unknown	Unknown	Haiman 1993a: 35, 42, 50; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
143	Nahal Yeter	3	Cist tombs	Cairns			EBA and MB I	Unknown	Haiman 1993a: 33, 34, 42; Lender 1990: 105, 81; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)
144	Nahal Zin	50+1	Cairns	Cist tombs			EBA, MB I and Byzantine	Unknown	Haiman 1991: 14; Lender 1990: 109, 112; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)

145	Nahal Nitzana	14	Cairns	Platform tombs			EBA, Iron II and Early Arab	Unknown	Haiman 1992a: 40; Steimer-Herbet 2004: 68, 90, Rosen 1994: 34-6, 40-1, 45		Sedimentary (Limestones, marls, conglomerate and sandstones)
146	Nahal Yattir/ Harei'Ira	3 and 3	Cairns	Cist tombs			EBA	Unknown	Govrin 1991: site 265, 268; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)
147	Ramat Barnea	2	Cairns				MBA	Unknown	Haiman 1991: site 224; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)
148	Vallee de Hissun/ Biq'at Hissun	5+35	Cairns	Cist tombs			EBA and MB I	Unknown	Avni 1992: 33-34, 39-41, 51; Steimer-Herbet 2004: 68		Sedimentary (Limestones, marls, conglomerate and sandstones)

149	Wadi al-Halufi (isolated cairns)	3	Cairns				Unknown	n/a	Haiman 1986: 37, 53-7; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
150	Wadi al-Halufi (Cairn field 1)	40	Cairns				EB II	ca. 500x300	Haiman 1986: site 10		Sedimentary (Limestones, marls, conglomerate and sandstones)
151	Wadi al-Halufi (Cairn field 2)	50	Cairns				Unknown	ca. 400x300	Haiman 1986: site 76		Sedimentary (Limestones, marls, conglomerate and sandstones)
152	Wadi al-Halufi (Cairn field 3)	30	Cairns				EB II	ca. 1sq km	Haiman 1986: site 80		Sedimentary (Limestones, marls, conglomerate and sandstones)

153	Wadi al-Halufi (Cairn field 4)	18	Cairns				EB II, MB I	ca. 500x100	Haiman 1986: site 89		Sedimentary (Limestones, marls, conglomerate and sandstones)
154	Wadi al-Halufi (Cairn field 5)	40	Cairns				EB II and Byzantine	ca. 400x200	Haiman 1986: site 82		Sedimentary (Limestones, marls, conglomerate and sandstones)
155	Ma'ale Ramon	2	Quadrangular tombs	Cairns			EBA, MB I, Iron II, Roman-Byzantine	n/a	Steimer-Herbet 2004: 85, Rosen 1994: 39, 40		Sedimentary (Limestones, marls, conglomerate and sandstones)
156	Ein al-Gudeirat	2	Platform tombs				MB I	n/a	Haiman 1992a: 39-40; Steimer-Herbet 2004: 90,		Sedimentary (Limestones, marls, conglomerate and sandstones)

157	Be'er Resisim	?	Platform tombs				IBA	c. 2.5 ha	Haiman 1992a: 39-40; Steimer-Herbet 2004: 90,		Sedimentary (Limestones, marls, conglomerate and sandstones)
158	Sede Boquer	3	Cairns	Platform tombs			MB I	Unknown	Haiman 1985: site 123; 1992a: 39-40; Steimer-Herbet 2004: 90		Sedimentary (Limestones, marls, conglomerate and sandstones)
159	Ramat Hanadiv	40	Cairns				3rd-2nd millennium BC	ca.200x450 across hillside	Greenberg 1991, 2000, 2001; Haiman 1984: 14-16 Steimer-Herbet 2004: 67		Sedimentary (Limestones, marls, conglomerate and sandstones)
160	Nahal Besor	14	Cairns				EB II-III, MB I, Byzantine, Early Arab	Unknown	Cohen 1985: 5-6, 8, 21, 24-5, 27; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)

161	Nahal Zalzal	6+	Cairns				EB II-III, MB I	1km. Square	Cohen 1985: site 3; Steimer-Herbet 2004: 68,		Sedimentary (Limestones, marls, conglomerate and sandstones)
162	Es Safi	?	Cist tombs				EB I, IB	Unknown	McDonald 1992: 249; McDonald et al. 1988; Steimer-Herbet 2004: 69		Sedimentary (Limestones, marls, conglomerate and sandstones)
163	Wadi Feifa	?	Cist tombs				EBA, Neolithic, Chalcoclithic, EB IV, Islamic	1x0.5km	MacDonald 1992: 257; MacDonald et al. 1988: 34, Rast and Schuab 1974: 11-12, 17,		Sedimentary (Limestones, marls, conglomerate and sandstones)
164	Rujm Khaneizir	?+1	Cist tombs	Dolmens			EBI, EB IV (also in 1992 IA)	Unknown	Glueck 1935: 10-11, 1939: 198-9, MacDonald et al. 1988: 34; MacDonald el a. 1992: 260, Swauger unpublished: 471		Sedimentary (Limestones, marls, conglomerate and sandstones)

165	Wadi Rahma	50	Cist tombs				Unknown	Unknown	Smith and Niemi 1994: 479; Steimer-Herbet 2004: 69		Granites, quartz, schist, gneiss, mica schist, gabbros, diorites and dike rocks
166	Wadi Mulghan	9	Cist tombs				Unknown	Unknown	Smith and Niemi 1994: 475; Steimer-Herbet 2004: 69		Granites, quartz, schist, gneiss, mica schist, gabbros, diorites and dike rocks
167	Wadi al-Wa'ra	1	Cist tombs				Unknown	ca. 5m diameter	Smith and Niemi 1994: 478; Steimer-Herbet 2004: 69		Granites, quartz, schist, gneiss, mica schist, gabbros, diorites and dike rocks
168	Ain Nuweiba	?	Cairns				Chalcolithic	Unknown	Smith and Niemi 1994: 479; Steimer-Herbet 2004: 68,		Granites, quartz, schist, gneiss, mica schist, gabbros, diorites and dike rocks

169	Gourmeyet Hesban/Wadi Hesban/El-Kerumiyeh	26 (10 surviving 1987)+ 2	Dolmens	Circle			EBA, Byzantine, Roman and Islamic	Unknown	Conder 1882: 69, 1889a; Ibach 1988; Steimer-Herbet 2004: 58; Swauger unpublished: 440-450, 450-453	50 dolmens reported in 1882 by Conder in PEFQ record-these may be the Sumia dolmens? In the record for Kurmiyeh also reference to possible presence of 2 stone circles.	Sedimentary (Limestones, marls, conglomerate and sandstones)
170	Ayoun Musa and al-Mehatta	?	Dolmens	Circle			Chalcolithic/EBA	Unknown	De Saulcy 1865: 144, 312, 316; Piccirillo 1993; Steimer-Herbet 2004: 58	Also referred to as Suweima	Sedimentary (Limestones, marls, conglomerate and sandstones)
171	North of Siyagha	?	Cairns				MB I	Unknown	Piccirillo 1993: 38; pers comm. Theusen 2007		Sedimentary (Limestones, marls, conglomerate and sandstones)
172	Wadi Jadidah/Conder's Circle	157, 21 and 1	Dolmens	Menhirs	Circle		Chalcolithic/EBA	Unknown	Piccirillo 1993: 464; pers comm. Thuesen 2007	Same as Ayn Jedeid/Jadidah also known as Quweijiya-this record includes evidence of structures in the wider region including dolmens, menhirs and circle rather than just the dolmens recorded by Conder etc.	Sedimentary (Limestones, marls, conglomerate and sandstones)

173	Khirbet es-Samra	100+	Dolmens	Cist tombs	Circular tombs		EBA	Unknown-tumuli linked in chains across plateau	Humbert 1993: 460; Sapin 1985: 220, 225, 1992: 171, 173; Steimer-Herbet 2004: 59, 69, 82		Soft Alluvial/Fluvial Deposits OR Basalts
174	Lachish	1	Dolmens				Chacolithic	Unknown	Gilead 1968: 20; Steimer-Herbet 2004: 57; Tufnell et al. 1958: 39		Sedimentary (Limestones, marls, conglomerate and sandstones)
175	Mont Garizim	1	Dolmens				Unknown	Unknown	Abel 1910: 594, 1922: 600-602; Steimer-Herbet 2004: 57		Sedimentary (Limestones, marls, conglomerate and sandstones)
176	Nahal 'Ezuz	?	Cist tombs					Unknown	Baumgarten 1982: 83; Steimer-Herbet 2004: 68		Soft Alluvial/Fluvial Deposits

177	Mishor Haruhot	2+2+3 (cairn rows)	Platform	Cairns			Unknown	c.120x60	Haiman 1992a: 39-40; Steimer-Herbet 2004: 90,		Sedimentary (Limestones, marls, conglomerate and sandstones)
178	Tell al-Umayri	1	Dolmens				EB IB	Isolated dolmen	Dabrowski 1996; Dubis and Dabrowski 2002: 171-3; Steimer-Herbet 2004: 59		Sedimentary (Limestones, marls, conglomerate and sandstones)
179	Saharonim (Ramat)	30	Cairns				Late Neolithic, EBA and Hellenistic	c. 600x600	Porat et al. 2006; Steimer-Herbet 2004: 86,		Sedimentary (Limestones, marls, conglomerate and sandstones)
180	al-Mereigat and al-Masloubiyeh	150+	Dolmens	Cairns	Menhirs		Unknown	Spread over area of around 1mile (e-w) by 1/2 mile (n-s)	Conder 1889a: 184-9; Jauseen and Savignac 1907; Savage 2010; Steimer-Herbet 2004: 59; Stekelis 1935: 32	Confusion about names used for this collection of megalithic structures arises with many individuals referrring to these monuments with different names eg. Zerqa main (Karge 1917: 442), Hjar el-Mansab/Mansub (Conder 1882: 69-70)-I have subsumed these under el-Mereigat as in all of the records they are mentioned in relation to this site.	Sedimentary (Limestones, marls, conglomerate and sandstones)

181	Rukkad/Ain Dakkar	400	Dolmens				Unknown	c. 150 acres in total across two dolmen fields seperated by around 200 yards	Karge 1917: 415-423; Schumacher 1886: 69; Steimer-Herbet 2004: 57	Reference to dolmens within region known as Radir el-Bustan, north of 'Ain Dakkar and east of Rukkad probably included in this record	Basalts
182	Khirbet Hamatah	?	Dolmens				Unknown	Documented as fallen dolmens-now constructed into sheepfolds crowning the top of Hamatah	Schumacher 1886: 11, 68-72, 74; Steimer-Herbet 2004: 58	Also reference to dolmens between Khirbet Hamatah and Jamleh (Broome 1940a: 117-118) probably included within Khirbet Hamatah or Gamla record	Basalts
183	Tsil	400	Dolmens				Unknown	c. 200 acres	Schumacher 1888: 149-152	Reference to Dolmens also referred to as within areas of Tell 'Ameidun and Jisr el-Allan probably also included in this record.	Basalts
184	Ain al-Mu'allakah	?	Dolmens				Unknown	c. 3 miles	Schumacher 1888: 124; Steimer-Herbet 2004: 57		Basalts

185	Rawiyeh (er) and Tell esh-Sheban	500	Dolmens				Unkown	Covering an area between Rawiyeh and Tell esh-Sheban	Broome 1940: 114; Schumacher 1888: 125-7; Steimer-Herbet 2004: 58; Swauger unpublished: 377		Basalts
186	Dabura	?	Dolmens	Circle			Unknown	c. 1 mile area	Schumacher 1888: 127-9; Steimer-Herbet 2004: 58,		Basalts
187	Farj	50	Dolmens	Cairns			BA sherds from within fields	Unknown	Dauphin and Gibson 1992: 24		Basalts
188	Er-Ramthaniyye	1+86	Dolmens	Cairns			EBA sherds found within settlement	Unknown	Dauphin and Gibson 1992: 25		Basalts

189	Gisr al-'Assi	1	Dolmens				EB III	Referring to largest tumulus North of village of Chouaghir	Copeland and Westcombe 1965: 32; Steimer-Hebert 2004: 59, Tallon 1958, 1959		Sedimentary (Limestones, marls, conglomerate and sandstones)
190	Hermel I (Mrah Abbas)	10	Dolmens				Unknown	Located on arid limestone uncultivated plain sloping down to Orontes Gorge	Copeland and Westcombe 1965: 32; Steimer-Herbet 2004: 59, Tallon 1958: 230-2		Sedimentary (Limestones, marls, conglomerate and sandstones)
191	Abou Dis	1	Dolmens				Unknown	Figure pg. 285 appears to depict monument on slope.	Steimer-Herbet 2004: 57; Vincent 1901: 285,1914: 256, Fig 287 and		Sedimentary (Limestones, marls, conglomerate and sandstones)
192	Merdj es-Sitt	5	Dolmens				Unknown	Appears to be located on upland area-2 plans given poss. more dolmens?	Steimer-Herbet 20; 04: 57; Vincent 1901: 279-298		Sedimentary (Limestones, marls, conglomerate and sandstones)

193	Wadi al-Qadi/Vasque Hebron	1	Dolmens				Unknown	Located on flanks of hills.	Abel 1928: 419, 422; Steimer-Herbet 2004: 57; Vincent 1901: 286,		Sedimentary (Limestones, marls, conglomerate and sandstones)
194	Wadi Suleim	5	Dolmens				Unknown	Located on hillside above Wadi	Vincent 1901: 286		Sedimentary (Limestones, marls, conglomerate and sandstones)
195	Qbour Bene-Israil/Hizma	5	Dolmens				Unknown	Located on flanks of hillside.	Conder and Kitchener 1883: 100-2; Vincent 1901: 287-9;		Sedimentary (Limestones, marls, conglomerate and sandstones)
196	Beitin (Bethel)/Wadi Qana/Jaljuliya/Djildjiliyeh	15	Dolmens				Red pottery found in environs	Located on summit and eastern flank of hillside running down to Wadi Qana-over distance of around 1km by 300m	Abel 1922: 602; Conder and Kitchener 296; 303-4; Steimer-Herbet 2004: 57; Vincent 1901: 279-298;		Sedimentary (Limestones, marls, conglomerate and sandstones)

197	Khirbet edh-Debbeh/ Gharandal	1+	Dolmens				Unknown	Plateau	Lagrange 1897: 212; Swauger unpublished: 338; Vincent 1898: 450-1,		Sedimentary (Limestones, marls, conglomerate and sandstones)
198	El-Ekla'a el-Mutrakib	12+	Dolmens				Unknown	c. 3 miles x 1.5 miles	Schumacher 1890: 133-6		Sedimentary (Limestones, marls, conglomerate and sandstones)
199	Umm el-Khawabi	1	Dolmens				Unknown	Unknown	Schumacher 1890: 108		Sedimentary (Limestones, marls, conglomerate and sandstones)
200	Jenin/Deir Ghazala	?	Cairns				Possibly associated with Roman encampment?	No precise location given for monuments	Conder and Kitchener 1882: 116		Sedimentary (Limestones, marls, conglomerate and sandstones)

201	Ras el Akra	?	Cairns				Unknown	On prominent hillside	Conder and Kitchener 1882: 367		Sedimentary (Limestones, marls, conglomerate and sandstones)
202	Beit Sufafa (also poss. known as Seba Rujum)	7	Cairns				Unknown	Unknown	Conder and Kitchener 1883: 156-7; Schick 1890: 22-3		Sedimentary (Limestones, marls, conglomerate and sandstones)
203	Site 49	11	Cairns				Iron Age/Unknown	Unknown	MacDonald 1992: 254		Sedimentary (Limestones, marls, conglomerate and sandstones)
204	Site 47	?	Cairns				Unknown	30x20m	MacDonald 1992: 254		Sedimentary (Limestones, marls, conglomerate and sandstones)

205	Site 68	8	Cairns				Unknown	Unknown	MacDonald 1992: 256		Sedimentary (Limestones, marls, conglomerate and sandstones)
206	Site 97	36+	Cairns				Byzantine/Unknown	Unknown	MacDonald 1992: 259		Sedimentary (Limestones, marls, conglomerate and sandstones)
207	Site 99	5+	Cairns				Unknown	Unknown	MacDonald 1992: 259		Sedimentary (Limestones, marls, conglomerate and sandstones)
208	Site 111 (A-G)	?	Cairns				IA, Islamic and Modern	Unknown	MacDonald 1992: 260-1		Sedimentary (Limestones, marls, conglomerate and sandstones)

209	Site 120	9	Cist tombs	Cairns			EB IV and EB IVA	Unknown	MacDonald 1992: 261-2		Sedimentary (Limestones, marls, conglomerate and sandstones)
210	Site 145 (A-B)	2	Cairns				Unknown and possible recent Bedouin burial	Unknown	MacDonald 1992: 264		Sedimentary (Limestones, marls, conglomerate and sandstones)
211	Site 147	5	Cairns				Unknown	Unknown	MacDonald 1992: 264		Sedimentary (Limestones, marls, conglomerate and sandstones)
212	Site 153 (A-B)	28	Cairns				Unknown	Unknown	MacDonald 1992: 265		Sedimentary (Limestones, marls, conglomerate and sandstones)

213	Site 154 (A-H)	?	Cairns				EBIV, Roman, Hellenistic, Byzantine, EB IIIA and EB	Unknown	MacDonald 1992: 265		Sedimentary (Limestones, marls, conglomerate and sandstones)
214	Site 172 (A-B)	2	Cairns				Chalcolithic/EB, Byzantine, Islamic	Unknown	MacDonald 1992: 267		Sedimentary (Limestones, marls, conglomerate and sandstones)
215	Site 190	2	Cairns				Iron Age, Byzantine	Unknown	MacDonald 1992: 269		Sedimentary (Limestones, marls, conglomerate and sandstones)
216	Site 198 (A-D)	6	Cairns				EB IV, MB I	Unknown	MacDonald 1992: 269-70		Sedimentary (Limestones, marls, conglomerate and sandstones)

217	Site 220	?	Cairns				Unknown	Unknown	MacDonald 1992: 272		Sedimentary (Limestones, marls, conglomerate and sandstones)
218	Deir-Sa'ideh	?	Dolmens	Circular tombs			Unknown	Unknown	Abel 1928: 590; Macalister 1900: 222-234; Steimer-Herbet 2004: 57; Stekelis 1935: 24		Sedimentary (Limestones, marls, conglomerate and sandstones)
219	Souweinit/ Djeba	1	Dolmens				Unknown	Unknown	Abel 1922: 593, 598; Steimer-Herbet 2004: 57, Stekelis 1935: 24		Sedimentary (Limestones, marls, conglomerate and sandstones)
220	Djifneh	1	Dolmens				Unknown	Unknown	Abel 1932: 599-600; Steimer-Herbet 2004: 57;		Sedimentary (Limestones, marls, conglomerate and sandstones)

221	Beit Djebrin	1	Dolmens				Unknown	Unknown	Karge 1917: 410; Macalister 1900: 222-234; Steimer-Herbet 2004: 57, Vincent 1901: 222		Sedimentary (Limestones, marls, conglomerate and sandstones)
222	Beit Nouba/Nuba	1, 4+, 1	Dolmens	Cairns	Menhirs		Unknown	Unknown	Broome 1940: 102; Drake 1872: 46, Mader 1927: 102; Stekelis 1935: 26; Swauger unpublished: 117		Sedimentary (Limestones, marls, conglomerate and sandstones)
223	et-Tell/ Burg Beitin	?	Dolmens				Unknown	Unknown	Dalman 1912: 12; Karge 1917: 400; Mader 1927: 101; Stekelis 1935: 24; Swauger unpublished: 140		Sedimentary (Limestones, marls, conglomerate and sandstones)
224	Medieh and Qibbiyah	1	Dolmens				Unknown	Unknown	Abel 1932: 593; Stekelis 1935: 24		Sedimentary (Limestones, marls, conglomerate and sandstones)

225	Beit Fedshar/Beit Fejjar/Beit Fojjar/esh-Shuyukh/es-Siuh/Wadi Zafaraneh	?	Dolmens				Unknown	Unknown	Mader 1914, 1927: 103; Stekelis 1935: 24 (nb. Beit Feggar in Mader)		Sedimentary (Limestones, marls, conglomerate and sandstones)
226	Qilquiliyeh	2+	Rectangular tombs				Unknown	Unknown	Mader 1914: 35; Stekelis 1935: 27		Sedimentary (Limestones, marls, conglomerate and sandstones)
227	Medjebel Yaba	2+	Rectangular tombs				Unknown	Unknown	Mader 1914: 35; Stekelis 1935: 27		Sedimentary (Limestones, marls, conglomerate and sandstones)
228	Deir Ballout	1+	Dolmens				Unknown	Unknown	Mader 1927: 100; Stekelis 1935: 27		Sedimentary (Limestones, marls, conglomerate and sandstones)

229	Rentis/Midya/Midje	2+	Dolmens				Unknown	Unknown	Mader 1914: 35; Stekelis 1935: 27	Suggested that dolmens in area between Rentis and Medjebel Yaba	Sedimentary (Limestones, marls, conglomerate and sandstones)
230	Tell Sandahannah	1	Dolmens				Unknown	Unknown	Macalister 1900: 231-2; Mader 1914: 37; Stekelis 1935: 27		Sedimentary (Limestones, marls, conglomerate and sandstones)
231	Kherazieh	24	Dolmens	Cairns			Bronze Age, Hellenistic, Roman, Byzantine, Arab	c. 4.5km north and 4km east.	Karge 1917: 306; Stekelis 1935: 28-9; Turville-Petre 1931: 155-66		Basalts
232	ed-Dikke	1	Dolmens				Unknown	Unknown	Broome 1940a: 114; Karge 1917: 419, 477; Schumacher 1980: 71-3		Basalts

233	Al-Hosn/ El-Hosn	1+	Dolmens				Unknown	Unknown	Steimer-Herbet 2004: 58, Stekelis 1935: 25; Vincent 1914: 419,		Sedimentary (Limestones, marls, conglomerate and sandstones)
234	Ba'oun	1	Dolmens				Unknown	Unknown	Stekelis 1935: 25, 30		Sedimentary (Limestones, marls, conglomerate and sandstones)
235	Nou'eme/ Roudjm Kenise	1	Dolmens				Unknown	Unknown	Stekelis 1935: 30-1		Basalts
236	Beni Houd	?	Dolmens				Unknown	Unknown	Stekelis 1935: 30-1		Sedimentary (Limestones, marls, conglomerate and sandstones)

237	Kharaba	?	Dolmens				Unknown	Unknown	Stekelis 1935: 30-1		Sedimentary (Limestones, marls, conglomerate and sandstones)
238	Kafrindchi	?	Dolmens				Unknown	Unknown	Stekelis 1935: 30-1		Sedimentary (Limestones, marls, conglomerate and sandstones)
239	Djebel Attarous	1	Dolmens				Unknown	Unknown	Blackenhorn 1912: 201; Smith 1905: 361; Stekelis 1935: 33		Sedimentary (Limestones, marls, conglomerate and sandstones)
240	Tawahin es-Soukkar	?	Dolmens				Unknown	Unknown	Abel 1910: 540, 549-556; Irby and Mangles 1823: 231; Stekelis 1935: 34	This is probably the same as Damiyah which also has a local name of Tahounet esh-Soukkar	Sedimentary (Limestones, marls, conglomerate and sandstones)

241	Teqo'a	2	Dolmens				Unknown	Unknown	Blackenhorn 1905: 467; Karge 1917: 393, 407, 466; Stekelis 1935: 25; Steimer-Herbet 2004: 57; Vincent 1914: 412		Sedimentary (Limestones, marls, conglomerate and sandstones)
242	Bir Abu Deraj	1	Cairns				Unknown	North of well	Conder and Kitchener 1882: 390		Sedimentary (Limestones, marls, conglomerate and sandstones)
243	Muntar el Beneik	1	Cairns				Unknown	On south side of ancient watchtower?	Conder and Kitchener 1882: 402		Sedimentary (Limestones, marls, conglomerate and sandstones)
244	Ras el Jemjemeh	1	Cairns				Old Beacon Station	Unknown	Conder and Kitchener 1883: 377		Sedimentary (Limestones, marls, conglomerate and sandstones)

245	Ain el-Minyeh	7	Circular tombs				Unknown	Unknown	Stekelis 1935: 33; Conder 1889a: 10-13		Sedimentary (Limestones, marls, conglomerate and sandstones)
246	Tell el-Hammam/ Rawdah	300	Dolmens				Unknown	Unknown	Collins, Hamdan et al. 2009: 6-7, 9-10; 2010: 8-9, 14-15; Conder 1889: 229-230; Merrill 1881: 231; Prag 1995: 76, 79,	Locating this site using geo-corrected maps locates the site on soft fluvial/alluvial deposits. However, the 2010 field reports suggest that the majority of monuments were located in the foothills although it is noted that some may have been located close to Tell Hammam itself on an alluvial plain (Collins, Hamdan et al. 2010: 3)	Sedimentary (Limestones, marls, conglomerate and sandstones) OR Soft Alluvial/Fluvial Deposits
247	Ain-Karim	4	Dolmens				Unknown	Unknown	Mader 1914: 36-7, 1927:102, Stekelis 1935: 26		Sedimentary (Limestones, marls, conglomerate and sandstones)
248	Mar Elias/ Wadi ed-Dasis	1	Cave				Unknown	Unknown	Mader 1927: 102-3, Stekelis 1935: 26; Swauger unpublished: 128		Sedimentary (Limestones, marls, conglomerate and sandstones)

249	Kat'at Moussa	20	Dolmens				Unknown	Unknown	Mader 1927: 101; Stekelis 1935: 24		Basalts
250	Ouadi er-Rawabi/Ouadi Souleim	?	Dolmens				Unknown	Unknown	Mader 1914: 34; Stekelis 1935: 26		Sedimentary (Limestones, marls, conglomerate and sandstones)
251	el-Isaouijeh	5	Dolmens				Unknown	Unknown	Mader 1927: 101, Stekelis 1935: 28; Vincent 1901: 286		Sedimentary (Limestones, marls, conglomerate and sandstones)
252	Khirbet Ader/Adir	5+	Dolmens	Circle	Menhirs		Unknown	Unknown	Albright 1934; Glueck 1934: 45-7; Mallon 1924: 452-455, Stekelis 1935: 34	Other references mentioned in Swauger unpublished: 382-3, as well as reference to nearby location of Ara'ir-inlcuded in Ader total	Sedimentary (Limestones, marls, conglomerate and sandstones)

253	Beit Saour/Beit Sawir	1	Megalith				Unknown	Unknown	Broome 1940: 104; MacKay 1921; Stekelis 1935: 26		Sedimentary (Limestones, marls, conglomerate and sandstones)
254	Tulul el-Beida	Unknown	Cairns				Unknown	Located on a series of low marl rises	Glueck 1951: 363, Swauger unpublished: 500		Sedimentary (Limestones, marls, conglomerate and sandstones)
255	Tell Nimrin/ Tell el-Mustah	Unknown	Dolmens				Unknown	Unknown	Glueck 1951: 367		Sedimentary (Limestones, marls, conglomerate and sandstones)
256	Tell el-Hebbessah	Unknown	Dolmens				Unknown	Unknown	Glueck 1951: 384-5		Sedimentary (Limestones, marls, conglomerate and sandstones)

257	Tell Ejrafeh	Unknown	Cairns				Unknown-identified from air	Unknown	Glueck 1951: 396		Soft Alluvial/Fluvial Deposits
258	Rujm Abu Qa'il	Unknown	Dolmens	Circle			Unknown	Dolmens spread along summit and running down the slopes	Glueck 1951: 404		Sedimentary (Limestones, marls, conglomerate and sandstones)
259	Tell Igtana	Unknown	Dolmens	Cairns	Cist tombs		BA II	Unknown	Gilead 1968: 19; Glueck 1951: 394-398; Mallon 1933: 300; Steimer-Herbet 2004: 57		Sedimentary (Limestones, marls, conglomerate and sandstones)
260	Vallee de Sainte-Croix/el-Jib/el-Djib	1	Dolmens				Unknown	Poss. natural outcrop interpreted as a dolmen	Abel 1922: 590-1, 594-8; Steimer-Herbet 2004: 57; Vincent 1914: 412;		Sedimentary (Limestones, marls, conglomerate and sandstones)

261	Ti'innik	?	Circle	Menhirs			Unknown	Unknown	Vincent 1907: 412, Swauger unpublished: 144-5		Sedimentary (Limestones, marls, conglomerate and sandstones)
262	Mount Tabor	1	Dolmens				Unknown	Unknown	Mader 1914: 28; Swauger unpublished: 146		Sedimentary (Limestones, marls, conglomerate and sandstones)
263	Beit Jahun/Tibnin including Kounine	13	Dolmens	Circle			Unknown	Unknown	Karge 1917: 381-7, 414, 425, 486, 511, 602; Mader 1927: 95		Sedimentary (Limestones, marls, conglomerate and sandstones)
264	Taibeh/Markaba/Markeheh	?	Dolmens				Unknown	Schumacher suggested originally dolmen field 2 miles long and 1/2 mile wide	Mader 1914: 24, 1927: 95; Schumacher 1890: 133-4,		Sedimentary (Limestones, marls, conglomerate and sandstones)

265	Tell el-Kadi	4	Dolmens				Unknown	Located on a ridge to the west of Tell el-Qady (Tell Dan) and west of Nahr Leddan	Conder 1892: 248-9, Stekelis 1935: 30; Swauger unpublished: 337-8,	Suggested by correspondence between Biran and Swauger that no dolmens within this area (Swauger unpublished 337-8)-poss destroyed?	Sedimentary (Limestones, marls, conglomerate and sandstones)
266	Banias	?	Dolmens				Unknown	Unknown	Conder 1882: 225, 231, 1889: 283, Swauger unpublished: 381	In the same region as Tell Dan/Tell el-Kady-poss dolmens included in this total	Sedimentary (Limestones, marls, conglomerate and sandstones)
267	Khirbet Iskander	2	Menhirs				Unknown	Two menhirs located to north and east of site of Khirbet Iskander	Glueck 1939: 127-130; Karge 1917: 25; Schick 1879: 7, 12, Swauger unpublished: 383	Mentioned that dolmens also in the region aroubnd Ara'ir and Khirbet Ader	Sedimentary (Limestones, marls, conglomerate and sandstones)
268	Libb	1	Dolmens				Unknown	Located on high plateau	Blackenhorn 1912: 200-201, Karge 1917: 449		Sedimentary (Limestones, marls, conglomerate and sandstones)

269	el-Al/Elealeh	1	Menhirs				Unknown	Unknown	Baedeker 1912: 150; Broome 1940: 162; Conder 1882: 73-4,		Sedimentary (Limestones, marls, conglomerate and sandstones)
270	Sumia/ Sibmah/ Sumieh	50 (18 mentioned by Karge)+1	Dolmens				Unknown	Unknown	Conder 1892: 221, 256, Karge 1917: 431-434, Swauger unpublished 433-437	Dolmens in region of Heshban some may be included within this record, although not clear. 50 reported by Conder within the region, 18 of which also mentioned by Karge. A single dolmen to the SW of Sumia also mentioned by Conder-however Ibach pers comm. to Swauger suggested they were unable to find any of the dolmens mentioned by Conder.	Sedimentary (Limestones, marls, conglomerate and sandstones)
271	Samad	1	Circle				Unknown	Unknown	Glueck 1951: 112	Suggested to be a large stone circle with dolmen affinities	Sedimentary (Limestones, marls, conglomerate and sandstones)

272	Lajjun/ Leggoun/ Khirbet Fitijan	16	Menhirs				Unknown	Unknown	Glueck 1939: 129; Karge 1917: 60, 459-60; Stekelis 1935: 34		Sedimentary (Limestones, marls, conglomerate and sandstones)
273	Qafqafa	?	Dolmens				Unknown	Located on the top and sides of hill	Glueck 1951: 77, Swauger unpublished: 502	Wadi Abu el-Jeheish (record 257 of Glueck) included in this record	Sedimentary (Limestones, marls, conglomerate and sandstones)
274	Teleilat Ghassul	?	Dolmens				EB I, II, III	Unknown	Mallon 1933: 297-299, Swauger unpublished: 355-356	Suggested by Swauger to be unpublished but to be dolmens or associated tomb forms. It may be that Swuager and others were referring to Adeimeh when discussing tombs in relation to Ghassul as Bourke (2002: 15-7) identifies the former as possibly being the cemetery of Ghassul	Soft Alluvial/Fluvial Deposits
275	Ghadir el-Bustan	?	Dolmens				Unknown	Unknown	Broome 1940: 115; Karge 1917: 415, 423,		Basalts

276	Umm Beteimeh	?	Dolmens				Chalcolithic, EB I, Roman, Islamic	Dolmens located on hillslopes surrounding site of Umm Beteimeh	Glueck 1951: 71	Possibly included in Jerash record and precise locations unknown	Sedimentary (Limestones, marls, conglomerate and sandstones)
277	Umm Kharubeh	?	Dolmens				Unknown	On the tops and slopes of the hill known as Umm Kharubeh	Glueck 1951: 79-80	Possibly included in Jerash record and precise locations unknown	Sedimentary (Limestones, marls, conglomerate and sandstones)
278	Avital	50	Dolmens				Uknown	Slopes of Har Avital	Steimer-Herbet 2004: 58, Zingboym 2008		Basalts
279	Natur	4	Dolmens				Unknown	Unknown	Hartal 1985; Steimer-Herbet 2004: 58,		Basalts

280	Saourat et-Sghire	?	Cairns				Prehistoric	Unknown	Beaulieu 1943: 250		Basalts
281	Yatta	1	Dolmens				EB II-III	Unknown	Ilan 2002: 99; Steimer-Herbet 2004: 57		Sedimentary (Limestones, marls, conglomerate and sandstones)
282	Aidun/Edun	?	Dolmens	Menhirs			Unknown	Unknown	Broome 1940: 89-90; Karge 1917: 427, 123, Stekelis 1935: 30-1; Swauger unpublished: 502		Sedimentary (Limestones, marls, conglomerate and sandstones)
283	Es-Samu/ Ed-Samu	?	Dolmens				Unknown	Unknown	Broome 1940: 104-5; Mader 1914: 38-9, 127: 104-5; Swauger unpublished 115-6		Sedimentary (Limestones, marls, conglomerate and sandstones)

284	Khirbet Susic	3	Dolmens				Unknown	Unknown	Mader 1914: 39	Recorded as Khirbet Susia on map thought to be same site	Sedimentary (Limestones, marls, conglomerate and sandstones)
285	Wadi el-Ain/ El-'Ain/ Zakhireh	?	Dolmens				Unknown	Located on hills near site of El-'Ain and Wadi el 'Ain	Glueck 1946: 14, 1951: 71-3; Mader 1914: 30, 1927: 101		Sedimentary (Limestones, marls, conglomerate and sandstones)
286	Ain Yabrud/ Jebrud	1	Dolmens				Unknown	Unknown	Mader 1914: 33		Sedimentary (Limestones, marls, conglomerate and sandstones)
287	Mukawir	1	Circle				Unknown	Unknown	Broome 1940: 156; Karge 1917: 450		Sedimentary (Limestones, marls, conglomerate and sandstones)

288	Serabit el-Mushukker /Serabit el-Muhattah/ El-Mushaqqar	24+	Menhirs				Unknown	Unknown	Conder 1882: 74		Sedimentary (Limestones, marls, conglomerate and sandstones)
289	Mezar/Mezer	?	Dolmens				Unknown	Unknown	Oliphant 1880: 149-50		Sedimentary (Limestones, marls, conglomerate and sandstones)
290	Er-Rumman/ Mersa/Mobas	?	Dolmens				Unknown	Unknown	Karge 1917: 429	Dolmens located along road between Amman and Er-Rumman in environs of Mersa and Mobas	Sedimentary (Limestones, marls, conglomerate and sandstones)
291	Mahneh	?	Dolmens				Unknown	Unknown	Conder 1892: 251	Suggested to be group of dolmens in region of Mahneh (Mihna) extending several miles towards Suf	Sedimentary (Limestones, marls, conglomerate and sandstones)

292	Harrat al-Burma K Lines and Wadi Burma Kite Site	30+	Cairns				EBA?	Composed of several clusters of 'pseudo-wall' aligned in curves and associated with kites, each spreads over 100s of metres	Fuji 2004a, b	Excavated example Harrat al-Burma cairn line 1 contains 30 cairns, also area of enclosures and kites within area	Basalts
293	Natfeh/Natifa	100+	Dolmens				Unknown	Unknown	Glueck 1951: 157-9, 200-1	Probably part of larger Kefr Yuba group-Glueck recorded 100+ dolmens within the area between Tell esh Shi'ir and Natfeh-precise location of these fields not known.	Sedimentary (Limestones, marls, conglomerate and sandstones)
294	Kufr Kifiya	?	Dolmens				Unknown	Unknown	Glueck 1951: 2001	Recorded as one of the villages with contingous fields of dolmens running down to foothills of Jordan Valley-on the outskirts of Irbid.	Sedimentary (Limestones, marls, conglomerate and sandstones)
295	Ham	2+?	Cairns	Dolmens			Unknown	One galgal suggested to be 40m in diameter	Broome 1940: 212-4; Glueck 1951: 166	Part of dolmen fields stretching between Tell Kufr Yuba, Irbid and El-Husn	Sedimentary (Limestones, marls, conglomerate and sandstones)

296	Beit Yafa	1	Dolmens				Unknown	Unknown	Karge 1917: 427	Part of dolmen fields stretching between Tell Kufr Yuba, Irbid and El-Husn	Sedimentary (Limestones, marls, conglomerate and sandstones)
297	El-Fizara	?	Dolmens				Unknown	Unknown	Broome 1940: 116-7; Karge 1917: 421, 423, Schumacher 1914: 260-6	Referred to as lying between Lake Huleh and the Sea of Galillee on the west and Nahr Rukkad on the east-precise location unknown.	Basalts
298	El-Kuneitrah	?	Dolmens				Unknown	Extensive dolmen field stretching from el-Kara to el-Kuneitrah	Broome 1940: 161 (record 20); Conder 1886: 207-214, Karge 1917: 418-9; Mader 1914: 41	Extensive dolmen field stretching from el-Kara to el-Kuneitrah-exact location of dolmens unknown and probably included in other records	Basalts
299	Yajuz	?	Megalithic Structures				Unknown	Unknown	Broome 1940: 185	Dolmens and other megalithic structures identified along route between Yajuz and Amman	Sedimentary (Limestones, marls, conglomerate and sandstones)

300	Kastal/ El -Qastal	1	Dolmens				Unknown	Unknown	Stekelis 1935: 26		Sedimentary (Limestones, marls, conglomerate and sandstones)
301	West of Homs	822+1	Cairns	Menhirs			Unknown	Unknown	Ibáñez et al. 2004-2008	Series of megalithic tumuli/cairns spread along northern edge of Lake Qattina	Basalts
302	Khirbet el-Mekhlediyeh (Site 114)	12?	Dolmens				Unknown	Located along ridge	Glueck 1951: 174-5, Swauger unpublished: 485		Sedimentary (Limestones, marls, conglomerate and sandstones)
303	El-Qunaiya (Site 260)	?	Dolmens				Unknown	On slopes of hills south of village of el-Qunaiya	Glueck 1951: 84-5		Sedimentary (Limestones, marls, conglomerate and sandstones)

304	Umm Kharubeh (Site 298)	?	Dolmens				Unknown	On the tops and slopes of the hill known as Umm Kharubeh	Glueck 1951: 79-80		Sedimentary (Limestones, marls, conglomerate and sandstones)
305	Iraq al-Amir	15+(40)	Dolmens	Rock-cut tombs			Unknown	On slopes overlooking the Wadi al-Sir in 2 clusters; the first c. 1.5km N-S by 0.8km E-W and the second c.1.5km N-S and 0.4km E-W.	Ji 1997		Sedimentary (Limestones, marls, conglomerate and sandstones)
306	Eilat	22, 9, 2	Cairns	Stone tombs	Megalithic Structure		6th-5th millennia B.C	Unknown	Steimer-Herbet 2004: 68; Avner 1990b, pers comm.. Avner 2008		Granites, quartz, schist, gneiss, mica schist, gabbros, diorites and dike rocks
307	Khirbet Hawaya (Hawada)	1	Circle	Cave			EB IV-MB I sherds from inside stone circle	Circle 23m in diameter	Homès-Fredericq and Hennessy 1989: 25-44	Burial Caves in region-part of Beka'a valley survey	Sedimentary (Limestones, marls, conglomerate and sandstones)

308	Ma'ale Efrayim	1	Cairns				Unknown		Greenberg and Keinan 2009: Site 162; Peleg 2002	Building and cairn	Sedimentary (Limestones, marls, conglomerate and sandstones)
309	Khirbet Ka'kul	1+	Cairns				Iron Age II, Hellenistic, Roman, Byzantine, Early Islamic, Mamluk, Ottoman	Unknown	Greenberg and Keinan 2009: Site 442	Area of tombs, cairns, strutures, winepresses, rock-hewn cisterns, ovens found at site	Sedimentary (Limestones, marls, conglomerate and sandstones)
310	Ramot Forest	30	Cairns				Iron Age II (and evidence in local area of Persian, Late Hellenistic and Roman pottery)	Unknown	Greenberg and Keinan 2009: Site 468		Sedimentary (Limestones, marls, conglomerate and sandstones)
311	Nahal Og	1	Cairns				Iron Age II (and Roman pottery)	Unknown	Greenberg and Keinan 2009: Site 473	Area of Iron Age II farmstead, cisterns , rock hewn winepress, cairns, agricultural terraces, square structure	Sedimentary (Limestones, marls, conglomerate and sandstones)

312	East Talpiyot	1	Cairns				Iron Age II, Roman, Byzantine	Unknown	Greenberg and Keinan 2009: Site 735	Area including wine presses, cisterns, installations and one cairn.	Sedimentary (Limestones, marls, conglomerate and sandstones)
313	el-Khadr	1	Cairns	Cave			Persian, Roman, Hellenistic	Ulnknown	Greenberg and Keinan 2009: Site 806	Area around a possible Roman camp, including a burial cave, cairn, cisterns, wine presses and quarries.	Sedimentary (Limestones, marls, conglomerate and sandstones)
314	Jebel el-Qa'aqir	1+	Cairns				EB IV (IBA), Iron Age II, Hellenistic, Roman, Byzantine, Ottoman	Unknown	Dever 1969; Greenberg and Keinan 2009: 908; Smith 1982	An area of rock-cut cemeteries , cairns, caves and settlement remains	Sedimentary (Limestones, marls, conglomerate and sandstones)
315	Shahar Batz	1+	Cairns				Iron Age II, Roman, Byzantine	Unknown	Greenberg and Keinan 2009: Site 968	Area of water cisterns, towers, burial cave and cairns	Sedimentary (Limestones, marls, conglomerate and sandstones)

316	Mezadot Yehuda B	2	Cairns				EB IV (IBA?), Iron Age II, Persian, Roman, Byzantine	Unknown	Greenberg and Keinan 2009: Site 969	Cairns, towers, dwelling cave and Roman farmstead	Sedimentary (Limestones, marls, conglomerate and sandstones)
317	Mezadot Yehuda A	3	Cairns				Unknown	Unknown	Greenberg and Keinan 2009: Site 970	Cairns and building remains	Sedimentary (Limestones, marls, conglomerate and sandstones)
318	Yafit	2	Cairns				LBA, Iron Age, Persian , 6-4th centuries BC	Two tumuli found on a steep slope in the western Jordan Valley	Greenberg and Keinan 2009: Ste 159; Magen 2004: 285-299		Sedimentary (Limestones, marls, conglomerate and sandstones)
319	Site 6	1	Cairns				Unknown	One cairn located on north-western edge of plateau	Miller 1991: Site 6		Sedimentary (Limestones, marls, conglomerate and sandstones)

320	Site 9	1	Cairns				Unknown	Cairn on narrow ridge	Miller 1991: Site 9		Sedimentary (Limestones, marls, conglomerate and sandstones)
321	Site 17	1	Cairns				Nabatean, Early Roman	Cairn overlooking Wadi el-Mujib	Miller 1991: Site 17		Sedimentary (Limestones, marls, conglomerate and sandstones)
322	Site 45	3+	Cairns				Unknown	Cairns located on northern edge of ridge between Wadi el-Ghuweir and Wadi el-Mujib	Miller 1991: Site 45		Sedimentary (Limestones, marls, conglomerate and sandstones)
323	Site 46	3	Cairns				Unknown	Cairns located on edge of prominent plateau	Miller 1991: Site 46		Sedimentary (Limestones, marls, conglomerate and sandstones)

324	Site 48	1+	Cairns				Unknown	Numerous cairns found on spur	Miller 1991: Site 48		Sedimentary (Limestones, marls, conglomerate and sandstones)
325	Site 49	1+	Cairns				Unknown	Several cairns on southern spur of ridge between Wadi el-Ghuweir and Wadi el-Mujib	Miller 1991: Site 49		Sedimentary (Limestones, marls, conglomerate and sandstones)
326	Site 69	1+	Cairns				Unknown	Cairns located across mountain ridge	Miller 1991: Site 69		Sedimentary (Limestones, marls, conglomerate and sandstones)
327	Site 84	2	Cairns				Unknown	Two cairns overlooking Wadi el-Ghuweir	Miller 1991: Site 84		Sedimentary (Limestones, marls, conglomerate and sandstones)

328	Site 131	2	Cairns				Unknown	Two cairns on rocky knoll	Miller 1991: Site 131		Sedimentary (Limestones, marls, conglomerate and sandstones)
329	Site 137	1+	Cairns				Unknown	Numerous cairns along banks of wadi system which enter main Wadi el-Mujib canyon	Miller 1991: Site 137		Sedimentary (Limestones, marls, conglomerate and sandstones)
330	Site 145	1	Cairns				Unknown	Cairn on edge of plateau	Miller 1991: Site 145		Sedimentary (Limestones, marls, conglomerate and sandstones)
331	Site 146	2	Cairns				Unknown	Located in wadi bed	Miller 1991: Site 146		Sedimentary (Limestones, marls, conglomerate and sandstones)

332	Site 147	2	Cairns				Unknown	Two cairns on small ridge	Miller 1991: Site 147		Sedimentary (Limestones, marls, conglomerate and sandstones)
333	Site 148	1	Cairns				Unknown	Cairn on slope of ridge on north bank of Wadi Abu Sha'r	Miller 1991: Site 148		Sedimentary (Limestones, marls, conglomerate and sandstones)
334	Site 150	2	Cairns				Unknown	Cairns on ridge overlooking Wadi Abu Sha'r	Miller 1991: Site 150		Sedimentary (Limestones, marls, conglomerate and sandstones)
335	Site 152	5	Cairns				Unknown	Five prominent cairns on rocky hillside	Miller 1991: Site 152		Sedimentary (Limestones, marls, conglomerate and sandstones)

336	Site 180	1+	Cairns				Unknown	Carn on ridge	Miller 1991: Site 180		Sedimentary (Limestones, marls, conglomerate and sandstones)
337	Site 218	1	Menhirs				Unknown	Stone monoliths/menhirs found around 2km noth of Adir. All the menhirs have now collapsed but interepreted as similar structure to Lejjun and Ader	Miller 1991: Site 218		Sedimentary (Limestones, marls, conglomerate and sandstones)
338	Site 243	2	Cairns				Unknown	Cairns on ridge overlooking Wadi er-Ramla	Miller 1991: Site 243		Sedimentary (Limestones, marls, conglomerate and sandstones)
339	Site 245	1	Circle				Unknown	Stone circle located on north bank of Wadi er-Ramla	Miller 1991: Site 245		Sedimentary (Limestones, marls, conglomerate and sandstones)

340	Site 246	2+	Circle				Unknown	Series of stone circles on hilltop overlooking Wadi er-Ramla	Miller 1991: Site 246		Sedimentary (Limestones, marls, conglomerate and sandstones)
341	Site 280	2	Cairns				Unknown		Miller 1991: Site 280		Sedimentary (Limestones, marls, conglomerate and sandstones)
342	Site 318	1+	Cairns				Unknown	Numerous small heaps of stone or cairns on esh-Sharif ridge	Miller 1991: Site 318		Sedimentary (Limestones, marls, conglomerate and sandstones)
343	Site 321	1+	Cairns				Unknown	Various cairns along rdige SE of esh-Sharif	Miller 1991: Site 321		Sedimentary (Limestones, marls, conglomerate and sandstones)

344	Site 326	1+	Cairns				Unknown	Cairns on prominent ridgeline	Miller 1991: Site 326		Sedimentary (Limestones, marls, conglomerate and sandstones)
345	Site 327	1	Cairns				Unknown	Cairns on ridge	Miller 1991: Site 327		Sedimentary (Limestones, marls, conglomerate and sandstones)
346	Site 334	1+	Cairns				Unknown	Cairns along ridge of Umm Taur	Miller 1991: Site 334		Sedimentary (Limestones, marls, conglomerate and sandstones)
347	Site 336	1	Cairns				Unknown		Miller 1991: Site 336		Sedimentary (Limestones, marls, conglomerate and sandstones)

348	Site 339	1	Cairns				Unknown	Large cairn located on prominent hill	Miller 1991: Site 339		Sedimentary (Limestones, marls, conglomerate and sandstones)
349	Site 340	1	Cairns				Unknown	Cairns on morth slope of Umm Taur	Miller 1991: Site 340		Sedimentary (Limestones, marls, conglomerate and sandstones)
350	Site 343	1	Cairns				Iron Age and Nabatean		Miller 1991: Site 343		Sedimentary (Limestones, marls, conglomerate and sandstones)
351	Site 345	3	Cairns				Unknown		Miller 1991: Site 345		Sedimentary (Limestones, marls, conglomerate and sandstones)

352	Site 357	15	Cairns				Unknown	Cairns along crest of Jebel el-Batra	Miller 1991: Site 357		Sedimentary (Limestones, marls, conglomerate and sandstones)
353	Site 376	2	Cairns				Unknown	Cairns located on Jebel Abu Rukbah	Miller 1991: Site 376		Sedimentary (Limestones, marls, conglomerate and sandstones)
354	Site 382	1+	Cairns				Unknown	Cairns along ridge at south-eastern tip of Jebel el-Batra	Miller 1991: Site 382		Sedimentary (Limestones, marls, conglomerate and sandstones)
355	Site 408	2	Cairns				Unknown	Cairns located at northern end of Wadi el Hesa	Miller 1991: Site 408		Sedimentary (Limestones, marls, conglomerate and sandstones)

356	Site 422	1	Cairns				Unknown	Cairn on ridge	Miller 1991: Site 422		Sedimentary (Limestones, marls, conglomerate and sandstones)
357	Site 437	1	Cairns				Unknown	Cairn on small knoll overlooking plain	Miller 1991: Site 437		Soft Alluvial/Fluvial Deposits
358	Site 439	2	Cairns				Unknown		Miller 1991: Site 439		Sedimentary (Limestones, marls, conglomerate and sandstones)
359	Site 443	2	Cairns				Unknown	Cairns on small rises in hilly area near edge of Wadi el-Hesa	Miller 1991: Site 443		Sedimentary (Limestones, marls, conglomerate and sandstones)
360	Ard Al-Karak and Ar-Raha al-Mu'arrajah	60+	Cairns	Menhirs				Over sixty cairns and examples of menhirs have been recorded in the area of Al-Karak. The monuments are predominantly located on the plateaus overlooking the major wadis flowing through this region	Worschech 1985, 2000, 2002	These cairns have been recorded as a single record. The location of several have been recorded in detail (see Worshech 1985) however it is not totally clear how these monuments correlate with the records of Miller (1991)	Sedimentary (Limestones, marls, conglomerate and sandstones)

3.1.2. Unknown Location/Details Records

Area	Number	Form	Possible Period	Area of burial (m)	Reference	Notes
Amarat al-Furni	1	Cairn connected to courtyard	EBA	Unknown	Haiman 1992a: 27; Steimer-Herbet 2004: 67	Exact location unknown
Birket er-Rashad	?	Dolmens	Unknown	Unknown	Schumacher 1889; Steimer-Herbet 2004: 58,	Exact location unknown
Birket Terjam	1	Dolmen	Unknown	Unknown	Swauger unpublished: 335	Exact location unknown
Camel Site	5	Tumuli	EBA	In area of enclosures, one structure built into wall line of enclosure	Rosen 2003	Recorded as tumuli with possible cist, exact nature of structures unknown thus not included in analysis
Dalma	350-400	Dolmens	Unknown	Unknown	Stekelis 1935: 33; Swauger unpublished: 514	Recorded as being in Ajlun area by Stekelis 1935: 33, probably subsumed within Ajlun area records, such as Kefr Yuba but unknown whether this is the case.
Dchouffen	?	Dolmens	Unknown	Unknown	Stekelis 1935: 30-1	In Ajloun area-South of Dchouffen
Deir el-Ahmar/SW of El-Khirbeh	?	Megaliths	Unknown	Unknown	Broome 1940: 161 (record 38); Stekelis 1935: 30-1,	In Ajloun area and recorded as Tell Der el-Ahmar by Broome. Broome sketch map very imprecise-location unknown
Deir el-Kassis	1	Trilithon	Unknown	Unknown	Mader 1927: 100; Stekelis 1935: 27	Exact location unknown
Desert de Judee	?	Cist Tombs	Unknown	Unknown	Steimer-Herbet 2004: 67	Exact location unknown
Dhahiriya/es-Daherije/es-Semu'a/Debir/Nahal Zohar	?	Dolmens	Unknown	Unknown	Badeker 1912: 170; Broome 1940: 162 (record 85 and 73); Karge 1917: 408,	Wadi Heras area according to Karge 1917: 408 also Map by Broome, however only sketch map, imprecise location
Dher	?	Dolmens	Unknown	Unknown	Irby and Mangles 1868: 143-4, Swauger unpublished: 341	Exact location unknown mentioned as within region of Dhiban, Wadi Wala and Ma'in-precise location not given

Djebel Ammon-Nsajeb	1	Dolmens	Unknown	Unknown	Stekelis 1935: 34, Swauger unpublished: 338	Referred to by Karge, Musil and Swauger as being to the SE of Kufrabba and SW of Kerak-exact location unknown
el Emtawak	?	Megaliths	Unknown	On summit	Broome 1940: 161 (record 45); Stekelis 1935: 30-1,	On the summit of el-Emtawak, Map by Broome, however only sketch map, imprecise location
el-Artaq	2	Megaliths	Unknown	Unknown	Stekelis 1935: 33	in el-Artaq region in Belka
el-Ekhdib	?	Megaliths	Unknown	Unknown	Stekelis 1935: 30-1	South of ruins at el-Ekhdib
El-Hajr Lasbah	?	Stone circle and monoliths	Unknown	Unknown	De Saulcy: 1865: 165-168	Exact location unknown
El-Kaluh	?	Trilithon with cupmarks+Dolmens	Unknown		Spoehr 1908: 273	Exact location unknown
El-Kefire	4+1	Dolmens and trilithon	Unknown	Unknown	Mader 1927: 101, Swauger unpublished: 112	North of Abu Ros as travelling from el-Kefire
el-Khader	?	Dolmen	Unknown	Unknown	Stekelis 1935: 26	Exact location unknown-west of Jerusalem
el-Minyeh	?	Dolmen	Unknown	Unknown	Stekelis 1935: 26	Exact location unknown-west of Jerusalem
Feinan	?	Dolmen	Unknown	Unknown	Blackenhorn 1912: 149	Exact location unknown
Har Zaror	?	Cist Tombs	Unknown	Unknown	Steimer-Herbet 2004: 68	Exact location unknown
Kefr Bir'im	1	Dolmen	Unknown	Unknown	Broome 1940: 91, 161 (record 8); Mader 1914: 28,	Map by Broome, however only sketch map, imprecise location
Kerak Region	?	Dolmen, menhirs and megalithic settlements	Unknown	Unknown	MacKenzie 1911: 9, Swauger unpublished: 338	Exact location unknown just mentioned as being within the Kerak region by both MacKenzie and Swauger
Kerem Ben-Zimra	?	Dolmens	Unknown	Unknown	Steimer-Herbet 2004: 58, Schumacher 1889	Exact location unknown
Khirbet er-Raghabneh	1	Rectangular monument-also known as Qobour Bene Israil poss. Dolmen	Unknown	Unknown	Mader 1927: 103; Stekelis 1935: 27; Swauger unpublished: 133	Exact location unknown-east of Jerusalem
Khirbet es-Sineineh	?	Dolmen	Unknown	Unknown	Swauger unpublished: 335	Exact location unknown
Khirbet Kesfa/Kafr Kanna	?	Dolmen	Unknown	Unknown	Mader 1927: 100, Swauger unpublished 120	Location unclear
Khirbet Mahne	1	Dolmen	Unknown	Located near Khirbet Mahne	Karge 1917: 428	North of Ajlun region
Khirbet Moumu'arassas	1	Dolmen	Unknown	Unknown	Broome 1940: 162 (record 57); Conder 1892: 197; Swauger unpublished: 145; Tyrwhitt-Drake 1874: 187; Vincent 1901: 278	Exact location unknown on road between Khirbet Dikki and Mourassas. Map by Broome, however only sketch map, imprecise location
Megharat-Daoud	?	Dolmen	Surrounded by flints	In area surrounding cave	Vincent 1901: 285-6	Exact location uknown

Megleden	?	Megalith	Unknown	Unknown	De Saulcy 1865: 314-6, Stekelis 1935: 34	around the environs of Megleden appears to a double line of stones 90m in diameter
Mesha	1	Dolmen	Unknown	Unknown	Mader 1927: 100, Stekelis 1935: 27	Exact location unknown
Muntar El-Meshukkar/Khirbet Umm el-'Akak	2	Menhir	Unknown	Unknown	Conder 1882: 74, Swauger unpublished: 431, 439	Exact location unknown possible that same as site of Serabit el-Mushukker (record 297)
Nahal Nissan	?	Cist Tombs	Unknown	Unknown	Steimer-Herbet 2004: 68	Exact location unknown
Ouadi el-Has	5	Dolmens	Unknown	Unknown	Karge 1917: 460, Stekelis 1935: 34	Exact location unknown-referred by Karge as being to the South of Wadi el-Has/Hasa
Ouadi el-Mheres	?	Dolmens	Unknown	Unknown	Karge 1917: 459-60, Stekelis 1935: 34	Kerak region-exact location unknown. On plateau east of this wadi
Ouadi er-Rachin/Khirbet Menazil/Khirbet Bir el-'Edd/Hebron	6	Dolmen	Unknown	Unknown	Broome 1940: 162 (record 81); Mader 1914: 37-9, Stekelis 1935: 27, Swauger unpublished: 116, 121, Karge 1917: 392-394	Referred to as being within area of Wadi Rachin and also as Hebron group by Broome 1940: 162
Ouadi Oualeh	2	Menhirs	Unknown	Unknown	Stekelis 1935: 33	Within environs of Wadi Oualeh/Wadi Wala-also recorded by Irby and Mangles/Blackenhorn and Musil
Oueli Schech Mas'oud/Tulkarm	2+	Dolmen	Unknown	Unknown	Mader 1914: 35, Mader 1927: 100, Karge 1917: 410, Stekelis 1935: 27, Swauger unpublished: 120	Exact location unknown-Dolmens suggested to be in region between Jaffa and Tulkarm reported by Karge to be around 10 mins from Oueli Schech Mas'oud (Seh Masud)
Rafat	?	Dolmen	Unknown	Unknown	Mader 1927: 100, Swauger unpublished 120	Location unclear
Ras Atiyeh/Ras Atije	?	Dolmen	Unknown	Unknown	Mader 1927: 100, Swauger unpublished: 114	Exact location unknown
Roudjm el-Chetem/el-Khazi	?	Megaliths	Unknown	Unknown	Stekelis 1935: 30-1	Roudjm el-Chetem and South of el-Khazi
Rujm el-Heik	1	Dolmen	Unknown	Unknown	Swauger (unpublished: 105)	Location not mentioned
Sarfa	?	Dolmens	Unknown	Unknown	De Saulcy 1865: 314-6, Stekelis 1935: 33	Belka region
Site 196	4+1	Cairns	Iron Age, Nabatean	Western edge of plateau overlooking the Ghors	MacDonald 1992: 269, pers comm. MacDonald 2009	Exact location of site unknown due to issues of identifying location during fieldwork (pers comm. MacDonald 2009)

Suweiseh	?	Dolmen	Unknown	Unknown	Broome 1940: 161 (record 17), 488	Reference to dolmen and cairn field which spread between Suweiseh and Tell ej-Jabieh-no exact location given and probably included in other records from Golan (Jaulan). Map by Broome, however only sketch map, imprecise location
Tell es-Soma	?	Dolmen	Unknown	Unknown	Nasrallah 1963: 41, Stekelis 1935: 24	Exact location unknown
Tell-Rameh	?	Dolmens	Unknown	Unknown	Stekelis 1935: 35	In Jordan Valley
Tyasir	?	Dolmen	Unknown	Unknown	Mader 1927: 100, Swauger unpublished 145	Exact location unknown suggested to be along old Roman road from Beisan to Nablus
Umm el-Kalkh	?	Dolmens	Unknown	Unknown	Swauger unpublished: 298a	Suggested to be partly excavated and mentioned by government of palestine antiquities records but exact location unknown
Utbaiyeh/Wadi 'Atabeiyieh	1	Dolmen	Unknown		Tristram 1874: 300, Glueck 1934: 33	Exact location unknown
Wadi Abude/Wadi el-Eade	?	Dolmen	Unknown	Unknown	Mader 1927: 104, Swauger unpublished: 124	Location suggested 30 minutes east of Hebron between Wadi Abude and el-Eade
Wadi 'Ammud	?	Dolmen	Unknown	Unknown	Karge 1917: 305	Located along Wadi Ammud in Golan region probably covered by other records from this area. Areas of both basalt and some limestone (Karge 1917: 305)
Wadi Ghuwen	5	Dolmen	Unknown	Unknown	Mader 1914: 38, Swauger unpublished: 125	North bank of Wadi Ghuwen
Wadi Harab	1	Dolmen	Unknown	Unknown	Mader 1914: 38, Swauger unpublished: 125	Location unclear
Wady el-Kanabis	?	Dolmen	Unknown	Unknown	Oliphant 1885: 181	Location unclear, suggested in region of El-Mugheir so probably in the records for this site
Wady Heras	1	Dolmen	Unknown	Unknown	Mader 1917: 104, Swauger unpublished: 125	Location unclear
Oumm et-Tala	?	Dolmens	Unknown	Unknown	Stekelis 1935: 26; Vincent 1901: 279-286	Not marked on Stekelis's map and very vague location suggested by Vincent
Beka'a Valley Dolmen and Tumuli Sites (370,373)	?	Dolmens/Tumuli	Shepherd Neolithic	Unknown	Marfoe 1995: 82	Location known but not included in discussion as nature of monuments i.e. dolmen/tumuli/cairn unkown

Touloul ar-Rouyan	1	Stone tomb	Unknown	Unknown	Nasrallah 1963: 56	Location known but not included in analysis as merely recorded as a stone tomb by Nasrallah
Hyrcania Valley Tumulus	?	Cairn/Tumuli	Unknown	Unknown	Greenberg and Keinan 2009: 139, Site 5	Recorded as an excavated cairn although location not known and no further details concerning finds recorded.

APPENDIX 3.2: TERMS FOR STONE MONUMENTS USED WITHIN CHAPTER 3

Tomb/Feature Type	Description	Reference/Source Example	Examples
Cairns/Tumuli	Structures composed of a matrix of stones or earth. These structures may be marked by an external revetment and in some cases clear chambers or cists can be indentified within the internal structure.	Bradbury and Philip in press	Homs NSA
Cave	Natural' caves exploited as a burial locale	Homès-Fredericq and Hennessy 1989: 25-44	Khirbet Hawaya (Hawada)
Circle	Stone circle composed of a series of upright/recumbent monoliths or wall line forming a circle.	Philip and Bradbury 2010; Mortensen 2004	SHR 362, Conder's Circle
Circular tombs	Steimer-Herbet suggested this form of tomb can be identified via a stone built circular chambers, formed via orthostats, marking the revetment of the tomb. The basis for distinguishing this type of tomb as distinct from cairns is not clear.	Steimer-Herbet 2004: 40	Mengez Tombs
Cist Tombs	Composed of a series of stone slabs delimiting a chamber or area where the deceased can be placed. These can vary in shape but are not associated with a chamber unlike tumuli.	Steimer-Herbet 2004: Tallon 1959: 105-7, Copeland and Westcombe 1965: 33	Wadi al-Joz
Dolmens	Composed of a series of monolith stones, dolmens can show clear variation. A basic form is composed of a series of uprights with a covering capstone. In some cases these monument may be associated with tumuli, making it difficult to distinguish between these and other forms of tomb	Stekelis 1961	Damiyeh
Megalithic Structure	These represent a broad grouping of structures whose nature and form does not readily fit it to the other categories presented here e.g. a burial function cannot necessarily be ascribed to the structure. It includes features such as megalithic buildings and enclosures.	Savage 2010	El Mureighat
Menhir	Single or grouped upright stones, also known as monoliths. Can be associated with tombs or possibly rock art.	Ibanez et al 2007: 63	Homs area
Platform tombs	These are structures composed of earth and stones, which can vary in shape. They may not all represent burial structures. In the Negev region such as at Nahal Mitnan they can be found associated with linear arrangements of stone piles	Steimer-Herbet 2004: 90, Haiman 1992a: 39-40; Haiman 1996: 7	Be'er Resisim; Nahal Mitnan
Quadrangular tombs	These consist of 'towers' of stones, which are quadrangular in shape and may contain an internal cist. The differentiation between these and tumulus or cairns (bar the traditional 'circular' shape of cairns) is not necessarily clear.	Steimer-Herbet 2004: 85, Rosen 1994: 39, 40	Ma'ale Ramon

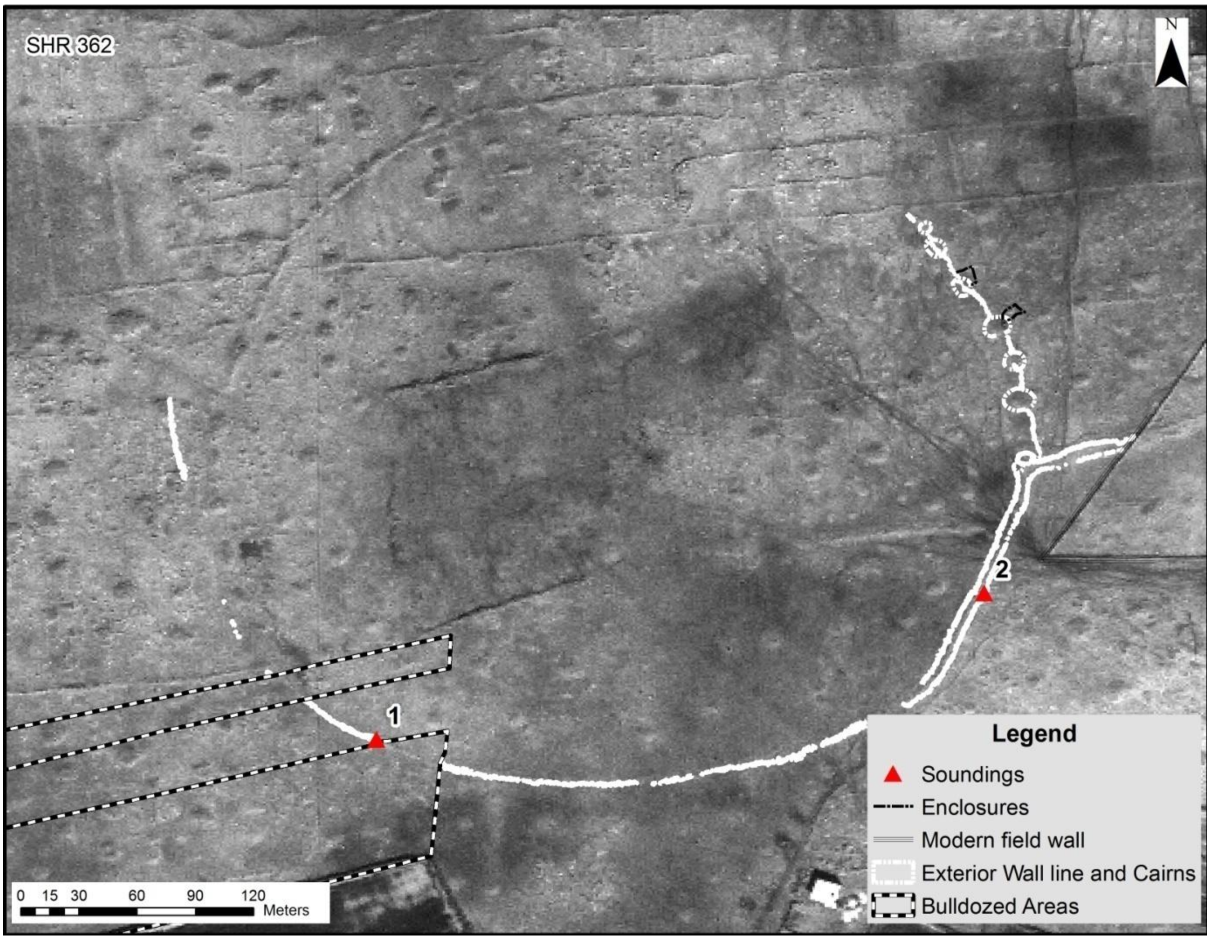
Rectangular tombs	Stone built rectangular chambers, often formed via the use of stone slabs. Unlike dolmens they do not necessarily have a superstructure of orthostats, although can, in some cases, be associated with a tumulus.	Steimer-Herbet 2004: 34	Mengez Tombs
Rock-cut tombs	Tombs which exploit natural rock faces in order to hollow out/cut tombs within the stone face.	Ji 1997, 1998, 2000; Stekelis 1961	Iraq al-Amir, Damiya
Shaft tomb	Below ground burial features. Consisting of a shaft leading to either a single or multiple chambers.	Bourke pers comm. 2007; Castel et al. 2005	Tell Husn (Pella); Al-Rawda
Stone tombs	This has been used to cover tombs which have not been classified by their investigators into a distinct form. In some cases this may be due to their collapsed state, whilst in others it may not be possible to identify shape or associated features. In some examples (such as the example here) merely the presence of stone tombs has been mentioned without any further details.	Nasrallah 1963: 56	Touloul ar-Rouyan

3.2.1. Cairns

Chamber in Cairn 388, Homs NSA

Cairn 75, Homs NSA

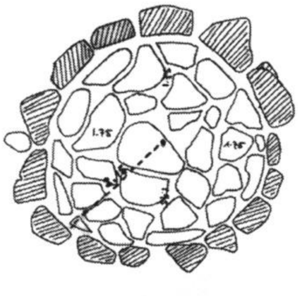
3.2.2. Stone Circles



SHR 362, Homs NSA

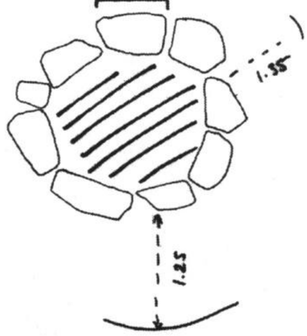
Conder's Circle, Mount Nebo

3.2.3. Circular Tombs

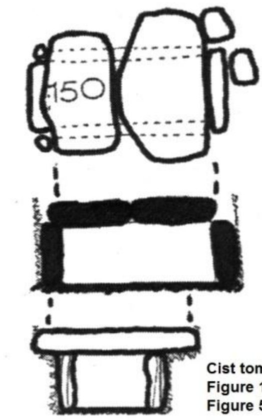


QM1 Tallon Lebanon (Steimer-Herbet 2004: 41, Figure 17)

MSE6 Tallon Lebanon (Steimer-Herbet 2004: 41, Figure 19)



3.2.4. Cist Tombs



Cist tomb, Adeimeh (Stekelis 1935: Figure 12; Steimer-Herbet 2004: 61, Figure 50)

3.2.5. Dolmens

Damiyah Dolmen

Wadi Jadidah Dolmen

3.2.6. Megalithic Structures

View of El-Mureighat main site (photo courtesy of Gajus Scheltma)

3.2.7. Monoliths

Monolith from the Homs area (Ibáñez et al., 2007: 63)

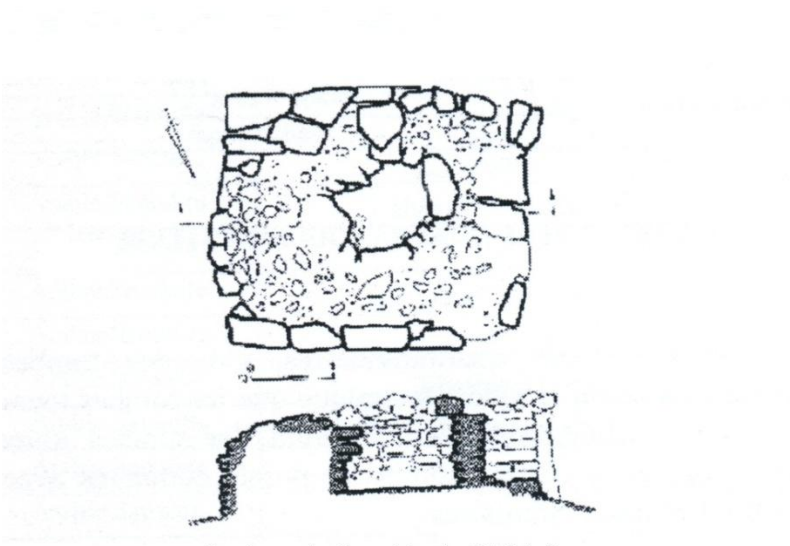
3.2.8. Platform tombs

Fig. 9. Rectangular platform with cairn burials on both sides (Haiman 1991: 92).

Fig. 10. The narrow side of a rectangular platform (Haiman 1991: 99).

Platform tombs in the Negev (Haiman, 1996: 10)

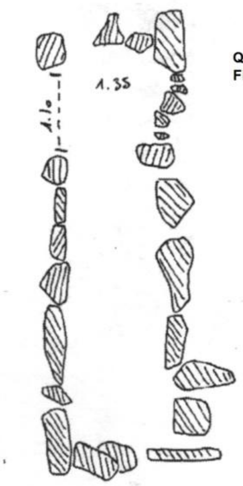
3.2.9. Quadrangular tombs



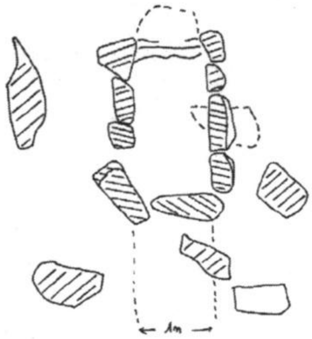
Quadrangular 'tower' tomb at Ma'ale Ramon, Negev (Steimer-Herbet 2004: 84, Figure 86)

(Steimer-Herbet, 2004: 83, Figure 86)

3.2.10. Rectangular tombs



QM7 Tallon Lebanon (Steimer-Herbet 2004: 35, Figure 3)



QM3 Tallon Lebanon (Steimer-Herbet 2004: 35, Figure 5)

(Steimer-Herbet, 2004: 35, Figure 3, 5)

APPENDIX 5.1: DEFINITIONS AND RECORDS

5.1.1. Glossary of terms used in Chapter 5

Associated Feature	Category	Definition
Agricultural/Structural re-use	Cairn attribute	Integration into modern walls and structures, use as foundations for shelters/hides
Blocky	Cairn attribute	Majority of material 0.5m or larger in size
Burial/symbolic re-use	Cairn attribute	Evidence for a later cist or inscription being added to cairn
Circular	Cairn attribute	Length and Width equal-rounded corners
Cobbly	Cairn attribute	material mainly consisting of blocks less than 0.5m in size
External Paving	Cairn attribute	An area of flat cobbles/slabs, flush with the surface external to the main structure of the cairn
External revetments	Cairn attribute	Arrangement of stones/slabs delimiting the edge of a cairn
Internal chambers/cists	Cairn attribute	Internal structures. They are usually the location where the deceased remains are interred
Irregular	Cairn attribute	Length and width vary throughout structure of cairn. Possibly due to the presence of tails and spreads of material
Irregular Clustered Structures (ICS)	Site morphology	Clusters of irregular and sub-circular structures, these features vary in size, density and distribution. In general they are found in tight clusters, with individual structures varying in number from around a dozen, to clusters which contain up to 40 or more structures. The individual structures which form a cluster range between 10 to 20 m in diameter, and are usually quite tightly packed: there is little evidence to suggest that the structures were arranged around a central open area. While the overall impression is that the structures are laid-out an irregular manner, a number of do appear to show a loose linear arrangement (see Appendix 8.8. for a list and individual description of each of these sites)

Mausolea/Mausoleum	Site morphology	Burial structures generally dated to the Hellenistic/Roman and Byzantine periods in the Hom NSA. They consist of a stone built construction often with associated architectural features, such as lintels and pillars and contain more than one burial chamber or loculi. The examples in the Homs Basalt in some cases show considerable similarities to cairn monuments in the region.
No re-use	Cairn attribute	No apparent modification to structure
Ovoid	Cairn attribute	One side longer than other-rounded corners
Platforms	Cairn attribute	A man-made stone built construction (both cobble and slab structure seen in the Homs NSA) upon which a cairn can be located.
Rectangular	Cairn attribute	One side longer than other-squared corners
Rectilinear Clustered Structures (IRS)	Site morphology	These clusters consist of a basic orthogonal plan which can be identified either on the ground and/or from satellite imagery, although the details are frequently obscured by rubble (Figure 7). There is considerable differentiation in both size and organization between IRS and ICS which might indicate a genuine functional distinction.
Rubbly	Cairn attribute	blocks mixture of large blocks i.e. 0.5m+ and material less than 0.5m in size
Soil-filled	Cairn attribute	largely soily matrix interspersed with small stones and cobbles
Square	Cairn attribute	All sides equal-squared corners
(Shape) Unknown	Cairn attribute	No discernable shape-used when cairn badly destroyed to make assumption concerning what cairn shape.
Uprights/monoliths	Cairn attribute	Single or grouped vertical stones. Often these can be found to be marking the edge of a chamber or cist
Wall lines/enclosures	Cairn attribute	Wall lines linking cairns or enclosures attached to cairns. In many cases it is difficult to tell the difference between these two attributes and they are often found in combination i.e. An enclosure is partly formed by the presence of wall lines linking cairns

5.1.2. Attributes of Surveyed Cairns (525 Records)

Geography and Identification and Survey Methodology				Cairn Measurements						Cairn Preservation	Landscape location			Cairn Morphology												
ID	Cluster Number	Category of Associated Feature (e.g. what is the cairn in proximity to?)	Pick-up attempted (0=No; 1=Yes)	Length	Length including boulders/tail	Width	Width including boulders/tail	Height	Area	Preservation	Hydrology	Topography	Current Landuse	Associated Archaeological Structures/Features (1=Yes; 0=No)	Cairns with associated features	Cairns without associated features	Pick-up attempted (0=No; 1=Yes)	Platform	Monoliths	Internal Chamber/Cists	External Paving	External Revetment	Enclosure Wall	Building Material	Number of Features	Re-Use
1	**10**	**Archaeological Site**	**0**	10.2	0	8.4	0	0	85.68	100% intact	Seasonal Lakes	Slope of Ridge	Set-aside (fallow)	1	1	0	0	0	0	1	0	1	0	Blocky	2	No Re-Use
2	**10**	**Archaeological Site**	**0**	9.3	0	9.1	0	1	84.63	100% intact	Seasonal Lakes	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
3	**10**	**Archaeological Site**	**0**	9.5	0	9.5	0	1.5	135.375	100% intact	Seasonal Lakes	Slope of Ridge	Set-aside (fallow)	1	1	0	0	0	0	1	0	1	0	Cobbly	2	No Re-Use
4	**10**	**Archaeological Site**	**0**	11	0	10.3	0	1	113.3	100% intact	Seasonal Lakes	Slope of Ridge	Set-aside (fallow)	1	1	0	0	0	0	0	1	0	0	Cobbly	1	No Re-Use

5	**10**	**Archaeological Site**	**0**	10.3	0	8.8	0	1.2	108.768	more than 50% intact	Seasonal Lakes	Slope of Ridge	Set-aside (fallow)	1	1	0	0	0	0	0	1	1	1	Blocky	3	No Re-Use
6	**10**	**Archaeological Site**	**0**	10.8	0	10	0	1	108	more than 50% intact	Seasonal Lakes	Slope of Ridge	Set-aside (fallow)	1	1	0	0	0	0	0	1	1	0	Blocky	2	Agricultural/Structural Re-Use
7	**11**	**Archaeological Site**	**0**	15.6	0	12.3	0	1.5	287.82	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	0	1	Blocky	2	No Re-Use
8	**11**	**Archaeological Site**	**0**	10.8	0	10.8	0	2	233.28	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	0	1	Blocky	2	No Re-Use
9	**11**	**Archaeological Site**	**0**	9.5	0	7.3	0	1.6	110.96	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	0	1	Blocky	2	No Re-Use
10	**11**	**Archaeological Site**	**0**	8.2	0	8.2	0	1	67.24	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	0	1	Blocky	2	No Re-Use
11	**11**	**Archaeological Site**	**0**	14	14	8.6	0	1	120.4	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	0	1	1	1	1	1	1	Rubbly	6	No Re-Use
12	**11**	**Archaeological Site**	**0**	16.4	0	13	0	2	426.4	100% intact	Seasonal Lakes	Slope of Ridge	Grazing	1	1	0	0	0	0	1	0	0	0	Blocky	1	Agricultural/Structural Re-Use
13	**11**	**Archaeological Site**	**0**	9.1	0	10.4	0	0.7	66.248	more than 50% intact	Seasonal Lakes	Slope of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
14	**11**	**Archaeological Site**	**0**	14	0	12.6	0	2.5	441	more than 50% intact	Seasonal Lakes	Slope of Ridge	Grazing	1	1	0	0	0	0	0	1	1	1	Blocky	3	Agricultural/Structural Re-Use
15	**12**	**Archaeological Site**	**0**	10.1	0	10.1	0	0	102.01	more than 50% intact	Seasonal Lakes	Slope of Ridge	Grazing	1	1	0	0	0	0	1	0	0	1	Rubbly	2	No Re-Use
16	**12**	**Archaeological Site**	**0**	8.1	0	8.1	0	0.75	49.2075	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
17	**12**	**Archaeological Site**	**0**	8.3	0	8.3	0	1	68.89	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
18	**12**	**Archaeological Site**	**0**	7.1	0	7.1	0	0.75	37.8075	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
19	**12**	**Archaeological Site**	**0**	4.8	0	4.8	0	0.75	17.28	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
20	**12**	**Archaeological Site**	**0**	5.5	0	5.5	0	0.75	22.6875	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
21	**12**	**Archaeological Site**	**0**	5.3	0	5.3	0	0.5	14.045	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
22	**15**	**Archaeological Site**	**0**	9.2	0	8.8	0	0.8	64.768	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
23	**15**	**Archaeological Site**	**0**	7	0	6.2	0	0.3	13.02	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use

24	**15**	**Archaeological Site**	**0**	10.7	0	10.1	0	0.7	75.649	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	Agricultural/Structural Re-Use
25	**15**	**Archaeological Site**	**0**	8.6	0	8.2	0	0.8	56.416	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	1	1	1	0	Blocky	3	No Re-Use
26	**15**	**Archaeological Site**	**0**	11.8	0	8.7	0	0.3	30.798	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	1	0	0	1	Rubbly	2	No Re-Use
27	**15**	**Archaeological Site**	**0**	6.1	0	4.7	0	0.2	5.734	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
28	**15**	**Archaeological Site**	**0**	9.7	0	8.4	0	0.75	61.11	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	Agricultural/Structural Re-Use
29	**15**	**Archaeological Site**	**0**	13.5	0	12	0	1	162	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	1	1	1	Rubbly	3	No Re-Use
30	**15**	**Archaeological Site**	**0**	10.7	0	8.4	0	1	89.88	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Blocky	2	No Re-Use
31	**15**	**Archaeological Site**	**0**	9.8	0	9.8	0	0.6	57.624	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	No Re-Use
32	**15**	**Archaeological Site**	**0**	8.5	0	8.2	0	0	69.7	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
33	**15**	**Archaeological Site**	**0**	9.9	0	9	0	0	89.1	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	1	1	1	Cobbly	3	No Re-Use
34	**15**	**Archaeological Site**	**0**	7.5	0	7.5	0	0	56.25	less than 50% intact	Unknown	Plateau	Recently bulldozed	1	1	0	0	0	0	0	0	1	0	Cobbly	1	Agricultural/Structural Re-Use
35	**15**	**Archaeological Site**	**0**	8.3	0	8.3	0	0	68.89	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Blocky	2	No Re-Use
36	**15**	**Archaeological Site**	**0**	4.9	0	4.4	0	0.1	2.156	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	1	1	0	Rubbly	2	No Re-Use
37	**15**	**Archaeological Site**	**0**	9.5	0	6.1	0	0.5	28.975	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	1	1	1	Blocky	3	No Re-Use
38	**15**	**Archaeological Site**	**0**	8.1	0	6.6	0	0.4	21.384	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	1	0	1	0	Blocky	2	No Re-Use
39	**15**	**Archaeological Site**	**0**	11.8	0	9.1	0	1	107.38	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	1	0	1	1	1	Cobbly	4	No Re-Use
40	**15**	**Archaeological Site**	**0**	13.4	0	5.1	0	1	68.34	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
41	**15**	**Archaeological Site**	**0**	6	0	6	0	1	36	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	1	1	1	Cobbly	3	No Re-Use
42	**15**	**Archaeological Site**	**0**	10.2	0	7.9	0	1	80.58	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	1	0	1	1	0	Rubbly	3	No Re-Use

43	**15**	**Archaeolo gical Site**	**0**	10.2	0	10.2	0	1	104.04	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	1	1	1	Cobbly	3	No Re-Use
44	**15**	**Archaeolo gical Site**	**0**	7.5	0	6.2	0	1	46.5	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	1	1	1	Cobbly	3	No Re-Use
45	**15**	**Archaeolo gical Site**	**0**	13	0	12	0	1	156	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	1	1	1	1	1	Rubbly	5	No Re-Use
46	**15**	**Archaeolo gical Site**	**0**	15	0	11	0	1	165	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	1	1	1	1	Cobbly	4	No Re-Use
47	**12**	**Archaeolo gical Site**	**0**	0	0	0	0	0	0	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/S tructural Re-Use
48	**1**	**Archaeolo gical Site**	**0**	20.4	0	12	0	1	244.8	more than 50% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Blocky	2	No Re-Use
49	**1**	**Archaeolo gical Site**	**0**	10.1	0	8	0	1.5	121.2	more than 50% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	1	1	1	1	0	Blocky	4	No Re-Use
50	**1**	**Archaeolo gical Site**	**0**	14.3	0	9	0	0	128.7	less than 50% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	1	1	0	1	1	Blocky	4	No Re-Use
51	**1**	**Archaeolo gical Site**	**0**	9.1	0	8	0	0.5	36.4	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	No Re-Use
52	**1**	**Archaeolo gical Site**	**0**	16.1	0	14.2	0	2.5	571.55	less than 50% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	1	0	1	0	Cobbly	2	Agricultural/S tructural Re-Use
53	**1**	**Archaeolo gical Site**	**0**	9.9	0	8.9	0	0	88.11	less than 50% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	Agricultural/S tructural Re-Use
54	**1**	**Archaeolo gical Site**	**0**	10.6	0	6	0	0	63.6	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	No Re-Use
55	**1**	**Archaeolo gical Site**	**0**	6.11	0	5	0	0.2	6.11	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	1	0	0	0	0	0	Cobbly	1	No Re-Use
56	**1**	**Archaeolo gical Site**	**0**	11.4	16. 3	6	0	0	97.8	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	No Re-Use
57	**1**	**Archaeolo gical Site**	**0**	11	18	11	0	0	198	100% intact	Unknown	Slope of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
58	**1**	**Archaeolo gical Site**	**0**	6.3	0	4.5	0	0.2	5.67	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
59	**1**	**Archaeolo gical Site**	**0**	7.7	0	6.8	0	0	52.36	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
60	**1**	**Archaeolo gical Site**	**0**	8.3	0	6.3	0	0	52.29	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	1	0	1	0	Cobbly	2	No Re-Use
61	**1**	**Archaeolo gical Site**	**0**	11.2	0	9.7	0	1.5	162.96	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	1	1	1	1	0	Blocky	4	No Re-Use

62	**34**	**None**	**0**	6	0	4.5	0	1	27	100% intact	Unknown	Flat Basin	Set-aside (fallow)	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
63	**34**	**None**	**0**	5.7	0	5.3	0	0.4	12.084	100% intact	Unknown	Flat Basin	Set-aside (fallow)	1	1	0	0	0	0	0	0	0	1	Blocky	1	No Re-Use
64	**31**	**Hydrological Feature**	**0**	0	0	0	0	0	0	100% intact	River	Plateau	Set-aside (fallow)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
65	**32**	**Hydrological Feature**	**0**	6.3	0	5.2	0	0.5	16.38	less than 50% intact	River	Wadi Bottom	Set-aside (fallow)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
66	**32**	**Hydrological Feature**	**0**	7.2	0	7.1	0	0.5	25.56	less than 50% intact	River	Wadi Bottom	Set-aside (fallow)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
67	**33**	**None**	**0**	7.4	0	6.7	0	0.5	24.79	more than 50% intact	River	Plateau	Grazing	1	1	0	0	0	0	1	0	0	0	Rubbly	1	Agricultural/Structural Re-Use
68	**33**	**None**	**0**	10.2	0	6.7	0	1	68.34	more than 50% intact	River	Plateau	Grazing	1	1	0	0	0	1	0	0	0	0	Rubbly	1	Agricultural/Structural Re-Use
69	**33**	**None**	**0**	9	0	8.1	0	1	72.9	100% intact	River	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
70	**33**	**None**	**0**	8	0	6.8	0	0.8	43.52	100% intact	River	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
71	**33**	**None**	**0**	11.2	0	11	0	1.5	184.8	100% intact	River	Plateau	Grazing	1	1	0	0	0	0	1	0	1	0	Blocky	2	No Re-Use
72	**33**	**None**	**0**	10.5	0	8.7	0	1	91.35	100% intact	River	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
73	**33**	**None**	**0**	8.7	0	7.2	0	0.8	50.112	less than 50% intact	River	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
74	**33**	**None**	**0**	7.8	0	7.6	0	0.5	29.64	more than 50% intact	River	Plateau	Agricultural (Planted)	1	1	0	0	0	0	1	0	0	0	Rubbly	1	Agricultural/Structural Re-Use
75	**33**	**None**	**0**	13.7	0	16.2	0	1.5	332.91	more than 50% intact	River	Plateau	Agricultural (Planted)	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
76	**33**	**None**	**0**	12.6	0	10.4	0	1.2	157.248	more than 50% intact	River	Plateau	Agricultural (Planted)	1	1	0	0	0	0	1	0	1	0	Blocky	2	No Re-Use
77	**33**	**None**	**0**	9	0	8.3	0	0.6	44.82	more than 50% intact	River	Plateau	Agricultural (Planted)	1	1	0	0	1	0	1	0	1	0	Blocky	3	No Re-Use
78	**33**	**None**	**0**	8.8	0	7	0	0.5	30.8	more than 50% intact	River	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use

79	**33**	**None**	**0**	10.5	0	8.5	0	0.7	62.475	100% intact	River	Plateau	Agricultural (Planted)	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
80	**12**	**Archaeological Site**	**0**	7.4	0	7.4	0	1.25	68.45	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
81	**12**	**Archaeological Site**	**0**	5.8	0	5.8	0	0.75	25.23	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
82	**12**	**Archaeological Site**	**0**	8.2	0	8.2	0	1	67.24	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	1	0	0	0	Rubbly	1	No Re-Use
83	**12**	**Archaeological Site**	**0**	8	0	8	0	1	64	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
84	**12**	**Archaeological Site**	**0**	5.1	0	5.1	0	0.5	13.005	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
85	**12**	**Archaeological Site**	**0**	7.5	0	7.5	0	1.25	70.3125	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
86	**12**	**Archaeological Site**	**0**	6.5	0	6.5	0	0.5	21.125	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
87	**12**	**Archaeological Site**	**0**	5.6	0	5.6	0	0.7	21.952	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	1	0	0	0	1	0	Rubbly	2	No Re-Use
88	**12**	**Archaeological Site**	**0**	5.5	0	5.5	0	0.5	15.125	more than 50% intact	Seasonal Lakes	Flat Basin	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Unknown
89	**12**	**Archaeological Site**	**0**	6.1	0	6.1	0	0.5	18.605	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
90	**12**	**Archaeological Site**	**0**	6.8	0	6.3	0	0.3	12.852	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
91	**12**	**Archaeological Site**	**0**	5.2	0	5.2	0	0.5	13.52	100% intact	Seasonal Lakes	Flat Basin	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
92	**15**	**Archaeological Site**	**0**	12	0	9.9	0	0.5	59.4	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	1	0	1	0	Blocky	2	No Re-Use
93	**15**	**Archaeological Site**	**0**	3.9	0	3.6	0	0.25	3.51	100% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Soil-filled	0	No Re-Use
94	**15**	**Archaeological Site**	**0**	7.9	0	7.1	0	0.25	14.0225	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	1	0	1	0	Blocky	2	No Re-Use
95	**15**	**Archaeological Site**	**0**	13.5	0	9.4	0	0.5	63.45	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	1	0	1	1	Rubbly	3	No Re-Use
96	**15**	**Archaeological Site**	**0**	6.8	0	3.5	0	0.25	5.95	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Blocky	2	No Re-Use
97	**1**	**Archaeological Site**	**0**	10.7	0	8.9	0	0	95.23	100% intact	Unknown	Slope of Ridge	Grazing	1	0	1	0	1	0	1	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
98	**1**	**Archaeological Site**	**0**	17.7	0	5.5	0	0	97.35	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use

99	**1**	**Archaeological Site**	**0**	7.8	0	5.5	0	0	42.9	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	1	0	1	Rubbly	2	No Re-Use
100	**33**	**None**	**0**	6.3	0	6.2	0	0.3	11.718	more than 50% intact	River	Plateau	Agricultural (Planted)	1	1	0	0	0	0	1	0	0	0	Rubbly	1	Agricultural/Structural Re-Use
101	**33**	**None**	**0**	8	0	6	0	0.5	24	100% intact	River	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
102	**33**	**None**	**0**	8.8	0	7.1	0	0.5	31.24	100% intact	River	Plateau	Agricultural (Planted)	1	1	0	0	0	0	0	0	0	1	Rubbly	1	Agricultural/Structural Re-Use
103	**29**	**Hydrological Feature**	**0**	11.4	0	9.3	0	1	106.02	100% intact	Seasonal Lakes	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	Agricultural/Structural Re-Use
104	**29**	**Hydrological Feature**	**0**	11	0	9.5	0	0	104.5	100% intact	Seasonal Lakes	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	No Re-Use
105	**29**	**Hydrological Feature**	**0**	9.5	0	7.4	0	0.5	35.15	100% intact	Seasonal Lakes	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Soil-filled	0	No Re-Use
106	**29**	**Hydrological Feature**	**0**	12.8	0	11.6	0	1.8	267.264	more than 50% intact	Seasonal Lakes	Plateau	Agricultural (Planted)	1	1	0	0	0	0	0	0	0	1	Rubbly	1	Agricultural/Structural Re-Use
107	**29**	**Hydrological Feature**	**0**	12	0	5.3	0	0.4	25.44	100% intact	Seasonal Lakes	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
108	**29**	**Hydrological Feature**	**0**	11	0	9.4	0	0.5	51.7	100% intact	Seasonal Lakes	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
109	**29**	**Hydrological Feature**	**0**	14.5	0	4.6	0	0	66.7	100% intact	Seasonal Lakes	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
110	**29**	**Hydrological Feature**	**0**	11.2	0	7.6	0	0.4	34.048	more than 50% intact	Seasonal Lakes	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
111	**29**	**Hydrological Feature**	**0**	9.7	0	6.7	0	0.5	32.495	more than 50% intact	Seasonal Lakes	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
112	**29**	**Hydrological Feature**	**0**	16	0	5	0	0.6	48	more than 50% intact	Seasonal Lakes	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
113	**29**	**Hydrological**	**0**	10.4	0	7.8	0	0	81.12	100% intact	Seasonal Lakes	Plateau	Set-aside (fallow)	1	1	0	0	0	0	1	0	1	0	Cobbly	2	Agricultural/Structural Re-

		Feature																								Use
114	**29**	**Hydrological Feature**	**0**	7.8	0	6.8	0	0.4	21.216	more than 50% intact	Seasonal Lakes	Plateau	Agricultural (Planted)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
115	**29**	**Hydrological Feature**	**0**	10.2	0	6.6	0	0.5	33.66	more than 50% intact	Seasonal Lakes	Plateau	Agricultural (Planted)	1	1	0	0	0	0	0	0	1	0	Cobbly	1	Agricultural/Structural Re-Use
116	**29**	**Hydrological Feature**	**0**	15.6	0	4.8	0	0.4	29.952	more than 50% intact	Seasonal Lakes	Plateau	Grazing	1	1	0	0	0	1	0	0	0	0	Blocky	1	Agricultural/Structural Re-Use
117	**29**	**Hydrological Feature**	**0**	11.3	0	6.2	0	0.5	35.03	more than 50% intact	Seasonal Lakes	Plateau	Grazing	1	1	0	0	0	0	1	0	0	0	Rubbly	1	Agricultural/Structural Re-Use
118	**29**	**Hydrological Feature**	**0**	13.2	0	4.7	0	0.2	12.408	100% intact	Seasonal Lakes	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Cobbly	0	Agricultural/Structural Re-Use
119	**29**	**Hydrological Feature**	**0**	9.8	9.8	6.4	0	0	62.72	more than 50% intact	Seasonal Lakes	Plateau	Grazing	1	1	0	0	0	0	1	0	1	0	Rubbly	2	Agricultural/Structural Re-Use
120	**29**	**Hydrological Feature**	**0**	9.5	0	9.2	0	0.5	43.7	less than 50% intact	Seasonal Lakes	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
121	**29**	**Hydrological Feature**	**0**	13.8	0	4.1	0	0.2	11.316	100% intact	Seasonal Lakes	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
122	**29**	**Hydrological Feature**	**0**	6.4	0	6.2	0	0.4	15.872	more than 50% intact	Seasonal Lakes	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
123	**30**	**Modern Village**	**0**	5.3	0	4.3	0	0.5	11.395	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Cobbly	1	No Re-Use
124	**30**	**Modern Village**	**0**	8.6	8.6	4	0	0	34.4	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	1	0	0	0	1	Blocky	2	Agricultural/Structural Re-Use
125	**30**	**Modern Village**	**0**	8.7	0	3.7	0	0.3	9.657	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	No Re-Use
126	**30**	**Modern Village**	**0**	7.7	0	7.5	0	0.4	23.1	less than 50% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
127	**30**	**Modern Village**	**0**	0	0	0	0	0	0	less than 50% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use

128	**30**	**Modern Village**	**0**	6.2	0	5.2	0	0.5	16.12	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	Agricultural/Structural Re-Use
129	**30**	**Modern Village**	**0**	9	0	7.7	0	0.4	27.72	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	Agricultural/Structural Re-Use
130	**30**	**Modern Village**	**0**	6.5	0	6.1	0	0.4	15.86	100% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Cobbly	0	No Re-Use
131	**30**	**Modern Village**	**0**	7.9	0	7.2	0	0.6	34.128	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	No Re-Use
132	**30**	**Modern Village**	**0**	9.2	0	9.2	0	0	84.64	more than 50% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
133	**30**	**Modern Village**	**0**	6.9	0	6.5	0	0.4	17.94	less than 50% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
134	**30**	**Modern Village**	**0**	4.9	0	4.4	0	0.2	4.312	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Rubbly	2	No Re-Use
135	**17**	**Hydrological Feature**	**0**	12.7	0	7.4	0	0.5	46.99	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	1	0	1	1	Cobbly	3	No Re-Use
136	**34**	**None**	**0**	11.5	0	9.3	0	1	106.95	100% intact	Unknown	Flat Basin	Set-aside (fallow)	1	1	0	0	0	0	1	0	0	0	Blocky	1	No Re-Use
137	**34**	**None**	**0**	8.3	0	8.2	0	1	68.06	100% intact	Unknown	Flat Basin	Set-aside (fallow)	0	1	0	0	1	0	0	0	0	0	Blocky	1	No Re-Use
138	**34**	**None**	**0**	11.4	0	11.3	0	1.6	206.112	100% intact	Unknown	Flat Basin	Set-aside (fallow)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
139	**34**	**None**	**0**	8	0	4.8	0	0.2	7.68	100% intact	Unknown	Flat Basin	Set-aside (fallow)	1	1	0	0	0	0	0	0	1	1	Rubbly	1	No Re-Use
140	**34**	**None**	**0**	7.6	0	7.1	0	0	53.96	100% intact	Unknown	Flat Basin	Set-aside (fallow)	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
141	**34**	**None**	**0**	12.1	0	11.1	0	2	268.62	100% intact	Unknown	Flat Basin	Set-aside (fallow)	1	1	0	0	0	0	1	0	0	1	Blocky	2	No Re-Use
142	**17**	**Hydrological Feature**	**0**	9.5	0	5.7	0	0.5	27.075	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
143	**17**	**Hydrological Feature**	**0**	14.7	0	8.1	0	2	238.14	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	1	0	0	0	0	1	Cobbly	2	Agricultural/Structural Re-Use
144	**17**	**Hydrological Feature**	**0**	11	0	9.6	0	0.4	42.24	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	1	1	1	0	1	1	Cobbly	5	No Re-Use

145	**17**	**Hydrological Feature**	**0**	14	0	7.5	0	0	105	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	Agricultural/Structural Re-Use
146	**17**	**Hydrological Feature**	**0**	27.7	0	23	0	1	637.1	more than 50% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	1	0	1	1	Cobbly	4	Burial Re-Use
147	**17**	**Hydrological Feature**	**0**	9	0	7.3	0	0	65.7	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	Agricultural/Structural Re-Use
148	**17**	**Hydrological Feature**	**0**	8.7	0	6	0	0.3	15.66	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	1	0	1	1	Cobbly	4	No Re-Use
149	**17**	**Hydrological Feature**	**0**	9.5	0	6.5	0	1.2	74.1	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
150	**17**	**Hydrological Feature**	**0**	12.4	0	9.5	0	0.5	58.9	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	1	0	1	1	1	1	Rubbly	5	No Re-Use
151	**17**	**Hydrological Feature**	**0**	9.2	0	9	0	1	82.8	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
152	**17**	**Hydrological Feature**	**0**	9.8	0	7.7	0	0.4	30.184	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
153	**17**	**Hydrological Feature**	**0**	10.2	0	8.2	0	2	167.28	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	0	1	Rubbly	2	No Re-Use
154	**17**	**Hydrological Feature**	**0**	18.3	0	7.4	0	0.5	67.71	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	1	1	Cobbly	3	No Re-Use
155	**17**	**Hydrological Feature**	**0**	6.7	0	4.4	0	0.4	11.792	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	1	0	Blocky	2	No Re-Use
156	**17**	**Hydrological Feature**	**0**	12.8	0	9.6	0	0.7	86.016	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	1	0	1	1	Rubbly	4	No Re-Use
157	**17**	**Hydrological Feature**	**0**	8.7	0	8.3	0	1.2	86.652	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	0	1	Rubbly	2	No Re-Use
158	**17**	**Hydrological Feature**	**0**	9	0	8.2	0	1	73.8	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use

159	**17**	**Hydrological Feature**	**0**	13.5	0	7.4	0	0.5	49.95	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	0	1	Cobbly	2	No Re-Use
160	**17**	**Hydrological Feature**	**0**	9.6	0	7	0	1	67.2	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	1	1	0	0	1	1	Blocky	4	No Re-Use
161	**17**	**Hydrological Feature**	**0**	9.6	0	5	0	1	48	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
162	**17**	**Hydrological Feature**	**0**	9	0	5.6	0	0.3	15.12	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
163	**17**	**Hydrological Feature**	**0**	13	0	12.6	0	0.4	65.52	more than 50% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	1	1	1	1	Cobbly	5	No Re-Use
164	**17**	**Hydrological Feature**	**0**	4	0	3	0	0.5	6	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
165	**17**	**Hydrological Feature**	**0**	9.6	0	9.4	0	1	90.24	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	1	1	Cobbly	3	No Re-Use
166	**17**	**Hydrological Feature**	**0**	9.3	0	5.3	0	1	49.29	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	No Re-Use
167	**17**	**Hydrological Feature**	**0**	9.5	0	8.5	0	1	80.75	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	1	1	Cobbly	3	No Re-Use
168	**17**	**Hydrological Feature**	**0**	17.7	24.2	7.8	0	1	188.76	more than 50% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	0	0	1	1	Cobbly	3	No Re-Use
169	**17**	**Hydrological Feature**	**0**	27	0	9.5	0	2	513	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	1	1	0	1	0	Cobbly	3	No Re-Use
170	**17**	**Hydrological Feature**	**0**	9.3	0	7.5	0	1	69.75	100% intact	Seasonal Lakes	Gentle Slope	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	No Re-Use
171	**7**	**Modern Village**	**0**	8.6	0	7.4	0	0.4	25.456	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	1	Blocky	3	No Re-Use
172	**7**	**Modern Village**	**0**	15.3	0	15.2	0	2	465.12	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	1	0	0	0	1	0	Blocky	2	No Re-Use
173	**7**	**Modern Village**	**0**	12.3	0	11.5	0	1.5	212.175	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	1	0	1	1	Blocky	4	Agricultural/Structural Re-

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174	**7**	**Modern Village**	**0**	22	0	18.4	0	3	1214.4	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
175	**7**	**Modern Village**	**0**	6.7	0	4.5	0	0.2	6.03	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Soil-filled	1	No Re-Use
176	**7**	**Modern Village**	**0**	6.5	0	4	0	0.2	5.2	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	0	0	Blocky	1	No Re-Use
177	**7**	**Modern Village**	**0**	6.6	0	4.1	0	0.2	5.412	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	No Re-Use
178	**7**	**Modern Village**	**0**	21.7	0	14	0	3	911.4	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	0	Rubbly	2	No Re-Use
179	**7**	**Modern Village**	**0**	9.3	0	6.4	0	0.4	23.808	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	0	Rubbly	2	No Re-Use
180	**7**	**Modern Village**	**0**	8.7	0	6.6	0	0.5	28.71	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	1	0	0	0	1	0	Cobbly	2	No Re-Use
181	**7**	**Modern Village**	**0**	7.8	0	7.6	0	0	59.28	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	No Re-Use
182	**7**	**Modern Village**	**0**	4.8	0	3.7	0	0.3	5.328	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	No Re-Use
183	**7**	**Modern Village**	**0**	4.4	0	3.8	0	0.1	1.672	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Rubbly	2	No Re-Use
184	**7**	**Modern Village**	**0**	4.6	0	2.6	0	0.1	1.196	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	No Re-Use
185	**7**	**Modern Village**	**0**	3.3	0	2	0	1	6.6	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	No Re-Use
186	**7**	**Modern Village**	**0**	9.2	0	8.2	0	1.5	113.16	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
187	**7**	**Modern Village**	**0**	9.2	0	9	0	0.5	41.4	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Rubbly	2	No Re-Use
188	**7**	**Modern Village**	**0**	10.9	0	5	0	0.4	21.8	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	1	Cobbly	3	No Re-Use
189	**7**	**Modern Village**	**0**	10.1	0	8.8	0	1	88.88	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	1	1	1	0	Rubbly	4	No Re-Use
190	**7**	**Modern Village**	**0**	16.7	0	15.5	0	2	517.7	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Rubbly	2	No Re-Use
191	**7**	**Modern Village**	**0**	13.8	0	12.3	0	3	509.22	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Rubbly	3	Agricultural/Structural Re-Use
192	**7**	**Modern Village**	**0**	11.2	0	7.5	0	1.5	126	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	Agricultural/Structural Re-

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193	**22**	**Modern Village**	**0**	6.7	0	6.5	0	0.3	13.065	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	1	0	1	0	Cobbly	3	No Re-Use
194	**22**	**Modern Village**	**0**	5.4	0	4.7	0	0.3	7.614	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	1	0	1	0	Cobbly	3	No Re-Use
195	**22**	**Modern Village**	**0**	8.9	0	8.5	0	0.7	52.955	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	1	0	1	0	Cobbly	3	No Re-Use
196	**22**	**Modern Village**	**0**	8.8	0	8	0	1	70.4	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	1	1	0	Rubbly	2	No Re-Use
197	**22**	**Modern Village**	**0**	6.1	0	5.1	0	0.3	9.333	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	No Re-Use
198	**22**	**Modern Village**	**0**	9.8	0	7.1	0	1.5	104.37	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	No Re-Use
199	**22**	**Modern Village**	**0**	6.8	0	5.3	0	0.5	18.02	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Blocky	2	No Re-Use
200	**22**	**Modern Village**	**0**	5.5	0	5.2	0	0.3	8.58	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	1	0	1	0	Blocky	3	No Re-Use
201	**22**	**Modern Village**	**0**	5.4	0	4.8	0	0.2	5.184	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	No Re-Use
202	**22**	**Modern Village**	**0**	7.2	0	6.2	0	0.5	22.32	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	No Re-Use
203	**22**	**Modern Village**	**0**	5.2	0	3.9	0	0.3	6.084	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Rubbly	2	No Re-Use
204	**22**	**Modern Village**	**0**	6.4	0	6.2	0	0.5	19.84	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
205	**22**	**Modern Village**	**0**	10.4	0	10.2	0	1	106.08	less than 50% intact	Anthropological Water Source	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
206	**22**	**Modern Village**	**0**	8.8	0	7.4	0	0.3	19.536	more than 50% intact	Anthropological Water	Plateau	Grazing	0	1	0	0	0	0	0	0	1	0	Cobbly	1	Agricultural/Structural Re-

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207	**22**	**Modern Village**	**0**	7	0	6.7	0	0..3 0	14.07	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	1	0	1	0	Cobbly	2	No Re-Use
208	**22**	**Modern Village**	**0**	6.8	0	5.2	0	0.3	10.608	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
209	**22**	**Modern Village**	**0**	8.8	0	8.3	0	1	73.04	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
210	**22**	**Modern Village**	**0**	0	0	4.8	0	0.5	0	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	Agricultural/Structural Re-Use
211	**22**	**Modern Village**	**0**	5.5	0	4.5	0	0.4	9.9	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
212	**22**	**Modern Village**	**0**	4.7	0	4.1	0	0.1	1.927	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Soil-filled	2	No Re-Use
213	**22**	**Modern Village**	**0**	4.3	0	3.9	0	0.4	6.708	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Blocky	2	No Re-Use
214	**22**	**Modern Village**	**0**	4.3	0	3.6	0	0.4	6.192	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	Agricultural/Structural Re-Use
215	**22**	**Modern Village**	**0**	13.8	0	8.8	0	1	121.44	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
216	**22**	**Modern Village**	**0**	6.1	0	5.7	0	0.3	10.431	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Blocky	2	Unknown
217	**22**	**Modern Village**	**0**	7.4	0	6.6	0	0.3	14.652	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	No Re-Use
218	**22**	**Modern Village**	**0**	12.1	0	9.7	0	0.7	82.159	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
219	**22**	**Modern Village**	**0**	12.2	0	10.2	0	0.5	62.22	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Blocky	2	Agricultural/Structural Re-Use
220	**22**	**Modern Village**	**0**	14.5	0	9.2	0	1	133.4	more than 50% intact	Anthropological Water	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	Agricultural/Structural Re-

											Source															Use
221	**22**	**Modern Village**	**0**	12.7	0	5.8	0	0.4	29.464	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
222	**22**	**Modern Village**	**0**	12	0	11.7	0	1	140.4	less than 50% intact	Anthropological Water Source	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
223	**22**	**Modern Village**	**0**	12.2	0	11.2	0	0.6	81.984	less than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Cobbly	2	Agricultural/Structural Re-Use
224	**22**	**Modern Village**	**0**	11.8	0	11.2	0	2	264.32	less than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	Agricultural/Structural Re-Use
225	**22**	**Modern Village**	**0**	10.8	0	8.6	0	1	92.88	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	Agricultural/Structural Re-Use
226	**22**	**Modern Village**	**0**	7.8	0	6.3	0	0.3	14.742	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Rubbly	2	Agricultural/Structural Re-Use
227	**22**	**Modern Village**	**0**	10.7	0	10.5	0	1	112.35	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	1	0	Cobbly	2	Agricultural/Structural Re-Use
228	**22**	**Modern Village**	**0**	10.2	0	8.7	0	2	177.48	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	Agricultural/Structural Re-Use
229	**22**	**Modern Village**	**0**	8.3	0	7.3	0	0.5	30.295	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
230	**22**	**Modern Village**	**0**	8.3	0	4.8	0	0.5	19.92	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Blocky	2	Agricultural/Structural Re-Use
231	**22**	**Modern Village**	**0**	7.7	0	7.4	0	0.5	28.49	more than 50% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	0	0	1	0	0	0	0	Blocky	1	Agricultural/Structural Re-Use
232	**13**	**Archaeological Site**	**1**	13.3	0	12.2	0	0.5	81.13	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
233	**13**	**Archaeological Site**	**1**	10.7	0	10.5	0	1	112.35	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	0	Rubbly	2	No Re-Use
234	**13**	**Archaeological Site**	**1**	14.3	0	13.9	0	1.75	347.8475	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	1	0	1	0	0	1	Rubbly	3	Agricultural/Structural Re-Use

235	**13**	**Archaeological Site**	**1**	8.5	14.9	8.2	0	1	122.18	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	1	1	0	0	1	1	Rubbly	4	No Re-Use
236	**13**	**Archaeological Site**	**1**	9.2	15	7.6	0	0.75	85.5	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
237	**13**	**Archaeological Site**	**1**	11	0	10.8	0	1	118.8	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
238	**13**	**Archaeological Site**	**1**	7.7	0	8.25	0	0.25	15.88125	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Cobbly	0	No Re-Use
239	**13**	**Archaeological Site**	**1**	8.3	13.7	8.15	0	2	223.31	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	0	0	Rubbly	1	No Re-Use
240	**13**	**Archaeological Site**	**1**	8	0	7.2	0	0.4	23.04	100% intact	Seasonal Lakes	Slope of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Cobbly	1	No Re-Use
241	**13**	**Archaeological Site**	**1**	6.4	14.6	6.9	0	0.5	50.37	100% intact	Seasonal Lakes	Slope of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
242	**13**	**Archaeological Site**	**1**	8.4	9.7	8.5	0	1	82.45	less than 50% intact	Seasonal Lakes	Slope of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
243	**13**	**Archaeological Site**	**1**	11.8	0	8.5	0	1	100.3	less than 50% intact	Seasonal Lakes	Flat Basin	Set-aside (fallow)	1	0	1	1	0	0	0	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
244	**15**	**Archaeological site**	**1**	11.7	0	10.2	0	1	119.34	less than 50% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	Agricultural/Structural Re-Use
245	**15**	**Archaeological site**	**1**	10.4	0	5.1	0	0.75	39.78	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
246	**15**	**Archaeological site**	**1**	10.1	0	4.5	0	0.5	22.725	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
247	**15**	**Archaeological site**	**1**	8.4	12.1	7.5	0	1.5	136.125	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	1	0	1	1	Rubbly	3	Agricultural/Structural Re-Use
248	**15**	**Archaeological site**	**1**	11.2	0	6.65	0	0.5	37.24	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
249	**15**	**Archaeological site**	**1**	4.8	0	3.7	0	0.5	8.88	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	1	0	0	1	0	Cobbly	2	No Re-Use
250	**15**	**Archaeological site**	**1**	3.3	0	3	0	0.2	1.98	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Soil-filled	1	Agricultural/Structural Re-Use
251	**15**	**Archaeological site**	**1**	5.6	0	4.2	0	0.3	7.056	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	1	0	0	1	0	Rubbly	2	No Re-Use
252	**15**	**Archaeological site**	**1**	11.8	15.6	5.8	0	1	90.48	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
253	**15**	**Archaeological site**	**1**	4.5	0	3.4	0	0.5	7.65	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use

254	**15**	**Archaeological site**	**1**	9.4	0	7.6	0	1	71.44	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	1	0	1	1	0	Rubbly	3	No Re-Use
255	**15**	**Archaeological Site**	**1**	9.3	0	3.8	0	0.5	17.67	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	1	Soil-filled	2	No Re-Use
256	**15**	**Archaeological site**	**1**	12.5	0	8.3	0	1.5	155.625	100% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	1	0	1	1	Rubbly	3	No Re-Use
257	**7**	**Archaeological site**	**1**	25.5	0	18	0	2.5	1147.5	less than 50% intact	Unknown	Summit of Ridge	Set-aside (fallow)	1	1	0	1	0	1	1	0	0	0	Blocky	2	No Re-Use
258	**7**	**Archaeological site**	**0**	16.4	0	6.4	0	1	104.96	more than 50% intact	Unknown	Summit of Ridge	Set-aside (fallow)	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
259	**7**	**Archaeological site**	**0**	14	0	4.3	0	0.75	45.15	more than 50% intact	Unknown	Summit of Ridge	Set-aside (fallow)	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
260	**7**	**Archaeological site**	**0**	9.8	0	8.2	0	1	80.36	100% intact	Unknown	Summit of Ridge	Set-aside (fallow)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
261	**7**	**Archaeological site**	**0**	7.1	0	6.5	0	1	46.15	100% intact	Unknown	Summit of Ridge	Set-aside (fallow)	1	1	0	0	0	1	0	0	0	0	Rubbly	1	No Re-Use
262	**7**	**Archaeological site**	**0**	27.5	0	10.1	0	2	555.5	more than 50% intact	Unknown	Summit of Ridge	Set-aside (fallow)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
263	**15**	**Archaeological site**	**0**	11.6	0	6.4	0	1.5	111.36	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	1	0	0	1	1	Rubbly	3	No Re-Use
264	**15**	**Archaeological site**	**0**	16.1	0	13.8	0	1	222.18	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	Agricultural/Structural Re-Use
265	**15**	**Archaeological site**	**0**	5.1	0	4.9	0	0.5	12.495	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
266	**15**	**Archaeological site**	**0**	11.1	0	3.4	0	1	37.74	100% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
267	**15**	**Archaeological site**	**0**	4.4	0	4	0	0.75	13.2	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
268	**15**	**Archaeological site**	**0**	13.6	0	7	0	0.75	71.4	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	Agricultural/Structural Re-Use
269	**15**	**Archaeological site**	**0**	5.6	0	5.1	0	1	28.56	100% intact	Unknown	plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
270	**15**	**Archaeological site**	**0**	7.1	0	6.3	0	1.5	67.095	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
271	**15**	**Archaeological site**	**0**	5.1	0	4.3	0	0.75	16.4475	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
272	**15**	**Archaeological site**	**0**	8.4	0	6	0	1.5	75.6	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use

273	**15**	**Archaeolo gical site**	**0**	10.2	0	8	0	2	163.2	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
274	**15**	**Archaeolo gical site**	**0**	7.7	0	7.7	0	1	59.29	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
275	**15**	**Archaeolo gical site**	**0**	3.4	0	2.8	0	0.2	1.904	100% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
276	**15**	**Archaeolo gical site**	**0**	4.8	0	3	0	0.5	7.2	100% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	1	Rubbly	0	No Re-Use
277	**15**	**archaeolo gical site**	**0**	5.9	0	3.6	0	1	21.24	100% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
278	**15**	**Archaeolo gical site**	**0**	16	0	6.5	0	1.5	156	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
279	**15**	**Archaeolo gical site**	**0**	4.2	7	3.5	0	0.5	12.25	more than 50% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
280	**15**	**Archaeolo gical site**	**0**	6.7	0	5.6	0	1	37.52	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
281	**15**	**Archaeolo gical site**	**0**	5.3	0	5	0	1	26.5	100% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
282	**16**	**Archaeolo gical site**	**0**	9.4	0	7	0	2	131.6	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
283	**16**	**Archaeolo gical site**	**0**	12	0	9.2	0	1.5	165.6	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
284	**16**	**Archaeolo gical site**	**0**	8.2	0	8.1	0	1.5	99.63	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
285	**16**	**Archaeolo gical site**	**0**	10	0	7.1	0	1	71	100% intact	Unknown	Summit of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
286	**16**	**Archaeolo gical site**	**0**	17	0	16	0	2.5	680	100% intact	Unknown	Summit of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
287	**16**	**Archaeolo gical site**	**0**	10.4	0	9.4	0	1.5	146.64	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
288	**15**	**Archaeolo gical site**	**1**	5.25	0	5	0	0.2	5.25	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Soil-filled	0	No Re-Use
289	**15**	**Archaeolo gical site**	**1**	9	0	9	0	0.5	40.5	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Cobbly	1	No Re-Use
290	**15**	**Archaeolo gical site**	**1**	10.5	0	10	0	0.5	52.5	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Cobbly	0	No Re-Use
291	**15**	**Archaeolo gical site**	**1**	8	0	7	0	1	56	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	1	0	Rubbly	0	No Re-Use
292	**15**	**Archaeolo gical site**	**1**	9	0	8	0	0.7 5	54	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
293	**15**	**Archaeolo gical site**	**1**	7	0	4	0	0.5	14	more than 50% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use

294	**15**	**Archaeological site**	**1**	6	0	4.5	0	0.5	13.5	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Cobbly	1	No Re-Use
295	**15**	**Archaeological site**	**1**	6	0	5	0	0.3	9	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Blocky	1	No Re-Use
296	**15**	**Archaeological site**	**1**	6.5	0	6	0	0.4	15.6	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Blocky	1	No Re-Use
297	**15**	**Archaeological site**	**1**	6	0	5	0	0.4	12	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
298	**15**	**Archaeological site**	**1**	4.05	0	4.5	0	0.4	7.29	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Blocky	1	No Re-Use
299	**15**	**Archaeological site**	**1**	5	0	3	0	0.5	7.5	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Blocky	0	No Re-Use
300	**15**	**Archaeological site**	**1**	15	0	13	0	1	195	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
301	**15**	**Archaeological site**	**1**	8	13	9	0	1	117	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
302	**15**	**Archaeological site**	**1**	13	0	12	0	1.5	234	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
303	**15**	**Archaeological site**	**1**	12	0	12	0	2	288	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
304	**15**	**Archaeological site**	**1**	12	0	10	0	1.5	180	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
305	**15**	**Archaeological site**	**1**	6	0	6	0	0.5	18	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
306	**15**	**Archaeological site**	**1**	10	0	9	0	1.5	135	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
307	**15**	**Archaeological site**	**1**	14	0	6	0	1	84	less than 50% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	Agricultural/Structural Re-Use
308	**16**	**Archaeological site**	**1**	8	0	6	0	1	48	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
309	**16**	**Archaeological site**	**1**	5	0	5	0	0.5	12.5	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
310	**16**	**Archaeological site**	**1**	5	0	5	0	0.5	12.5	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
311	**16**	**Archaeological site**	**1**	8	0	7	0	0.75	42	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	rubbly	1	No Re-Use
312	**16**	**Archaeological site**	**1**	7	0	6	0	0.5	21	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
313	**16**	**Archaeological site**	**1**	7.5	0	4.5	0	0.5	16.875	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use

314	**16**	**Archaeological site**	**0**	8.2	0	7.1	0	1	58.22	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
315	**16**	**Archaeological site**	**0**	8.4	0	7.9	0	1	66.36	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
316	**16**	**Archaeological site**	**0**	6.1	0	5.4	0	1	32.94	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
317	**16**	**Archaeological site**	**0**	6	0	5.2	0	1	31.2	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
318	**16**	**Archaeological site**	**0**	5.3	0	5.1	0	0.5	13.515	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
319	**16**	**archaeological site**	**0**	4.9	0	4.8	0	1	23.52	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
320	**16**	**Archaeological site**	**0**	6	0	4.6	0	1	27.6	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
321	**16**	**Archaeological site**	**0**	4.2	6.5	4.3	0	0.5	13.975	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
322	**16**	**Archaeological site**	**0**	9.7	14	8.2	0	2	229.6	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	1	0	Blocky	2	Agricultural/Structural Re-Use
323	**16**	**Archaeological site**	**0**	5.1	0	4.9	0	0.4	9.996	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
324	**16**	**Arcuaeological site**	**0**	13.5	0	10.1	0	1	136.35	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use
325	**16**	**Archaeological site**	**0**	10.9	0	10.3	0	1.5	168.405	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
326	**19**	**Seasonal lake**	**1**	15.7	21.3	15.2	0	2.5	809.4	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	0	Blocky	2	No Re-Use
327	**19**	**Seasonal lake**	**1**	9.2	0	7.4	0	0.5	34.04	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Blocky	0	No Re-Use
328	**19**	**Seasonal lake**	**1**	6.9	0	6.7	0	0.5	23.115	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	0	Blocky	2	No Re-Use
329	**19**	**Seasonal lake**	**1**	5.6	0	2.4	0	0.2	2.688	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Blocky	0	No Re-Use
330	**19**	**Seasonal lake**	**1**	17.7	0	10.7	0	0.5	94.69500535	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
331	**19**	**Seasonal lake**	**1**	24.7	0	14.6	0	2	721.2400292	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	1	Rubbly	2	No Re-Use
332	**19**	**Seasonal lake**	**1**	19	0	14.6	0	1	277.4	more than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Blocky	0	No Re-Use
333	**19**	**Seasonal lake**	**1**	7.8	10.5	7.4	0	0.5	38.85	100% intact	Seasonal Lakes	Slope of ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use

334	**19**	**Seasonal lake**	**1**	19.8	0	15.5	0	1	306.8999845	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	0	1	1	0	0	0	0	1	0	Rubbly	0	Agricultural/Structural Re-Use
335	**19**	**Seasonal lake**	**1**	7.2	9.6	7	0	1	67.2	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
336	**19**	**Seasonal lake**	**1**	14.1	0	13	0	1	183.3	more than 50% intact	Seasonal Lakes	Slope of ridge	Grazing	1	1	0	1	0	1	1	0	1	0	Rubbly	3	No Re-Use
337	**19**	**Seasonal lake**	**1**	5.2	0	4.7	0	0.5	12.22	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	1	No Re-Use
338	**19**	**Seasonal lake**	**1**	16.4	0	12	0	2	393.6	less than 50% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	1	0	1	0	Rubbly	2	Agricultural/Structural Re-Use
339	**19**	**Seasonal lake**	**1**	7.7	0	6.4	0	1	49.28	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
340	**19**	**Seasonal lake**	**1**	13.7	0	7.4	0	2	202.76	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
341	**19**	**Seasonal lake**	**1**	10.9	0	7	0	2	152.6	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
342	**19**	**Seasonal lake**	**1**	5.8	0	4.7	0	1	27.26	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
343	**19**	**Seasonal lake**	**1**	6.8	0	6.6	0	0.5	22.44	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
344	**18**	**Seasonal lake**	**1**	8.5	0	5.1	0	1	43.35	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
345	**18**	**Seasonal lake**	**1**	16.6	0	12.4	0	2	411.68	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	Agricultural/Structural Re-Use
346	**18**	**Seasonal lake**	**1**	13.8	0	6.1	0	1.5	126.27	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
347	**18**	**Seasonal lake**	**1**	11	0	6.7	0	1	73.7	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	Agricultural/Structural Re-Use
348	**18**	**Seasonal lake**	**1**	7.7	0	4.8	0	0.75	27.72	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
349	**18**	**Seasonal lake**	**1**	11.5	0	4.7	0	0.75	40.5375	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
350	**18**	**Seasonal lake**	**1**	7.4	0	4.7	0	1	34.78	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
351	**18**	**Seasonal lake**	**1**	8.5	0	5.9	0	1.5	75.225	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
352	**18**	**Seasonal lake**	**1**	21.1	0	16	0	3	1012.8	100% intact	Seasonal Lakes	gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Blocky	1	Agricultural/Structural Re-

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353	**18**	**Seasonal lake**	**1**	12	0	11.2	0	1	134.4	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	rubbly	1	No Re-Use
354	**18**	**Seasonal lake**	**1**	14.1	0	12.9	0	1.5	272.835	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
355	**18**	**Seasonal lake**	**1**	14.4	0	9.8	0	2.5	352.8	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	Agricultural/Structural Re-Use
356	**18**	**Seasonal lake**	**1**	5.9	9.6	7.7	0	1	73.92	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	Agricultural/Structural Re-Use
357	**18**	**Seasonal lake**	**1**	5.8	10.1	6	0	1	60.6	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
358	**18**	**Seasonal lake**	**1**	6	11.1	4	0	0.5	22.2	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
359	**18**	**Seasonal lake**	**1**	7.7	0	6	0	1	46.2	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
360	**18**	**Archaeological site**	**0**	19.2	0	10.5	0	2	403.200021	more than 50% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	0	0	0	1	0	0	1	Rubbly	2	Agricultural/Structural Re-Use
361	**18**	**Archaeological site**	**1**	14.9	0	12	0	3	536.4	100% intact	Seasonal Lakes	Gentle slope	Grazing	1	1	0	1	0	0	1	1	0	0	Blocky	2	No Re-Use
362	**14**	**Modern settlement**	**1**	12.6	0	6.3	0	1	79.38	100% intact	Unknown	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
363	**14**	**Modern settlement**	**1**	14.8	0	13	0	1.25	240.5	100% intact	Unknown	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
364	**14**	**Modern settlement**	**1**	6.8	0	5.8	0	0.25	9.86	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	Agricultural/Structural Re-Use
365	**14**	**Modern settlement**	**1**	8.9	0	6	0	0.75	40.05	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	Agricultural/Structural Re-Use
366	**14**	**Modern settlement**	**1**	8.4	0	7.6	0	1.5	95.76	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	0	0	Rubbly	1	No Re-Use
367	**14**	**Modern settlement**	**1**	11.6	0	10.4	0	1.25	150.8	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
368	**14**	**Modern settlemen**	**1**	9.8	0	6	0	0.5	29.4	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	rubbly	1	No Re-Use

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369	**14**	**Modern settlement**	**1**	15.1	0	14.8	0	0.5	111.74	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	0	0	Rubbly	1	No Re-Use
370	**14**	**Modern settlement**	**1**	8.5	0	7	0	0.75	44.625	100% intact	Unknown	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
371	**14**	**Modern settlement**	**1**	5.9	0	3	0	0.2	3.54	100% intact	Unknown	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	rubbly	0	No Re-Use
372	**14**	**Modern settlement**	**1**	6.5	0	5.1	0	0.5	16.575	100% intact	Unknown	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
373	**14**	**Modern settlement**	**1**	16	0	12.4	0	1.5	297.6	100% intact	Unknown	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
374	**14**	**Modern settlement**	**1**	8.7	0	6.5	0	1	56.55	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
375	**14**	**Modern settlement**	**1**	8.7	0	8	0	1	69.6	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
376	**14**	**Modern settlement**	**1**	6.2	0	5.1	0	0.5	15.81	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	rubbly	1	No Re-Use
377	**14**	**Modern settlement**	**1**	13.8	0	6.4	0	1	88.32	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
378	**14**	**Modern settlement**	**1**	10.2	0	10	0	1	102	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	0	1	Rubbly	2	No Re-Use
379	**14**	**Modern settlement**	**1**	14.2	0	8.1	0	1.5	172.53	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	Agricultural/Structural Re-Use
380	**14**	**Modern settlement**	**1**	16.1	0	13.1	0	1	210.91	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	0	0	Rubbly	1	Agricultural/Structural Re-Use
381	**24**	**Archaeological site**	**1**	10.7	0	9.6	0	1	102.72	more than 50% intact	Unknown	Plateau	Set-aside (fallow)	1	1	0	1	0	0	0	1	0	0	Rubbly	1	Agricultural/Structural Re-Use
382	**24**	**Archaeological site**	**1**	9	12.3	8.5	0	1.25	130.6875	less than 50% intact	Unknown	Plateau	Set-aside (fallow)	1	1	0	1	0	0	0	1	0	0	Rubbly	1	Agricultural/Structural Re-

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383	**24**	**Archaeological site**	**1**	10.9	0	5.5	0	0.75	44.9625	more than 50% intact	Unknown	Plateau	Set-aside (fallow)	1	1	0	1	0	0	0	0	0	1	Rubbly	1	Agricultural/Structural Re-Use
384	**24**	**Archaeological site**	**1**	8.2	0	7.6	0	1	62.32	more than 50% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
385	**24**	**Archaeological site**	**1**	9	0	8	0	1	72	more than 50% intact	Unknown	Gentle slope	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
386	**24**	**Archaeological site**	**1**	13	0	10.9	0	1.5	212.55	more than 50% intact	Unknown	Gentle slope	Agriculture	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
387	**21**	**Archaeological site**	**1**	12.3	15.1	12.6	0	2	380.52	less than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	1	1	1	0	1	Rubbly	4	No Re-Use
388	**20**	**Archaeological site**	**1**	3	0	0.9	0	4	10.8	less than 50% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	1	1	0	0	1	Rubbly	3	No Re-Use
389	**20**	**Archaeological site**	**1**	4.9	0	4.8	0	0.5	11.76	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	No Re-Use
390	**20**	**Archaeological site**	**1**	8.1	10.5	5.5	0	1	57.75	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	No Re-Use
391	**20**	**Archaeological site**	**1**	7.3	13.1	4.5	0	0.5	29.475	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
392	**20**	**Archaeological site**	**1**	5	0	3.9	0	0.2	3.9	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	Cobbly	1	No Re-Use
393	**20**	**Archaeological site**	**1**	8.8	0	6.1	0	1.25	67.1	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	1	Cobbly	2	No Re-Use
394	**20**	**Archaeological site**	**1**	5.8	0	5.6	0	0.5	16.24	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	1	0	0	0	0	Rubbly	1	No Re-Use
395	**20**	**Archaeological site**	**1**	10.4	0	7.3	0	2	151.84	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
396	**20**	**Archaeological site**	**1**	15	0	7.9	0	2	237	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	0	1	Rubbly	2	Agricultural/Structural Re-Use
397	**20**	**Archaeological site**	**1**	9.9	0	4	0	0.5	19.8	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	No Re-Use
398	**20**	**Archaeological site**	**1**	10.1	0	5	0	0.75	37.875	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
399	**20**	**Archaeological site**	**1**	5.2	0	5.4	0	0.5	14.04	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	0	0	Rubbly	1	No Re-Use
400	**20**	**Archaeological site**	**1**	3.85	0	3.35	0	0.2	2.5795	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
401	**20**	**Archaeological site**	**1**	8.8	0	5.8	0	1	51.04	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use

402	**20**	**Archaeological site**	**1**	7.6	0	4.5	0	0.75	25.65	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
403	**20**	**Archaeological site**	**1**	7.6	0	6.9	0	1	52.44	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	No Re-Use
404	**20**	**Archaeological site**	**1**	8.1	0	6.6	0	1	53.46	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	No Re-Use
405	**20**	**Archaeological site**	**1**	8.3	0	8.2	0	1	68.06	100% intact	Seasonal Lakes	Summit of Ridge	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
406	**21**	**Archaeological site**	**1**	4.6	0	4.5	0	0.5	10.35	100% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
407	**21**	**Archaeological site**	**1**	7.4	0	5.5	0	0,75	30.525	100% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
408	**21**	**Archaeological site**	**1**	8.7	0	6.8	0	1	59.16	100% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
409	**21**	**Archaeological site**	**1**	9.2	0	6	0	1	55.2	100% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
410	**21**	**Archaeological site**	**1**	6.5	0	5.5	0	1.25	44.6875	more than 50% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
411	**21**	**Archaeological site**	**1**	11	0	8.6	0	1.5	141.9	more than 50% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Rubbly	1	No Re-Use
412	**21**	**Archaeological site**	**1**	5.6	0	4.7	0	0.9	23.688	100% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	1	0	1	Rubbly	2	No Re-Use
413	**21**	**Archaeological site**	**1**	6.4	0	4	0	0.5	12.8	100% intact	Unknown	gentle slope	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
414	**21**	**Archaeological site**	**1**	8.6	0	7.7	0	1	66.22	100% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Cobbly	1	No Re-Use
415	**21**	**Archaeological site**	**1**	8.8	0	6.6	0	1	58.08	100% intact	Unknown	gentle slope	Grazing	1	1	0	1	0	0	0	1	0	0	Cobbly	1	No Re-Use
416	**9**	**Archaeological Site**	**1**	13.1	0	11	0	1	144.1	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Cobbly	0	No Re-Use
417	**9**	**Archaeological site**	**1**	18.2	0	8	0	2	291.200016	100% intact	Unknown	Gentle slope	Grazing	1	1	0	1	0	0	1	0	0	0	Cobbly	1	No Re-Use
418	**9**	**Archaeological site**	**1**	26.7	0	8.6	0	1	229.6200086	100% intact	Unknown	Gentle slope	Grazing	1	1	0	1	0	0	1	0	0	0	Cobbly	1	No Re-Use
419	**9**	**Archaeological site**	**1**	36.5	0	6.9	0	1	251.85	100% intact	Unknown	Gentle slope	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	Agricultural/Structural Re-Use
420	**9**	**Archaeological site**	**1**	21.5	0	5.4	0	1	116.1	100% intact	Unknown	Gentle slope	Grazing	1	0	1	1	0	0	0	0	0	0	cobbly	0	No Re-Use
421	**9**	**Archaeological site**	**1**	6.4	0	5.6	0	1	35.84	100% intact	Unknown	Gentle slope	Grazing	1	0	1	1	0	0	0	0	0	0	cobbly	0	No Re-Use

422	**9**	**Archaeological site**	**1**	10.3	0	8.8	0	1	90.64	100% intact	Unknown	Gentle slope	Grazing	1	0	1	1	0	0	0	0	0	0	Rubbly	0	No Re-Use
423	**9**	**Archaeological site**	**1**	8	0	6.4	0	1	51.2	100% intact	Unknown	Gentle slope	Grazing	1	0	1	1	0	0	0	0	0	0	Cobbly	0	No Re-Use
424	**23**	**Archaeological site**	**1**	9	0	5.8	0	1	52.2	100% intact	Unknown	plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
425	**23**	**Archaeological site**	**1**	9.8	0	5.8	0	1	56.84	100% intact	Unknown	plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
426	**23**	**Archaeological site**	**1**	12.8	0	7.2	0	1	92.16	100% intact	Unknown	plateau	Grazing	1	1	0	1	0	0	0	0	0	0	Rubbly	1	No Re-Use
427	**23**	**Archaeological site**	**1**	14.8	0	8.7	0	1	128.76	less than 50% intact	Unknown	plateau	Grazing	1	1	0	1	0	0	1	0	0	0	Rubbly	1	No Re-Use
428	**23**	**Archaeological site**	**1**	11.7	0	8.4	0	1	98.28	less than 50% intact	Unknown	plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
429	**2**	**Archaeological Site**	**1**	8.1	0	8	0	0.75	48.6	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	No Re-Use
430	**2**	**Archaeological Site**	**0**	6.3	0	3.45	0	0.8	17.388	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
431	**2**	**Archaeological Site**	**0**	4.3	0	3.7	0	0.6	9.546	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
432	**2**	**Archaeological Site**	**0**	9.75	0	9.2	0	2	179.4	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
433	**2**	**Archaeological Site**	**0**	12.9	0	9.6	0	1.5	185.76	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
434	**2**	**Archaeological Site**	**1**	7.7	0	7.4	0	1.2	68.376	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	1	0	0	1	0	1	1	Rubbly	3	No Re-Use
435	**2**	**Archaeological Site**	**1**	8	0	4.6	0	2.5	92	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
436	**2**	**Archaeological Site**	**1**	10.2	0	8.3	0	2.5	211.65	100% intact	Unknown	Slope of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
437	**5**	**Archaeological Site**	**1**	11.5	13	12.6	0	2.5	409.5	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	Agricultural/Structural Re-Use
438	**5**	**Archaeological Site**	**1**	7.3	0	7	0	1.5	76.65	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	0	Rubbly	2	Agricultural/Structural Re-Use
439	**5**	**Archaeological Site**	**0**	7.1	0	6.5	0	1	46.15	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Blocky	2	No Re-Use
440	**5**	**Archaeological Site**	**0**	7	0	6.2	0	1	43.4	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
441	**5**	**Archaeological Site**	**0**	5.6	0	5.3	0	1	29.68	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	0	Blocky	2	No Re-Use

442	**5**	**Archaeolo gical Site**	**1**	7	0	4	0	2	56	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Blocky	1	No Re-Use
443	**5**	**Archaeolo gical Site**	**0**	6	7.8	7	0	2	109.2	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	No Re-Use
444	**5**	**Archaeolo gical Site**	**0**	10.3	0	6.7	0	2	138.02	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Blocky	3	No Re-Use
445	**5**	**Archaeolo gical Site**	**0**	11	20	6	0	3	360	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Rubbly	3	Agricultural/S tructural Re-Use
446	**5**	**Archaeolo gical Site**	**1**	9	0	5	0	2	90	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
447	**5**	**Archaeolo gical Site**	**1**	0	0	0	0	0	0	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Blocky	1	Agricultural/S tructural Re-Use
448	**5**	**Archaeolo gical Site**	**1**	17	0	8	0	3	408	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	1	Rubbly	3	Agricultural/S tructural Re-Use
449	**5**	**Archaeolo gical Site**	**1**	17	0	13	0	3	663	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	1	Blocky	3	Agricultural/S tructural Re-Use
450	**3**	**Archaeolo gical Site**	**1**	7	0	9	0	1.5	94.5	100% intact	Unknown	Gentle Slope	Grazing	1	1	0	1	0	1	0	0	1	0	Cobbly	2	No Re-Use
451	**3**	**Archaeolo gical Site**	**1**	5	0	4	0	1	20	less than 50% intact	Unknown	Gentle Slope	Grazing	1	0	1	1	0	0	0	0	0	0	Cobbly	0	Agricultural/S tructural Re-Use
452	**3**	**Archaeolo gical Site**	**1**	8	0	6	0	0.5	24	100% intact	Unknown	Gentle Slope	Grazing	1	1	0	1	0	0	1	0	1	0	Cobbly	2	No Re-Use
453	**3**	**Archaeolo gical Site**	**1**	1	0	1	0	0.2	0.2	100% intact	Unknown	Gentle Slope	Grazing	1	1	0	1	0	1	1	0	0	0	Blocky	2	No Re-Use
454	**3**	**Archaeolo gical Site**	**1**	0	0	1	0	1	0	100% intact	Unknown	Gentle Slope	Grazing	1	1	0	1	0	0	1	0	1	0	Cobbly	2	No Re-Use
455	**3**	**Archaeolo gical Site**	**1**	0	0	0	0	2	0	100% intact	Unknown	Gentle Slope	Grazing	1	1	0	1	0	0	0	0	1	0	Cobbly	1	No Re-Use
456	**8**	**Archaeolo gical Site**	**1**	17.2	0	16.3	0	3	841.08	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	1	Blocky	3	No Re-Use
457	**8**	**Archaeolo gical Site**	**1**	10	0	8.8	0	2	176	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	1	Blocky	3	No Re-Use
458	**8**	**Archaeolo gical Site**	**1**	10	0	8.3	0	2	166	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	1	1	Blocky	3	No Re-Use
459	**8**	**Archaeolo gical Site**	**1**	8.77	0	7.65	0	2	134.181	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Cobbly	1	Agricultural/S tructural Re-Use

460	**8**	**Archaeolo gical Site**	**0**	8.68	0	7.64	0	2	132.6304	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Blocky	2	No Re-Use
461	**8**	**Archaeolo gical Site**	**1**	12	19. 4	15	0	3	873	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	1	0	0	1	Blocky	2	Agricultural/S tructural Re-Use
462	**8**	**Archaeolo gical Site**	**0**	18.8	0	10	0	3	564	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Blocky	2	Agricultural/S tructural Re-Use
463	**8**	**Archaeolo gical Site**	**0**	17.3	0	10	0	3	519	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Blocky	2	Agricultural/S tructural Re-Use
464	**8**	**Archaeolo gical Site**	**0**	18.4	0	6.1	0	2	224.48	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	0	1	Blocky	2	Agricultural/S tructural Re-Use
465	**8**	**Archaeolo gical Site**	**0**	15	0	3.8	0	1	57	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	1	0	0	0	1	Blocky	2	Agricultural/S tructural Re-Use
466	**8**	**Archaeolo gical Site**	**1**	9.6	0	7	0	1.5	100.8	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	1	Rubbly	1	Agricultural/S tructural Re-Use
467	**8**	**Archaeolo gical Site**	**0**	15.8	0	14	0	3	663.6	more than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Blocky	2	Agricultural/S tructural Re-Use
468	**27**	**Archaeolo gical Site**	**0**	5.6	0	5.3	0	1	29.68	more than 50% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	1	0	0	0	0	1	0	0	0	Cobbly	1	Agricultural/S tructural Re-Use
469	**27**	**Archaeolo gical Site**	**0**	9.8	0	7.7	0	1.5	113.19	more than 50% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/S tructural Re-Use
470	**27**	**Archaeolo gical Site**	**0**	8.3	0	7.7	0	2	127.82	100% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	1	0	0	0	0	0	0	1	0	Rubbly	1	Agricultural/S tructural Re-Use
471	**27**	**Archaeolo gical Site**	**0**	9.5	0	9	0	2	171	more than 50% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/S tructural Re-Use
472	**27**	**Archaeolo gical Site**	**0**	8.9	0	8.1	0	2	144.18	100% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	1	0	0	0	0	1	0	1	0	Blocky	2	Agricultural/S tructural Re-Use
473	**27**	**Archaeolo gical Site**	**0**	7.5	0	6.2	0	1	46.5	100% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
474	**27**	**Archaeolo**	**0**	7.9	0	5.8	0	2	91.64	more than 50%	Unknown	Flat Basin	Agricultural	1	1	0	0	0	0	1	0	1	0	Blocky	2	No Re-Use

		gical Site								intact			(Planted-groves)													
475	**27**	**Archaeological Site**	**0**	5	0	4.2	0	1	21	100% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	1	0	0	0	0	1	0	1	0	Rubbly	2	No Re-Use
476	**27**	**Archaeological Site**	**0**	7.5	0	6.4	0	2	96	100% intact	Unknown	Flat Basin	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
477	**27**	**Archaeological Site**	**0**	9.8	0	6.9	0	2	135.24	less than 50% intact	Unknown	Flat Basin	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	Agricultural/Structural Re-Use
478	**27**	**Archaeological Site**	**0**	5.5	6.5	4.7	0	2	61.1	less than 50% intact	Unknown	Flat Basin	Grazing	1	1	0	0	0	0	1	0	0	0	Blocky	1	Agricultural/Structural Re-Use
479	**27**	**Archaeological Site**	**0**	4.3	0	4.1	0	1	17.63	100% intact	Unknown	Flat Basin	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use
480	**27**	**Archaeological Site**	**0**	7.4	0	5.4	0	1	39.96	more than 50% intact	Unknown	Flat Basin	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
481	**28**	**Archaeological Site**	**0**	11	0	3.8	0	1	41.8	less than 50% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
482	**28**	**Archaeological Site**	**0**	13	0	8.5	0	1.5	165.75	less than 50% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
483	**28**	**Archaeological Site**	**0**	7.3	0	7.2	0	1.5	78.84	more than 50% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	1	0	0	0	0	0	0	0	1	Blocky	1	Agricultural/Structural Re-Use
484	**28**	**Archaeological Site**	**0**	9.5	0	5.8	8.3	2	157.7	less than 50% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	0	1	0	0	0	0	0	0	0	Blocky	0	Agricultural/Structural Re-Use
485	**28**	**Archaeological Site**	**0**	9.7	0	5.3	8.4	2.5	203.7	more than 50% intact	Unknown	Flat Basin	Agricultural (Planted-groves)	1	1	0	0	0	0	0	0	0	1	Blocky	1	Agricultural/Structural Re-Use
486	**36**	**Archaeological Site**	**1**	8.1	0	6.4	0	1	51.84	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
487	**36**	**Archaeological Site**	**1**	5.4	0	3.4	0	0.4	7.344	100% intact	Unknown	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
488	**36**	**Archaeological Site**	**0**	8.8	0	8	0	3	211.2	less than 50% intact	Unknown	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Blocky	3	Agricultural/Structural Re-Use
489	**35**	**Archaeological Site**	**0**	7.6	0	7.4	0	3	168.72	more than 50% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Blocky	3	Agricultural/Structural Re-

																										Use
490	**35**	**Archaeological Site**	**0**	0	0	0	0	0	0	less than 50% intact	Unknown	Slope of Ridge	Grazing	1	1	0	0	0	0	1	0	1	1	Blocky	3	Agricultural/Structural Re-Use
491	**25**	**Archaeological Feature**	**0**	8.3	0	8.3	0	0.5	34.445	100% intact	Unknown	Plateau	Grazing	1	0	1	0	0	0	0	0	0	0	Soil-filled	0	No Re-Use
492	**25**	**Archaeological Feature**	**1**	8.6	0	5.2	0	0.7	31.304	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	No Re-Use
493	**26**	**Archaeological Site**	**1**	9.3	0	7.5	0	0.75	52.3125	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Blocky	1	No Re-Use
494	**26**	**Archaeological Site**	**1**	5.2	0	5.2	0	0.4	10.816	100% intact	Anthropological Water Source	Plateau	Grazing	1	1	0	1	0	0	1	0	1	0	Blocky	2	No Re-Use
495	**26**	**Archaeological Site**	**1**	8.6	0	8.6	0	0.7	51.772	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Cobbly	0	No Re-Use
496	**26**	**Archaeological Site**	**1**	5.8	0	5.5	0	0.2	6.38	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Cobbly	0	No Re-Use
497	**26**	**Archaeological Site**	**1**	4.6	0	3.7	0	0.2	3.404	100% intact	Unknown	Plateau	Grazing	1	0	1	1	0	0	0	0	0	0	Cobbly	0	No Re-Use
498	**26**	**Archaeological Site**	**1**	3.9	0	3.2	0	0.4	4.992	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	1	0	1	0	Cobbly	2	No Re-Use
499	**26**	**Archaeological Site**	**1**	10.6	0	9.8	0	1.5	155.82	less than 50% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Blocky	1	Agricultural/Structural Re-Use
500	**26**	**Archaeological Site**	**1**	5.8	0	5.6	0	0.2	6.496	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	0	1	Cobbly	1	No Re-Use
501	**4**	**Archaeological Feature**	**1**	8.5	0	8.4	0	2	142.8	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	1	0	1	0	Blocky	2	No Re-Use
502	**4**	**Archaeological Feature**	**1**	8.9	0	6.8	0	1	60.52	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	1	0	1	1	0	0	1	Blocky	3	Agricultural/Structural Re-Use
503	**4**	**Archaeological Feature**	**1**	10.3	0	9.5	0	2	195.7	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	1	Blocky	2	Agricultural/Structural Re-Use
504	**4**	**Archaeological Feature**	**1**	5.9	0	5.3	0	0.7	21.889	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	1	0	1	0	Blocky	2	No Re-Use

505	**4**	**Archaeological Feature**	**0**	6.9	0	6.1	0	0.5	21.045	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	0	0	0	0	0	1	0	Cobbly	1	Agricultural/Structural Re-Use
506	**4**	**Archaeological Feature**	**1**	5.4	0	5.3	0	0.5	14.31	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Cobbly	1	Agricultural/Structural Re-Use
507	**4**	**Archaeological Feature**	**1**	5.3	0	5.1	0	0.7	18.921	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Blocky	1	No Re-Use
508	**4**	**Archaeological Feature**	**1**	8.7	0	5.9	0	1.5	76.995	more than 50% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	0	1	Blocky	1	Agricultural/Structural Re-Use
509	**4**	**Archaeological Feature**	**1**	7	0	5	0	1	35	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	1	0	0	0	1	Blocky	2	No Re-Use
510	**4**	**Archaeological Feature**	**1**	6.6	0	5.2	0	1	34.32	100% intact	Unknown	Plateau	Grazing	1	1	0	1	0	0	0	0	1	0	Cobbly	1	No Re-Use
511	**6**	**Archaeological Feature**	**0**	8.2	0	7.8	0	0.5	31.98	less than 50% intact	Wadi/Stream	Summit of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	Agricultural/Structural Re-Use
512	**6**	**Archaeological Feature**	**0**	4.6	0	3.8	0	0.4	6.992	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	0	0	0	1	0	1	0	Rubbly	2	No Re-Use
513	**6**	**Archaeological Feature**	**0**	8.3	0	7.2	0	1	59.76	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	0	1	Blocky	1	No Re-Use
514	**6**	**Archaeological Feature**	**1**	6.8	0	5.8	0	1	39.44	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Cobbly	2	No Re-Use
515	**6**	**Archaeological Feature**	**1**	6.6	0	5.8	0	1.5	57.42	less than 50% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	1	Rubbly	2	Agricultural/Structural Re-Use
516	**6**	**Archaeological Feature**	**0**	7.6	0	4.1	0	1.5	46.74	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Blocky	1	No Re-Use
517	**6**	**Archaeological Feature**	**1**	6.4	0	6	0	2	76.8	less than 50% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	1	1	0	0	0	1	0	Blocky	2	Agricultural/Structural Re-Use
518	**6**	**Archaeological Feature**	**0**	5.5	0	5.3	0	1	29.15	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Blocky	0	No Re-Use

519	**6**	**Archaeological Feature**	**1**	5.8	0	5	0	0.3	8.7	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
520	**6**	**Archaeological Feature**	**0**	5.8	0	5.7	0	0.7	23.142	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	0	1	0	0	0	0	0	0	0	Rubbly	0	No Re-Use
521	**6**	**Archaeological Feature**	**0**	6.4	0	5.8	0	0.7	25.984	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	0	1	Rubbly	1	No Re-Use
522	**6**	**Archaeological Feature**	**1**	6.4	0	5.9	0	0.5	18.88	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	1	0	Rubbly	1	No Re-Use
523	**6**	**Archaeological Feature**	**1**	6.3	0	5.9	0	1	37.17	more than 50% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	1	0	0	0	0	0	0	Rubbly	1	Agricultural/Structural Re-Use
524	**6**	**Archaeological Feature**	**0**	7.3	0	6	0	1	43.8	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	1	Rubbly	2	No Re-Use
525	**6**	**Archaeological Feature**	**0**	6.5	0	5.8	0	0.7	26.39	100% intact	Wadi/Stream	Summit of Ridge	Grazing	1	1	0	0	0	0	0	0	1	0	Rubbly	1	No Re-Use

5.1.3. Attributes of Surveyed Sites and Units

Site/Cairn Ref	Sub Site	Square	Major_ID	Local Place Name	Translated Place Name	Topography	Unit Type	Morphology	Morphology Comments
4	1	100	4_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Small group of c.8 units
6	1	100	6_1_100	Unknown	Unknown	Plateau	Structures	Rectilinear / Square group of structures	Dispersed arrangement of rectilinear structures, rubble concentrations in centre of cluster and possible birket visible
7	1	100	7_1_100	Sayr al-'Ain	Crack of the eye	Unknown	Structures	Irregular / subcircular group of structures	Area of structures, cairns and rectilinear features. 50% of area destroyed in 2009 by bulldozing. Originally c.17 units
9	1	100	9_1_100	Sayr al-Salkheyat	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Dispersed cluster of enclosures c.15+ units
40	1	100	40_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Linear arrangement of structures c. 4 units
49	1	100	49_1_100	Tell Hinash	Tell of the snake	Valley Bottom	Tell	Tell	Basalt tell with basalt ramparts, located along Wadi al Qasab
59	1	100	59_1_100	Sir Huda	Crack xx	Ridge	Structures	Irregular / subcircular group of structures	Linear cluster of structures running E-W c.25 units spread along ridgline. Cairns built into SE edge of cluster
61	1	100	61_1_100	Unknown	Unknown	Ridge	Structures	Irregular / subcircular group of structures	Cluster of structures c. 16+ units on linear north-south alignment
62	1	100	62_1_100	Abu Mahfuz	Preserved	Plateau	Structures	Cairns	Cluster of cairns located along ridgeline. Rectilinear structure (poss. Roman tower) located to NE
63	1	200	63_1_200	Unknown	Unknown	Slope	Cairns	Cairns	Linear arrangement of cairns running towards seasonal lake
63	1	100	63_1_100	Unknown	Unknown	Slope	Structures	Irregular / subcircular group of	Small cluster of c.10 units located on edge of

								structures	ridgline slope
64	1	100	64_1_100	Sayr al-Juma	Unknown	Plateau	Structures	Irregular / subcircular group of structures	Large cluster of units c. 40+ all of similar dimensions
65	1	100	65_1_100	Khirbet Al-Sawda	Dark ruin	Plateau	Structures	Rectilinear / Square group of structures	Dispersed arrangement of rectilinear features/structures around a modern village
75	1	100	75_1_100	Sayr Saqr	Crack of the Falcon	Lower Slope	Structures	Irregular / subcircular group of structures	Groups of circular structures are arranged in an apporoximate north-south linear form, with short spaces between them.
358	1	100	358_1_100	Dar es-Salaam	Hill? Of Salaam (Peace?)	Wadi Terrace	Structures	Rectilinear / Square group of structures	Very obvious evidence of an abandoned village, with substantial evidence in a number of physical forms.
362	1	100	362_1_100	Unknown	Unknown	Plateau	Large Circular Enclosure	Multi-component	Large circular enclosure around 300m in diameter
362	1	200	362_1_200	Unknown	Unknown	Plateau	Transect	Transect	Transect within SHR 362
363	1	100	363_1_100	Khirbat un al-Qasab	Unknown	Plateau	Structures	Multi-component	Structures and rubble concentration. Plan and discrete features very difficult to determine
365	1	100	365_1_100	Unknown	Unknown	Unknown	Structures	Multi-component	Circular enclosure with central cairn surrounded by orthostatic stones and constructed on a platform
367	1	100	367_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Very small cluster of c.3 units
368	1	100	368_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Very small cluster of c.3 units
385	1	100	385_1_100	Unknown	Unknown	Unknown	Structures	Cairns	Large discrete cluster of cairns
386	1	100	386_1_100	Unknown	Unknown	Slope	Structures	Multi-component	Large circular enclosure with central circular cairn with large orthostatic stones around edge. Leading from the cairn are traces of three low straight rubble walls
387	1	100	387_1_100	Unknown	Unknown	Plateau	Structures	Irregular / subcircular group of structures	Small cluster of c.5 units
392	1	100	392_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Small cluster c.4units
396	1	100	396_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.6 units dispersed along N-S line, small gap between main cluster and 1 unit located a few

									metres south
453	1	100	453_1_100	Unknown	Unknown	Unknown	Large Circular Enclosure	Multi-component	D-shaped enclosure sloping down towards River Orontes to East. Cairns found within and along the structure.
666	1	1200	666_1_1200	Unknown	Unknown	Hilltop	Collection Area	Collection Area	Area of SHR 666 chosen for surface collection
666	1	200	666_1_200	Unknown	Unknown	Hilltop	Collection Area	Collection Area	Area of irregular structures damaged by bulldozing and chosen for surface collection
666	1	100	666_1_100	Unknown	Unknown	Hilltop	Structures	Irregular / subcircular group of structures	Circular and square enclosures
668	1	100	668_1_100	Burj Qai'	Tower of ?Qai'	Plateau	Tell	Settlement	Tell with modern village constructed on top
672	1	100	672_1_100	Unknown	Unknown	Ridge	Collection Area	Collection Area	Area of surface collection across ridgline of SHR 61, 62, 63 and 676
673	1	100	673_1_100	Dar es-Salaam, al-Qabou.	Hill of Salaam	Ridge	Structures	Rectilinear / Square group of structures	Complex cluster of rectilinear structures around central mound. Clear evidence of grid planning and Roman-Byzantine structures
674	1	100	674_1_100	Dar es-Salaam, al-Qabou.	Unknown	Plateau	Structures	Rectilinear / Square group of structures	Mausolea structures located to S of central mound of SHR 358
676	1	100	676_1_100	Unknown	Unknown	Ridge	Structures	Rectilinear / Square single strucutre	Single square feature towards centre of complex
677	1	100	677_1_100	Unknown	Unknown	Valley Bottom	Structures	Rectilinear / Square group of structures	Complex cluster of rectilinear structures, with evidence for architectural fragments
679	1	100	679_1_100	Unknown	Unknown	Plateau	Structures	Rectilinear / Square group of structures	Northern area - part destroyed beween 2002 and 2009.
825	1	100	825_1_100	Unknown	Unknown	Slope	Structures	Cairns	Area of structures and cairns built on platform near southern seasonal lake
831	1	100	831_1_100	Unknown	Unknown	Ridge	Structures	Irregular / subcircular group of structures	c.5 central irregular units, rectilinear structures located on E and W edge of cluster
832	1	100	832_1_100	Unknown	Unknown	Upper Slope	Structures	Irregular / subcircular group of structures	c.15 units short c.200m from SHR 831. Arranged in a rougly linear N-S cluster
833	1	100	833_1_100	Unknown	Unknown	Upper Slope	Structures	Irregular / subcircular group of structures	c.40+ units arranged in irregular 'tadpole' cluster. Small gap between main cluster and further 5 units located further south

834	1	100	834_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 10 small irregular units arranged around 2 large central rectilinear features
835	1	100	835_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.6 units, plan and discrete features fairly hard to identify
850	1	100	850_1_100	Unknown	Unknown	Plateau	Structures	Irregular / subcircular group of structures	c.6 units in small cluster with rubble concentration at NW edge of cluster
851	1	100	851_1_100	Unknown	Unknown	Plateau	Structures	Irregular / subcircular group of structures	c.5 units arranged in N-S linear c.200m from SHR 850
853	1	100	853_1_100	Unknown	Unknown	Slope	Structures	Rectilinear / Square group of structures	Mausolea Structures
855	1	100	855_1_100	Sayr al-foul	Unknown	Plateau	Structures	Rectilinear / Square group of structures	Mausolea Structures and Cairns. As of 2008 totally destroyed
857	1	100	857_1_100	Unknown	Unknown	Plateau	Structures	Irregular / subcircular group of structures	c.3units arranged in small cluster-poss part of SHR 858, by 1960 these two areas on imagery can be seen to separated by modern enclosures
858	1	100	858_1_100	Unknown	Unknown	Plateau	Structures	Irregular / subcircular group of structures	c.6 units-poss part of SHR 857, by 1960 these two areas on imagery can be seen to separated by modern enclosures
860	1	100	860_1_100	Sama'lil	Unknown	Unknown	Tell	Settlement	Tell with modern village constructed on top
862	1	100	862_1_100	Unknown	Unknown	Middle Slope	Structures	Multi-component	A large 'lemon' shaped enclosure, bounded by 2m widewalls to north and south, with in the centre a large cairn, surrounded by internal walls forming smaller square field areas, and occasional pits and cairns of various sizes
866	1	100	866_1_100	Krad Dasinyeh	Unknown	Plateau	Tell	Settlement	Tell with modern village constructed on top
872	1	100	872_1_100	Unknown	Unknown	Plateau	Structures	Irregular / subcircular group of structures	c.4 units, surrounding rectilinear fields/enclosures, partly disrupted cluster
873	1	100	873_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.10 units, by 2002 cluster disturbed by later rectilinear fields
874	1	100	874_1_100	Unknown	Unknown	Plateau	Structures	Irregular / subcircular group of structures	c.3 fairly large units c.30m max in diameter in small discrete cluster
875	1	100	875_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.4+units identified from 1960s Corona, only faint trace can be seen on Ikonos and plan and discrete units difficult to idenfiy
878	1	100	878_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Small discrete cluster of c.4 units

880	1	100	880_1_100	Tasnin	Unknown	Unknown	Tell	Settlement	Tell with modern village constructed on top
881	1	100	881_1_100	Unknown	Unknown	Unknown	Structures	Rectilinear / Square group of structures	Irregular cluster of rectilinear structures c. 7 units of varying dimensions
884	1	100	884_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster c.8 units in N-S inear arrangement
885	1	100	885_1_100	as-Sahi?	Unknown	Upper Slope	Structures	Rectilinear / Square group of structures	Complex cluster of rectilinear structures, with evidence for architectural fragments and grid plan
888	1	100	888_1_100	el-Hissa	Unknown	Unknown	Tell	Multi-component	Tell with modern village constructed on top
890	1	100	890_1_100	Unknown	Unknown	Upper Slope	Structures	Rectilinear / Square group of structures	Two structures
910	1	100	910_1_100	Unknown	Unknown	Plateau	Structures	Rectilinear / Square group of structures	Three square structures
913	1	100	913_1_100	Unknown	Unknown	Ridge	Structures	Irregular / subcircular group of structures	Small cluster c.4 unit, c.200m from SHR 914 along ridgeline
914	1	100	914_1_100	Unknown	Unknown	Ridge	Structures	Irregular / subcircular group of structures	c. 15+ units, 2 large cairns built into cluster at S edge, c.200m from SHR 913
920	1	100	920_1_100	Unknown	Unknown	Valley Bottom	Transect	Transect	Transect near SHR 49
944	1	100	944_1_100	Unknown	Unknown	Ridge	Transect	Transect	Transect across SHR 666
945	1	100	945_1_100	Unknown	Unknown	Ridge	Transect	Transect	Transect across SHR 666
946	1	100	946_1_100	Unknown	Unknown	Ridge	Transect	Transect	Transect across SHR 666
949	1	100	949_1_100	Unknown	Unknown	Plateau	Structures	Rectilinear / Square group of structures	Irregular cluster of rectilinear structures c. 9 units of varying dimensions. Cairns located in N half of cluster.
966	1	100	966_1_100	Unknown	Unknown	Unknown	Transect	Transect	Transect
967	1	100	967_1_100	Unknown	Unknown	Unknown	Transect	Transect	Transect
979	1	100	979_1_100	Unknown	Unknown	Upper Slope	Structures	Rectilinear / Square group of structures	Three district square structures, located to the E of SHR 358
1178	1	100	1178_1_100	Unknown	Unknown	Plateau	Transect	Transect	Transect across SHR 362
1179	1	100	1179_1_100	Unknown	Unknown	Ridge	Transect	Transect	Transect along ridgeline near 913 and 914
1180	1	100	1180_1_100	Unknown	Unknown	Ridge	Transect	Transect	Transect along ridgeline near 913 and 914

1181	1	100	1181_1_100	Unknown	Unknown	Ridge	Transect	Transect	Transect along ridgeline near 913 and 914
1182	1	100	1182_1_100	Unknown	Unknown	Plateau	Transect	Transect	Transect across SHR 362
1183	1	100	1183_1_100	Unknown	Unknown	Slope	Transect	Transect	Transect adjacent to Cairn 146
1184	1	100	1184_1_100	Unknown	Unknown	Unknown	Transect	Transect	Transect across bulldozed area of SHR 855
1185	1	100	1185_1_100	Unknown	Unknown	Unknown	Transect	Transect	Transect in area of SHR 64
1188	1	100	1188_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.14+ units arranged in irregular N-S linear, c.160m from SHR 914
1189	1	100	1189_1_100	Unknown	Unknown	Ridge	Collection Area	Collection Area	Collection Area
1190	1	100	1190_1_100	Unknown	Unknown	Ridge	Collection Area	Collection Area	Collection Area
1191	1	100	1191_1_100	Unknown	Unknown	Unknown	Transect	Transect	Transect in area of SHR 64
1193	1	100	1193_1_100	Unknown	Unknown	Valley Bottom	Transect	Transect	Transect near SHR 49
1194	1	100	1194_1_100	Unknown	Unknown	Valley Bottom	Transect	Transect	Transect near SHR 49
1195	1	100	1195_1_100	Unknown	Unknown	Valley Bottom	Transect	Transect	Transect near SHR 49
1196	1	100	1196_1_100	Unknown	Unknown	Valley Bottom	Transect	Transect	Transect near SHR 49
1197	1	100	1197_1_100	Unknown	Unknown	Valley Bottom	Transect	Transect	Transect near SHR 49
1206	1	100	1206_1_100	Unknown	Unknown	Plateau	Transect	Transect	Transect across SHR 362
1207	1	100	1207_1_100	Unknown	Unknown	Plateau	Transect	Transect	Transect across SHR 362
1208	1	100	1208_1_100	Unknown	Unknown	Unknown	Transect	Transect	Transect within circle of SHR 453
1214	1	100	1214_1_100	Unknown	Unknown	Unknown	Transect	Transect	Transect adjacent to large cairn cluster (385)
1215	1	100	1215_1_100	Unknown	Unknown	Unknown	Structures	Rectilinear / Square group of structures	Some rectilinear structures. Possibly represent field walls.
1216	1	100	1216_1_100	Unknown	Unknown	Unknown	Structures	Rectilinear / Square group of structures	Some rectilinear structures. Possibly represent field walls.
1217	1	100	1217_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster of structures near 1218
1218	1	100	1218_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Located in a small cluster near 1217.
1219	1	100	1219_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Possibly represent fieldsystems or disturbed area of structures

1222	1	100	1222_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster of c. 6+ units in E-W linear arrangement, less than 50m from SHR 1223
1223	1	100	1223_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster c.13 units in N-S linear arrangement, less than 50m from SHR 1222
1224	1	100	1224_1_100	Unknown	Unknown	Unknown	Structures	Rectilinear / Square group of structures	Cluster of square structures poss largely modern fields
1225	1	100	1225_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Small discrete cluster of c.5 units, poss further structures to SW, but difficult to tell from imagery
1226	1	100	1226_1_100	Unknown	Unknown	Unknown	Structures	Rubble concentration	Two areas of rubble concentration within area of structures/fields and village.
1227	1	100	1227_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster of structures.
1228	1	100	1228_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Chain of c.7 sub-circular structures to the W of 1229
1229	1	100	1229_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 3 units organised in linear N-S chain, c.30m from SHR 1229
1231	1	100	1231_1_100	Unknown	Unknown	Unknown	Structures	Rectilinear / Square group of structures	Long chain of structures
1232	1	100	1232_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	C.6 units in cluster of possible structures but could be field system.
1233	1	100	1233_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 5 small units in discrete cluster
1234	1	100	1234_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 5 small units in discrete cluster
1236	1	100	1236_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.3 units in discrete cluster
1239	1	100	1239_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 11 units in E-W roughly linear arrangement
1241	1	100	1241_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 5 units in small cluster
1242	1	100	1242_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 6 units in small cluster in N-S linear arrangement
1243	1	100	1243_1_100	Unknown	Unknown	Unknown	Structures	Rubble concentration	Area of possible structures. Rubble concentation seen on imagery
1244	1	100	1244_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of	c. 8 units in small discrete cluster

								structures	
1245	1	100	1245_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.11 units in small cluster, poss further 2 units c. 50m to NW
1246	1	100	1246_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.9 small units in cluster
1247	1	100	1247_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 12 units in sub-circular cluster, poss SHR 1248 part of this cluster
1248	1	100	1248_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c.3 units , in small cluster less than 20m from SHR 1247
1249	1	100	1249_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Small cluster c. 4 units
1250	1	100	1250_1_100	Unknown	Unknown	Unknown	Structures	Rectilinear / Square group of structures	Small cluster
1251	1	100	1251_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 6units arranged in a N-S linear alignment
1252	1	100	1252_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 6 units in dispersed cluster
1254	1	100	1254_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 6 units in small cluster, possibly partly disturbed on NW edge
1255	1	100	1255_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Small group of c.4 units might be an extension of 873 which is 70 m to the NW.
1256	1	100	1256_1_100	Unknown	Unknown	Unknown	Structures	Rectilinear / Square group of structures	Possibly represents fieldsystem
1257	1	100	1257_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster of c. 8 units, in sub-circular arrangement
1258	1	100	1258_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster c. 6 units, less than 10m from SHR 1259 probably part of same cluster
1259	1	100	1259_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster c.17+ units, in close proximity to SHR 1259-1262
1260	1	100	1260_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster of c. 7 units, in close proximity to SHR 1258, 1259, 1261, 1262
1261	1	100	1261_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster of c. 8 units, in sub-circular arrangement, in close proximity to SHR 1258, 1259, 1260, 1262

1262	1	100	1262_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	Cluster of c. 5 units, in sub-circular arrangement, in close proximity to SHR 1258, 1259, 1260, 1261
1263	1	100	1263_1_100	Unknown	Unknown	Unknown	Structures	Irregular / subcircular group of structures	c. 10 units in irregular arrangement to E of SHR 61 and 676, off ridgeline

APPENDIX 5.5: DIAGNOSTIC SHERDS FROM THE HOMS BASALT (CHALCOLITHIC-EB IV)

The below is a description of all diagnostic pottery forms (sites and cairns) from the Homs NSA. Those highlighted have not been drawn. Illustrations associated with these records can be found attached in appendix 5.6. This is a collation of records made by both the author, as well as Stephen Bourke on behalf of the SHR Project. The Fabric Types have been noted when the material has been studied by this author (see Chapter 5 and Figure 5.56 for fabric definitions). The fabric types of body sherds have not been recorded here. Where the material was of a non-basalt fabric (other than Fabric 5) it has merely been noted as such i.e. NBF.

P Number	Unit_ID	Sherd Type	Sherd Type_Category	Period	Description	Fabric
P8211	1179/1/100	Jar/Cooking Pot	Everted/Outflaring Rim Jars	Chalco/EB	Everted rim vessel in basalt fabric, fairly upright stance. Rusty coloured basaltic clay with 20% basalt temper.	1
P8212	1179/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Basaltic tempered vessel with thickened exterior rim and fairly upright stance, mix of grits and basalt temper 0.5mm-1mm. Fairly well fired hand-made vessel with grey core	1
P8213	1179/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Basaltic tempered vessel, inverted fairly upright stance with rounded thickened exterior rim and linear striation marking this thickening. Dense fabric with a mix of sub-angular basaltic grits 0.5-1mm.	1
P8215	1179/1/100	Bowl/Jar	Everted/Outflaring Rim Jars	Chalco/EB	Basaltic tempered fabric with mix of grits 0.5-1mm in size. Everted rim with slight thickening, hard fabric.	1

P8249	1184/1/100	Rim Sherd	Body sherd	Chalco/EB	Basalt temp. rim sherd, very small fragment not drawn-basalt and other inclusions, very small and well sorted (0.2mm), burnished exterior.	Unknown
P8206	1184/1/100	Jar/Cooking Pot	Everted/Outflaring Rim Jars	Chalco/EB	Light buff coloured chaff tempered everted rim vessel. Fabric Trench VIII Fabric C (Jen's Fab 5). Large diameter 260mm.	5
P8207	1184/1/100	Holemouth Jar	Jar Holemouth	Chalco/EB	Red, Brown in colour strongly inverted stance with rounded thickened outer rim	Unknown
P8208	1184/1/100	Holemouth Jar	Jar Holemouth	Chalco/EB	Red/brown in colour chaff tempered with small sub-rounded basalt inclusions less than 0.5mm poss. EBA?	4
P8245	1184/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Chaff tempered (0.5mm) holemouth, Trench VIII Fabric C (i.e. Fab 5), buff/pink fabric with light grey core, inverted rim, however diameter unsure, not drawn.	5
P8250	1184/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Basalt tempered holemouth Jar (Fab 3)-basalt and chaff tempering inclusions 0.5mm, low firing.	3
P8267	1194/1/100	Body Sherd	Body sherd	Chalco/EB	Body Sherd basalt tempered fabric 2, gritty mica and basalt (0.2mm) inclusions-probably located near neck of vessel however broken forms rim. Linear impressed decoration probably near neck of vessel.	2
P8262	1197/1/100	Jar (everted rim)	Everted/Outflaring Rim Jars	EBA?	Everted rounded rim, basalt Fab 2-gritty fabric (0.2mm) with basalt and mica inclusions red brown with dark grey core, fairly well fired.	2
P8263	1197/1/100	Basalt tempered Body Sherd	Body sherd	EBA?	Decorated basalt tempered body sherd. Fabric 2, red-brown with dark grey core, well fired. 2 horizontal bands of impressed decoration on exterior surface. Possibly wheel made?	2
P8264	1197/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Rim sherd with large rounded basalt inclusions (0.5mm) Fabric 1 fired evenly throughout, dark brown-red in colour.	1

P8265	1197/1/100	Rim sherd	Body sherd	Chalco/EB	Pinched rim, however form hard to tell as broken just beneath rim. Fired evenly throughout dark brown in colour-variant of Fabric 1-large basalt inclusions however others including white limestone and mica also present.	1
P8266	1197/1/100	Poss Lid????	Lid	Chalco/EB	Possible lid although unsure. Well levigated basaltic clay, some small basalt inclusions mainly chaff tempered with smoothed exterior and interior-2 small holes in exterior-evenly fired red-brown throughout.	4
P2479	312/1/100	Bowl Deep	Bowl Deep	EBA.	Upright Thickened Bevelled rim. Fairly finely mixed clay with many small and medium black stone (basalt), some light brown stone (chert?), and a few white lime (?) grits. Fired dark grey throughout. Thick red-brown slip ext./int. Horizontal hand burnishing ext./int.	Unknown
P8254	362/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB Poss EB II	Highly chaff tempered holemouth jar rim sherd, pink buff fabric with grey core, Trench VIII Fabric C i.e. Fab 5	5
P8091	4/1/100	Jar S/N Upright	Jars (Upright Rims)	EBA. Possibly Chal/EB.	Jar S/N Upright	Unknown
P2516	49/1/100	Jar S/N	Jars (Upright Rims)	EBIV.	Upright Out-turned Pendant Triangular rim. Fairly finely mixed clay with many small and some medium black stone (basalt), white lime, and a few grey chert grits. Fired dark grey at core and red-brown at surfaces. Self slipped ext./int. Shallow groove rim ext. and deeper groove under rim.	Unknown
P4292	49/1/100	Bowl Deep	Bowl Deep	EBIV.	Upright Outflaring Pinched Rounded rim. Soft Chalky pinkish buff fabric.	Unknown
P4296	49/1/100	Bowl Deep	Bowl Deep	EBIV. Possibly Later.	Upright Rounded Square rim. Light grey core, orangey brown surfaces.	Unknown
P4297	49/1/100	Jar Holemouth	Jar Holemouth	EBIV. Possibly Later.	Incurving Upright Swollen Rounded rim. Brick red core, pale brown surfaces. Self slipped in pale brown ext./int.	Unknown

P4298	49/1/100	Bowl Deep	Bowl Deep	Chal/EB. Possibly Later.	Upright Everted Swollen Flanged Rounded rim. Fired pale brown throughout. Orangey brown self (?) slip ext./int.	Unknown
P4301	49/1/100	Jar TNN	Jars (Upright Rims)	EBIV. Possibly Later. BF.	Upright Thickened Rounded Triangular rim.	Unknown
P8068	49/1/100	Jar S/N Outflaring	Everted/Outflaring Rim Jars	Chal/EB. Possibly Later.	Jar S/N Outflaring	Unknown
P8069	49/1/100	Jar Holemouth Fine	Jar Holemouth	EBA. Possibly EBIV.	Incurving Pinch Rounded rim. Fairly finely mixed clay with some chaff tempering, and many small and some medium black stone, and a few white lime grits. Fired medium to dark grey throughout. Self (?) slipped in thick red-brown ext./int.	4
P8070	49/1/100	Jar Holemouth Small Fine (LGoblet ?)	Jar Holemouth	EBIV. Perhaps Much Later.	Incurving Everted Swollen Rounded rim. Fairly finely mixed clay with many small white lime, some light grey chert, and a few black stone grits. Two-toned ware. Fired pinkish buff int., and pale greenish brown ext. Traces of pale greenish brown self (?) slip ext.	Unknown
P8072	49/1/100	Bowl Platter	Everted/Outflaring Bowls/Platters	EBA.	Outflaring Rounded Triangular rim. Fairly finely mixed clay with many small black stone, some off white and crystalline sand grits. Fired greyish red-brown at core and red-brown at surfaces. Self (?) slipped in thick brownish red int./rim ext. Irregularly wheel burnished int./rim ext.	Unknown
P8073	49/1/100	Body Sherd (Medium Jar)	Body sherd	EBIV. Possibly Later.	Quite finely mixed clay with many small white lime and a few large red stone and black stone grits. Fired sandy pinkish brown throughout. Thick greenish off-white slip ext./int.	Unknown
P8074	49/1/100	Bowl Deep	Bowl Deep	EBA. Possibly Chal/EB.	Outflaring Everted Swollen Pinch Rounded rim. Moderately mixed clay with much chaff tempering, and many small and medium black stone (basalt), and a few small white lime grits. Fired dark grey at core and dark red-brown at surfaces. Self slipped in dark red-brown ext./int.	Unknown
P8075	49/1/100	Jar Storage TNN Burnished in int. Rim	Everted/Outflaring Rim Jars	EBA. Possibly Later.	Outflaring Bevelled Bifurcated rim. Fairly finely mixed clay with some chaff temper, and a few small black stone and white crystalline sand grits. Fired dark grey at core and reddish brown at surfaces. Self slipped in reddish brown ext./int.	Unknown
P8078	49/1/100	Jar TNN	Jars (Upright Rims)	EBIV. Possibly Later	Upright Swollen Pinch Rounded rim. Fairly finely mixed clay with many small and a few medium red stone, white lime, grey chert and a few black stone grits. Fired greenish buff (oatmeal) throughout. Self slipped ext./int.	NBF

P8079	49/1/100	Bowl Deep	Bowl Deep	EBA Poss EB IV	Upright Thickened Bevelled rim. Fairly finely mixed clay with some chaff tempering, and many small and medium black stone (basalt), some small crystalline sand, and a few red stone grits. Fired greyish dark brown at core and red-brown at surfaces. Self slipped ext./int.	Unknown
P8080	49/1/100	Jar TNN Large	Everted/Outflaring Rim Jars	EBIV. Possibly MBA.	Outflaring Bevelled Rounded rim. Moderately mixed but very 'sandy' clay, with many small and a few medium white stone, and a few small black stone and grey chert grits. Fired light grey at core and light greyish brown at surfaces. Slipped in greenish buff ext./int.	NBF
P8081	49/1/100	Bowl Deep	Bowl Deep	EBA. Possibly EBIV	Incurving Bevelled Rounded rim. Moderately mixed clay with many small and medium black stone, some white lime and crystalline sand grits. Fired dark greyish brown at core and red-brown at surfaces. Self slipped in red-brown ext./int.	4
P8011	5/1/100	Body Sherd Applied PD	Body sherd	Neolithic. Possibly Later.	Body Sherd Applied PD	Unknown
P8092	5/1/701	Jar S/N	Jars (Upright Rims)	MBA. Possibly EBIV	Upright Out-turned Pendant Rounded rim. Moderately mixed clay with many small and medium black stone (basalt), and a few very small white lime (?) grits. Fired dark grey at core and brick red at surfaces.	4
P8209	62/1/100	Bowl/Platter	Everted/Outflaring Bowls/Platters	Chalco/EB? poss. Later?	Everted rim with Basaltic fabric, red brown in colour with very small mineral inclusions (probably BT Fabric 2) less than 0.5mm, hand-made and low temp firing.	2
P8210	62/1/100	Jar/Cooking Pot	Everted/Outflaring Rim Jars	Chalco/EB	Everted rim vessel in basalt fabric with mix of grits-fairly hard and well fired with dark core	1
P8216	64/1/100	Jar	Everted/Outflaring Rim Jars	EBA or poss later? Not basaltic fabric	Everted rim with fairly upright stance, thickened outer rim, buff fabric fired fired through, 10-20% grits and chaff tempering 0.5-1mm, fully oxidised. Possibly Bronze Age or later.	NBF
P8083	666/1/100	Bowl Simple	Upright rim bowl forms	EBA. Possibly Chal/EB.	Upright Everted Round rim. Fairly finely mixed clay. Fired grey at core and red-brown at surfaces.	4
P8084	666/1/100	Bowl Storage Outflaring	Everted/Outflaring Bowls/Platters	EBA.	Incurving Swollen Pinch Rounded rim. Fired grey at core and orangey red-brown at surfaces	2
P8105	666/1/100	Jar Holemouth Incurving	Jar Holemouth	EBA. Possibly EBIV.	Incurving, Thickened Pinch Rounded rim. Coarse to moderately mixed clay, with many small and medium black stone (basalt), and a few red and off-white stone grits. Chaff tempered. Fired dark smokey grey at core and red-brown at surfaces. Grass wiped.	4
P8106	666/1/100	Jar Holemouth Incurving	Jar Holemouth	EBA.	Incurving Pinch Rounded rim. Fired dark grey core, red-brown surfaces.	4

P8205	666/1/1200	Jar (Everted rim)	Everted/Outflaring Rim Jars	Chalco/EBA	Everted rim vessel in Nebi Mend Trench VIII Fabric C (in Jen's notes as her Fab 5). Light orangey buff fabric with grey core, highly chaff tempered with slightly flattened rim and very few non-vegetal inclusions.	5
P8085	666/1/200	Bowl Simple	Upright rim bowl forms	EBA (?) Possibly Chal/EB. (Not Basalt fabric).	Upright Swollen Rounded rim. Fired red-brown throught. Possible traces of pale brown slip ext. and rim int.	NBF
P8086	666/1/200	Jar TNN Incurving Grass Wiped	Jar Holemouth	EBA.	Thickened Bevelled rim. Fired brick red throughout	1
P8087	666/1/200	Jar TNN Incurving	Jars (Upright Rims)	EBA. Possibly EBIV.	Jar TNN Incurving	Unknown
P8088	666/1/200	Jar Holemouth Upright	Jar Holemouth	Chal/EB. Possibly Earlier.	Moderately mixed clay with many small and medium dark grey stone (basalt), some chaff and a few off-white and orangey stone grits. Fired dark grey at core and brick red at surfaces. Self slipped.	Unknown
P8089	666/1/200	Upright Everted Jar	Everted/Outflaring Rim Jars	EBA. Possibly Chal/EB.	Upright Everted Rounded rim. Chaff tempered. Fired dark grey at core and red-brown at surfaces.	3
P8090	666/1/200	Bowl Simple	Upright rim bowl forms	EBA. Possibly Chal/EB.	Upright Outflaring Tooled rim. Heavily chaff tempered. Fired dark grey at core and red-brown at surfaces	Unknown
P8107	666/1/200	Jar Holemouth Incurving	Jar Holemouth	EBA.	Incurving Swollen Pinch Rounded rim. Fired dark red-brown throughout.	4
P8108	666/1/200	Bowl Hemispherical	Upright rim bowl forms	EBA. Possibly Chal/EB.	Simple Upright Rounded rim. Moderately mixed clay, heavily chaff tempered, with many small and some medium red and orangey stone, black stone (basalt) and white lime grits.	5
P8109	666/1/200	Jar S/N (Chaff tempered fabric)	Jars (Upright Rims)	EBIV (?). Possibly Chal/EB.	Upright Swollen Rounded rim. Moderately mixed clay, with much chaff tempering, some small black stone, white lime and a few orangey grog (?) grits. Fired grey at core and orangey red-brown at surfaces.	5
P8305	666/1/200	Jar Holemouth	Jar Holemouth	Chal/EB	Large hmj sherd or poss large bowl. In Orange-pink fabric (med brown core 70%) with small white grit inclusions. Little or no basalt. Sherd has a crumbly feel and is surpisingly light in weight.Traces of grass-wiping int, small patch of cream colour slip on lower section of shrerd (away from rim).	Unknown
P8268	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Pinched rim, with inverted holemouth stance. Sherd too small to est. diameter and draw. Large rounded basalt inclusions (Fab 1) with some chaff temper and smoothed exterior.	1

P8269	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Pinched and slightly flattened rim orange-brown in colour with large rounded basalt inclusions (0.5mm) but no chaff temper (Fab 1) and smoothed surface treatment.	1
P8270	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Pinched roughly made rim, possibly burnished or smoothed exterior although badly degraded. Roughly made with slight carination below rim. Brick-red in colour with grey core. Basalt tempered fabric 1 with rounded large (0.5mm) basalt inclusions.	1
P8271	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB Poss EB II	Strongly inverted holemouth form, some chaff tempering, with rounded pinched rim. Red fabric with dark grey core. Variant of BT Fab 1 with rounded large basalt inclusions (0.5mm) and some chaff tempering.	1
P8272	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Rounded simple holemouth rim. Variant of Basaltic Temp Fabric 1 with rounded basalt inclusions and large % of chaff tempering (0.5mm/0.5mm). Red fabric with very dark core.	1
P8273	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB Poss EB II	Pinched simple rounded rim with fairly inverted stance. Fabric 1 basaltic temper with rounded basalt inclusions (0.5mm). Rim slightly folded at exterior. Very large jar. Diameter 30cm. Evenly fired red –brown fabric. Little if any chaff temper.	1
P8274	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB Poss EB I-II	Rounded simple rim. Fabric 1 with large basalt inclusions (0.5mm), evenly fired throughout red-brown in colour. No chaff tempering. Possible evidence of exterior smoothing.	1
P8275	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB Poss EB II	Inverted triangular rim, with slight upright flaring at the mouth. Fabric 1 with large basalt inclusions (0.5mm) evenly fired throughout, no chaff temper.	1
P8276	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Simple rounded rim, fairly upright stance with slight upright flaring at mouth. Fabric 1 variant with large basalt rounded inclusions and chaff tempering. Light brown in colour with smoothed exterior.	1
P8277	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Holemouth with pinched rim and mix of very small basalt inclusions (0.1mm) alongside predominant chaff temper (0.5mm) (Fabric 4). Rim sherd not drawn due to inability to determine diameter and exact stance.	4
P8278	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Simple rounded rim with slight upright flaring at rim. Red-brown in colour with dark core. Fabric 4 with predominance of chaff tempering (0.5mm) and some basalt inclusions (0.2mm). Slight carination can be seen around rim.	4

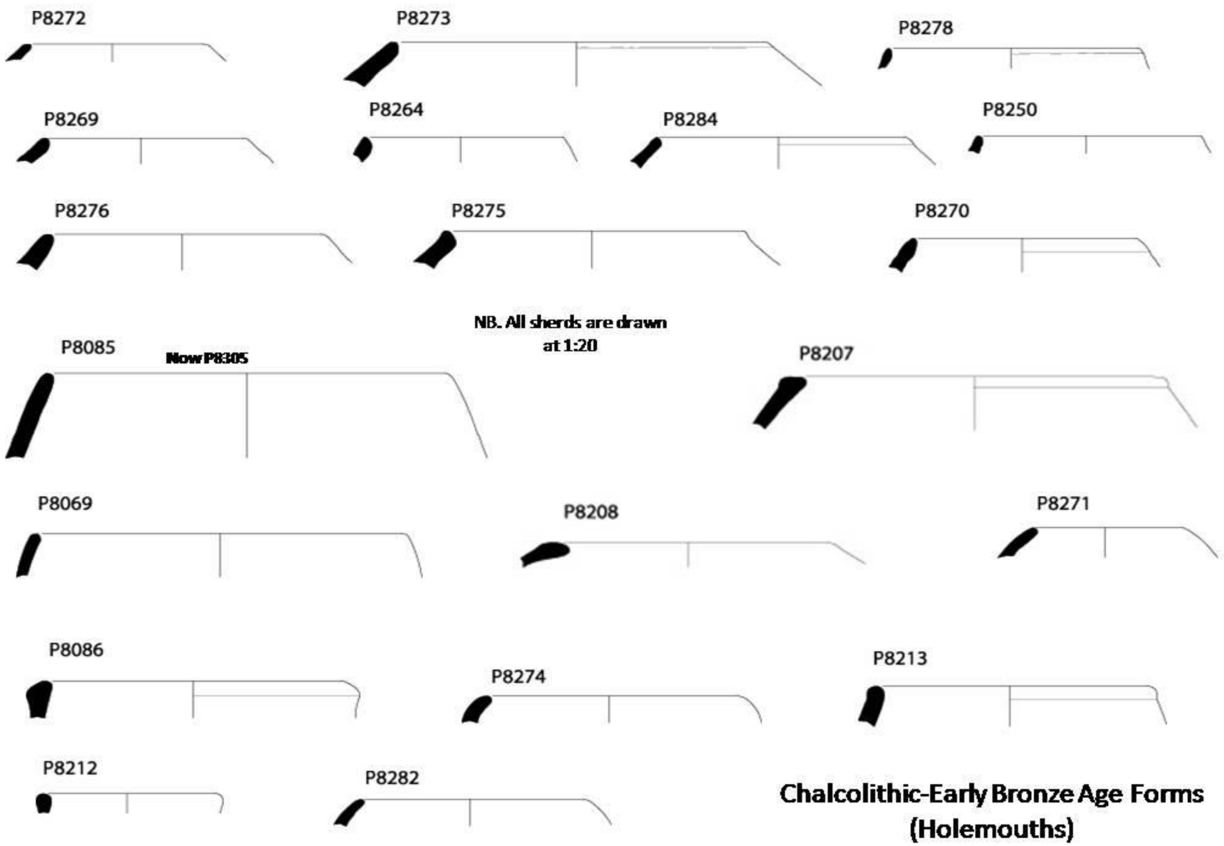
P8279	7/1/100	Handle	Loop Handle	EBA poss later?	Handle fragment, not particularly diagnostic, one of only handles seen in this fabric (Fab 2). Mix of mica and basalt inclusions, fairly well fired with light grey core. Dating unclear.	2
P8280	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB	Small holemouth jar rim sherd. Not drawn. Fabric 4, mix of chaff (predominant) and basalt inclusions and possible smoothed exterior.	4
P8281	7/1/100	Body sherd	Body sherd	Chalco/EB	Body sherd in Fabric 4, predominant chaff tempering with sparse basalt inclusions (0.1mm). Well sorted and levigated dark core and burnished exterior.	4
P8282	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB Poss EB I	Pinched rim sherd, (too small to assess rim diameter or draw), in Fabric 4, predominant chaff tempering with sparse basalt inclusions (0.1mm). Well sorted and levigated red core and burnished exterior.	4
P8283	7/1/100	Body sherd	Body sherd	Chalco/EB	Body sherd, Fabric 4 basalt tempered, with predominance of chaff tempering. Burnished exterior surface. Fired red-brown with black core.	4
P8284	7/1/100	Jar Holemouth	Jar Holemouth	Chalco/EB Poss EB II	Variant of Fabric 2, basalt and mica inclusions less finely sorted than most Fab 2 examples. Slight flattened rim, thickened and slightly lipped interior. Possible smoothing on exterior of sherd.	2
P8285	7/1/100	Body sherd	Body sherd	Chalco/EB	Body sherd with ‘impressed’ basket decoration on interior-poss variant on fabric 4, smoothed exterior surface. Fine inclusions but no chaff temper.	4
P8233	850/1/100	Rim Sherd	Body sherd	Chalco/EB poss. Later?	Broken rim sherd fragment, not drawn and stance and form unknown. Chaff and basalt tempered. Pink buff slip/surface treatment with darker red basaltic clay core. Impressed decoration on rim.	Unknown
P8235	850/1/100	Strap Handle	Strap Handle	EBA or poss later?	Basaltic tempered handle fragment dark brown fabric, well levigated and fired with a darker brown core, mica with some basalt, well sorted inclusions, less than 0.5mm, smoothed surface treatment.	4
P8237	850/1/100	Body Sherd	Body sherd	Chalco/EB	Well fired and levigated basaltic tempered body sherd. Brown/orange in fabric with burnished exterior, minimal inclusions which include basalt around 0.5mm	Unknown
P8200	914/1/100	Jar (Everted Rim)	Everted/Outflaring Rim Jars	Chalco/EB	Dark brown fabric with few rounded basalt inclusions (less than 1mm) and chaff temper, low firing and hand-made.	Unknown
P8093	915/1/100	Body Sherd Ledge Handle	Ledge Handle	EBA.	Half Moon Rounded Ledge . Moderately mixed clay, with very many small and medium dark grey stone (basalt), some reddish stone and a few white lime grits. Fired tan brown throughout. Although form is south Levantine, the fabric is Basalt Region.	6

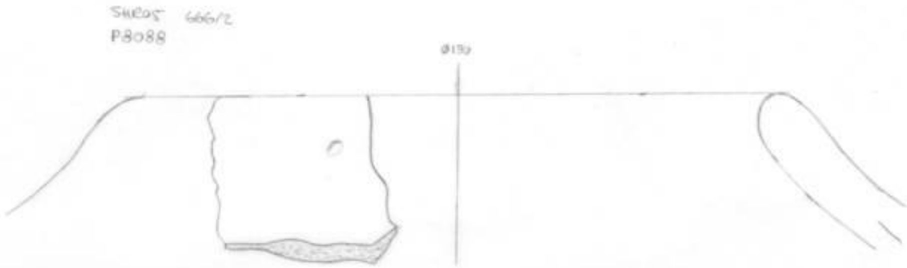
P8098	920/1/100	Base Flat	Base Flat	Chal/EB. Possibly Later.	Flattened Rounded. Dark grey core and red-brown surfaces.	2
P8099	920/1/100	Jar TNN	Everted/Outflaring Rim Jars	EBIV (?) Possibly Later	Upright Out-flaring Pinch-Rounded rim. Fairly finely mixed clay with many small and some medium grey stone (basalt?), some light grey chert, red stone and a few white lime grits. Fired light smokey grey throughout. Self (?) slipped in pale brown ext./int.	NBF
P8100	920/1/100	Bowl Deep	Bowl Deep	Chal/EB. Possibly Later.	Upright, Out-flaring Rounded Bevelled rim. Dark grey core, brick red surfaces.	1
P8101	920/1/100	Tray Shallow	Upright rim bowl forms	MBA. Possibly Earlier.	Upright Bevelled rim. Fairly finely mixed clay with many small/medium black stone (basalt?), a few larger red stone grits. Fired dark brown throughout. Self (?) slipped ext./int. Base area roughened	Unknown
P8102	920/1/100	Bowl Small	Everted/Outflaring Bowls/Platters	EBIV (?) Possibly Earlier.	Upright Out-flaring Pinch Rounded rim. Dark brown throughout. Red-brown slip ext. only.	Unknown
P8103	920/1/100	Jar TNN	Everted/Outflaring Rim Jars	EBIV	Upright, Out-flaring Swollen Rounded rim. Fair to quite finely mixed clay with many small red stone, white shell (?) and lime, and a few small grey stone (basalt?) grits. Fired medium to dark grey core and red-brown at surfaces.	Unknown
P2581	991/1/100	Jar	Jars (Upright Rims)	Chal/EB. Basalt Fabric.	Upright Everted Flanged Rounded Square rim. Fairly finely mixed clay with many small and some medium black stone and some small crystalline sand grits. Fired medium to dark grey at core and red-brown at surfaces. Self slipped in red-brown ext./int.	Unknown
P2582	991/1/100	Jar TNN (Large Storage)	Jars (Upright Rims)	EBA. Possibly Earlier.	Upright Rounded Triangular rim. Moderately mixed very gritty clay, with very many small and medium black stone, red stone, and a few white lime grits. Fired pale pinkish brick red throughout.	Unknown
P2583	991/1/100	Bowl Deep (Large)	Bowl Deep	EBA.	Outflaring Pinch Rounded rim. Moderately mixed very gritty clay, with many small and some medium dark grey stone, some red stone, and a few black and white stone grits. Fired light grey throughout. Thick red-brown slip ext./int. Heavily eroded ext.	Unknown
P8112	991/1/100	Jar Holemouth	Jar Holemouth	EBIV (?)	Incurving Thickened Rounded rim. Moderate to fairly finely mixed clay many small and medium black stone (basalt?), some reddish and orangey stone, and a few small white lime grits. Fired dark brown at core and red-brown at surfaces.	Unknown
P8258	CR 455	Body Sherd	Body sherd	Chalco/EB	Basaltic tempered body sherd with evidence for pronounced carination, Fabric variant, gritty basalt and mica inclusions (less than 0.5mm) with some chaff tempering, dark-red brown in colour, well fired.	2

APPENDIX 5.6: SHERD DIAGRAMS FOR ‘P’ NUMBERED SHERDS FROM THE HOMS NSA

A powerpoint version of this file can be found in Appendix 5.6 on the attached DVD

5.6.1. Chalcolithic-Early Bronze Age Forms

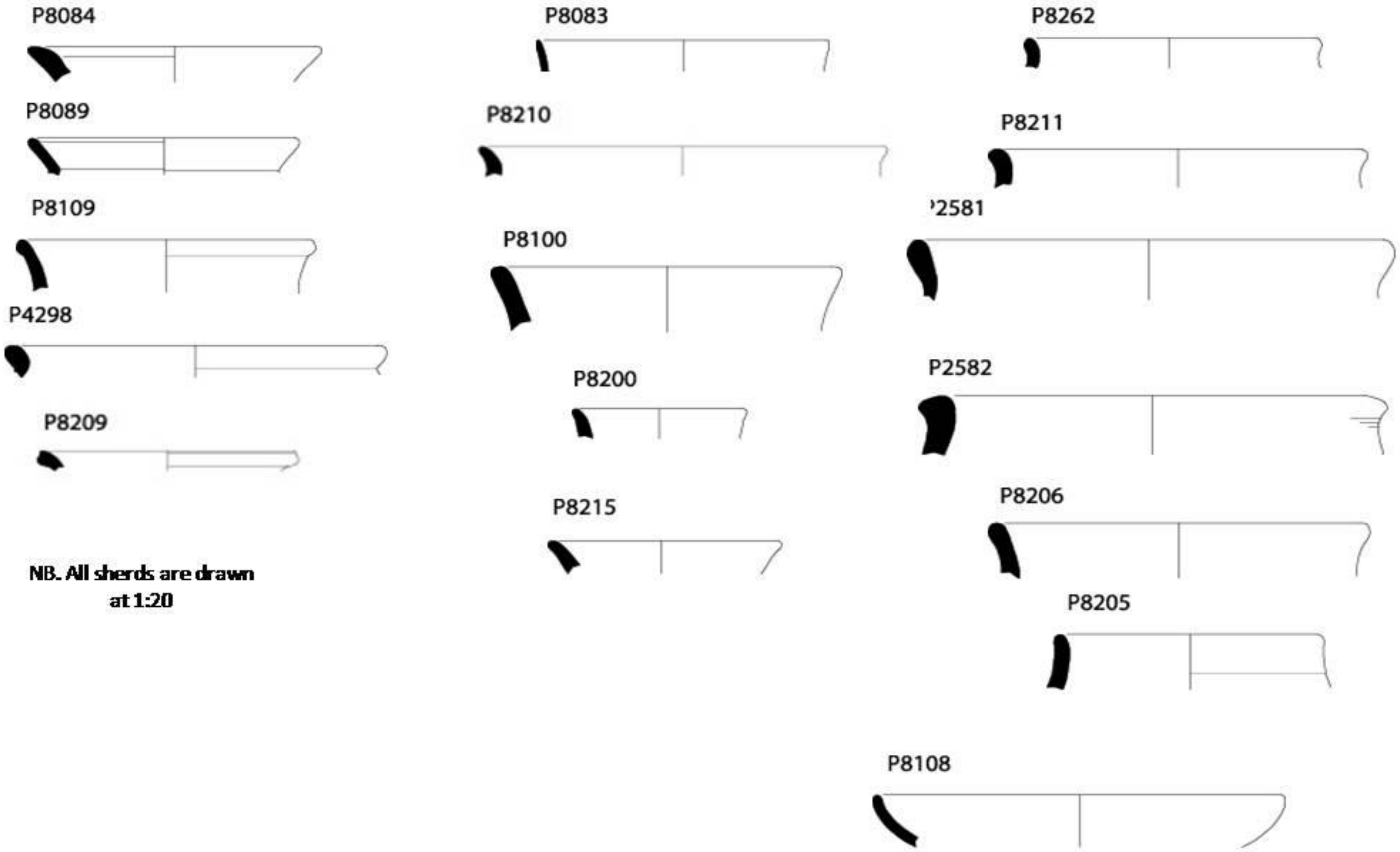




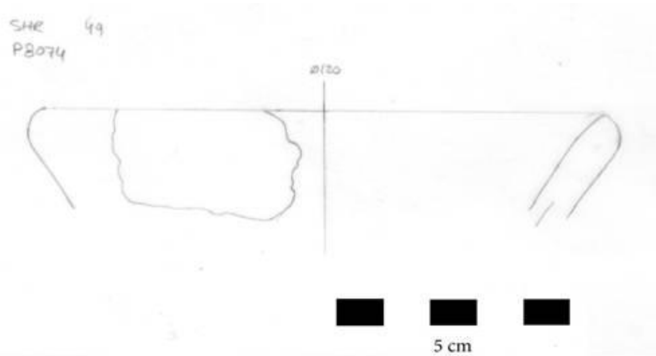
Nb. Recorded as possibly earlier than Chalco-EBA

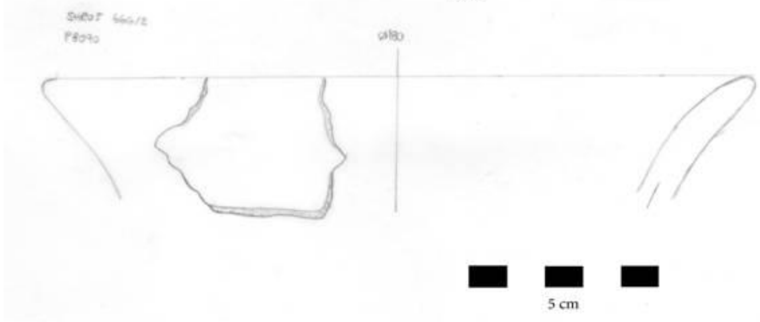
5 cm

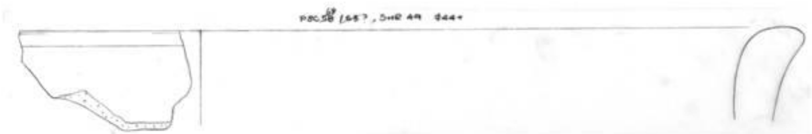
Chalcolithic-Early Bronze Age Forms (Holemouths)



**Chalcolithic-Early Bronze Age Forms
(Everted Rim Vessels-Bowls and Jars)**

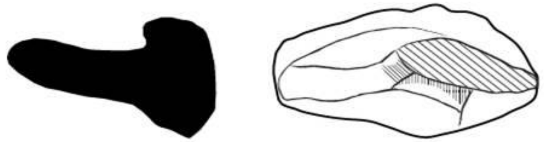






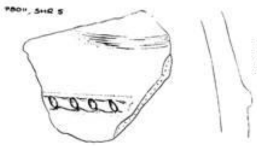
Chalcolithic-Early Bronze Age Forms
(Everted Rim Vessels-Bowls and Jars)

P8235



Scale 1:1 and 1:20

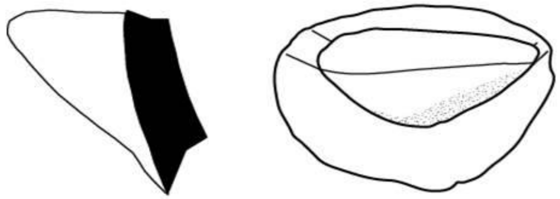
P8235



No scale recorded for this example

Nb. Poss Neolithic

P8093



Scale 1:1 and 1:20

P8093

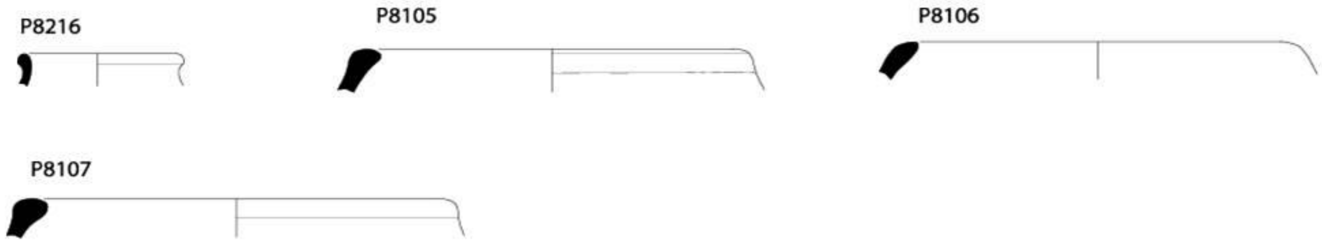
P8098

Nb. Poss Chalco/EB

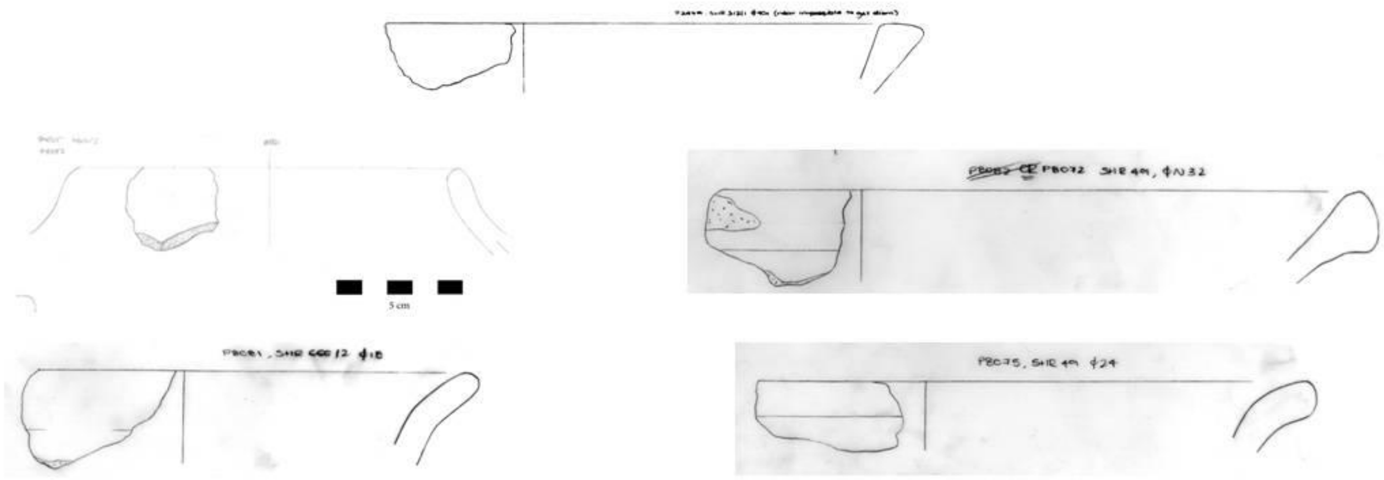
Scale 1:20

Chalco-Early Bronze Age Forms (Handles, Bases and Body Sherds)

5.6.2. Early Bronze Age Forms

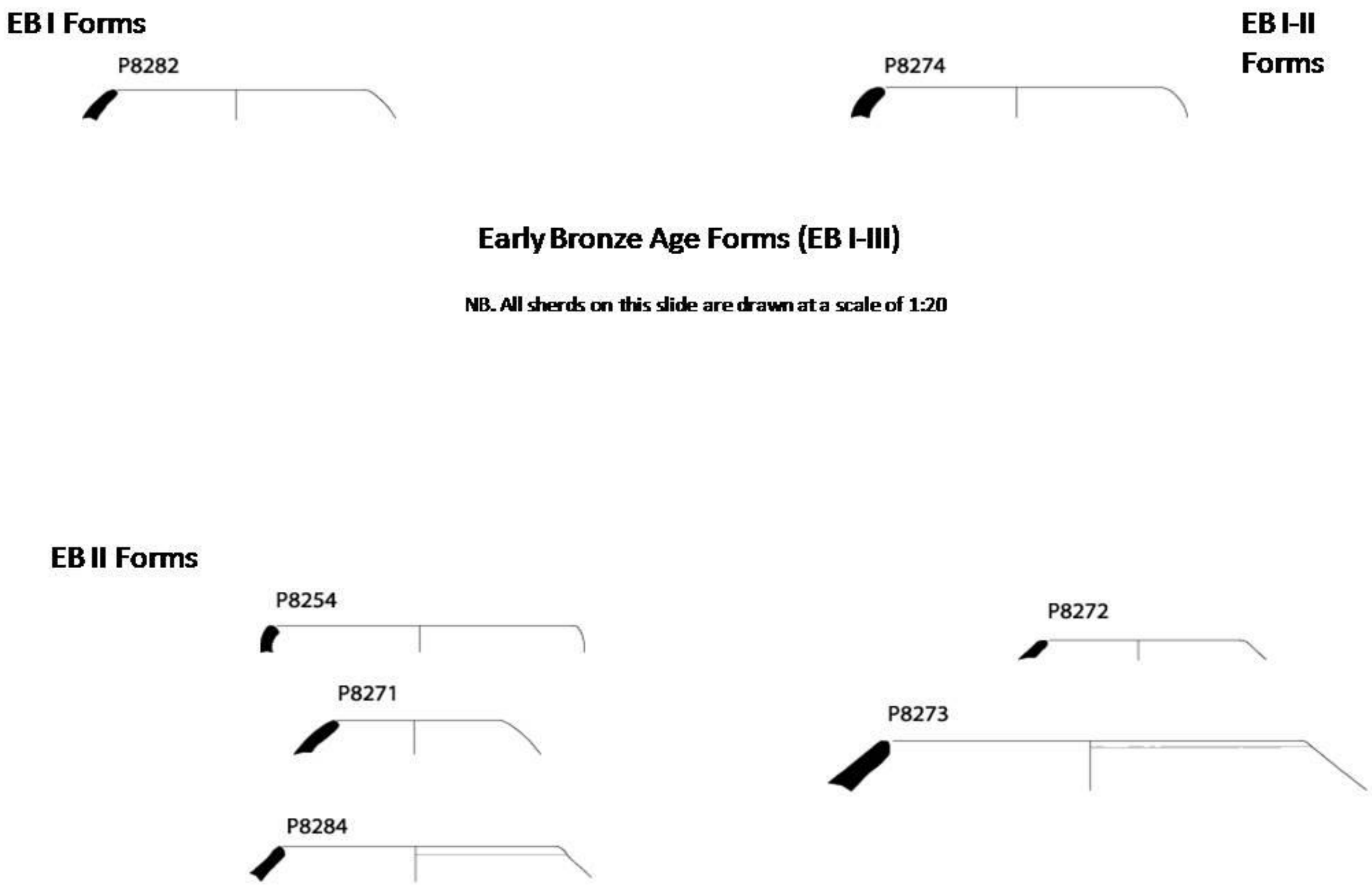


NB. The above images are all at a scale of 1:20. The below are working scans only and where scales are not present the dimensions can be found on the scan.

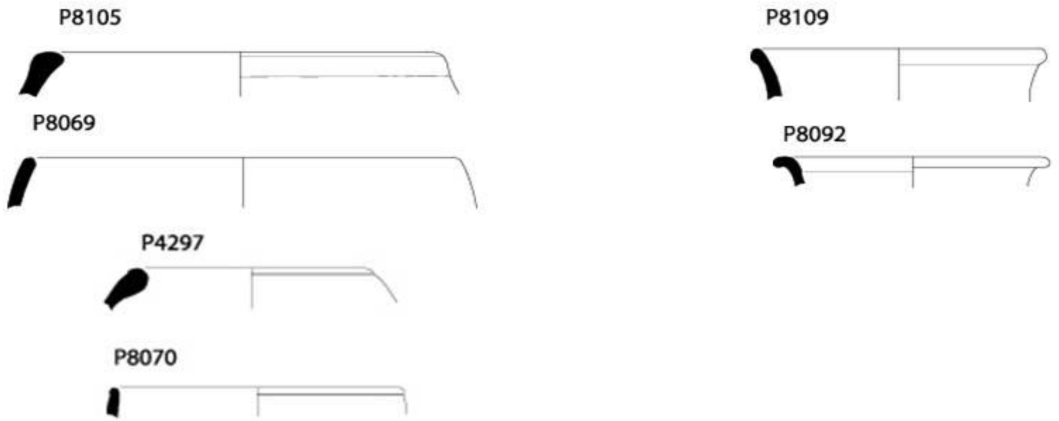


Early Bronze Age Forms

5.6.3. EB II-III Forms

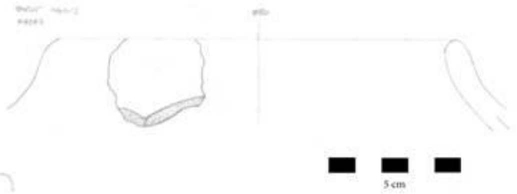


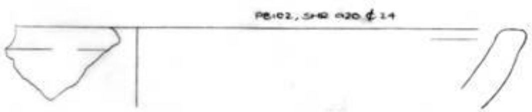
5.6.4. EB IV Forms

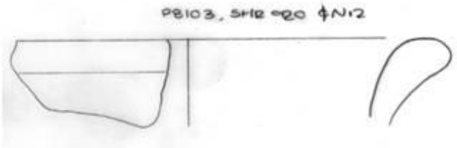


NB. All sherds on this slide are drawn at a scale of 1:20

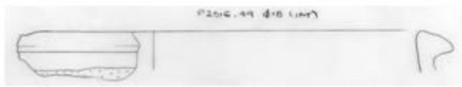
Early Bronze Age Forms (EB IV)



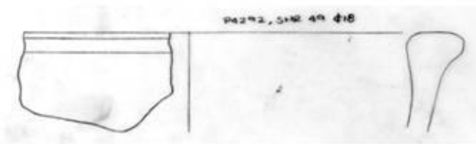


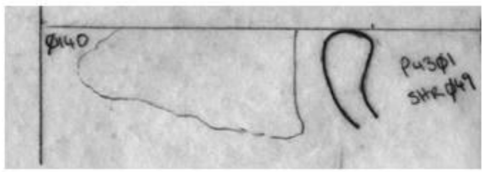


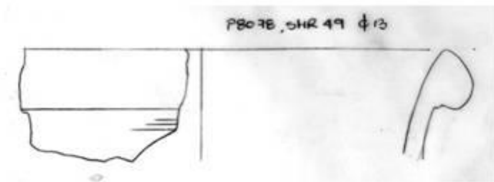
Nb. Please note these are working scans. Where scales are not present the dimensions can be found on the scanned images.



Poss. MBA







Poss. MBA

APPENDIX 8.1: LIST OF SITES DISCUSSED IN CHAPTER 8

The Site ID here corresponds to the ID of sites which have been mapped (i.e. see Figures 8.1-2 and 8.21-23). The corresponding references can be found in the main bibliography of the thesis.

Site ID	Site Name	uncal BP	error	cal BC start	cal BC end	% error	Oxcal	Oxcal	Oxcal % error	Chronological Period	Reference
1	Abel	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
	Abel	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Greenberg 2002
2	Abel Betma'akha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
3	Abu Hof	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987: fig 4.1.
4	Abu Ichya	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
5	Abu Matar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Dothan 1959: 2, site 3; Perrot 1955a, b
6	Alma	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
7	Ameuchad	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
8	Atar Azazma	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
9	Atar Har Dimon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
10	Atar Har Harif	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
11	Atar Har Ramon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
12	Atar Har Yeroham	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
13	Atar Mefal	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987

14	Atar Nahal Boqer	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
15	Atar Nahal Ezuz	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
16	Atar Nahal Mingar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
17	Atar Nahal Nizzana	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
18	Bahdaliyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Braemer pers comm. 2010
	Bahdaliyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer pers comm. 2010
19	Beer Ibrahim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Dothan 1959: 2, site 5
20	Beer Jemma	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
21	Be'er Karkom	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
22	Beer Shiqmim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
23	Beer Ze'elim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
24	Be'erotayim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1996, Cohen 1999
25	Beit Sefer Hayashan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
26	Bernstein	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
27	Bet Yerah	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Greenberg 2002: 93
28	Bir es-Safadi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Dothan 1959: 2, site 2; Perrot 1956
29	Bir Osnat	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
30	Bjuriyye	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992

28	Bosra	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	Braemer et al. 2004; Seeden 1983, 1986
	Bosra	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Braemer et al. 2004; Seeden 1983, 1986
	Bosra	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Braemer et al. 2004; Seeden 1983, 1986
29	Camel Site	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Rosen 2003
30	Dab'es catchment site	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
31	Dalton	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
32	Damas	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	Braemer et al. 2004
	Damas	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Braemer et al. 2004
33	Dan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
	Dan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Greenberg 2002
	Dan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
34	Darbashiyya	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Darbashiyya	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
35	Darbashiyya south	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Darbashiyya south	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
36	Deir Sras	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Epstein 1985a
37	Der'a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Braemer 1984
	Der'a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer 1984

38	Dimona Mountains	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1992a
39	Dura	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
	Dura	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Epstein 1978
40	Eilat IV/16	6470	80	5490	5320	n/a	-5626	-5219	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1215
41	Eilat IV/3	6340	60	5470	5260	n/a	-5481	-5067	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1215
42	Eilat IV/8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Late Neolithic	Avner et al. 1994, Avner and Carmi 2001: 1216
43	Eilat IV/8	5710	75	4680	4450	n/a	-4797	-4343	99.7	Late Neo-Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1216
44	Eilat V/18	5930	80	4910	4710	n/a	-5207	-4519	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1216
45	Eilat V/22	5980	130	5050	4880	n/a	-5356	-4451	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1216
46	Eilat V/27	6400	210	5650	5050	n/a	-5983	-4683	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1215
47	Eilat V/28	6060	65	5050	4850	n/a	-5226	-4722	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1216
48	'Ein el-Hariri	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
49	Ein Gamla	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Late Neolithic	Levy and Alon 1987
50	'Ein Qedeis-Har Horsha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
51	'Ein Yarda	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	'Ein Yarda	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
52	Ein Ziq Group (No placemark=type of temporary settlement forms)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1994

53	el-Arba'in	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
54	El-Ayun	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Vinitzky 1992
55	el-Havi (Yonathan)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
56	El-Huseiniya	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
57	el-Majami	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
58	'En Aqed	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
59	'En Avazim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	'En Avazim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
	'En Avazim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Greenberg 2002
60	'En Avdat	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
61	E'n Besor	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Gophna 1976
62	'En Hashomer	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
63	'En Ro'im	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
64	En Ziq/'En Zik	3880	50	2460	2290	n/a	-2569	-2140	99.7	EB III-IV	Cohen 1999, Avner and Carmi 2001: 1211
	En Ziq/'En Zik	3700	45	2200	1980	n/a	-2290	-1909	99.7	EB IV	Cohen 1999, Avner and Carmi 2001: 1211
65	'Enan Tomb	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
66	Er-Ramthaniyye	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Dauphin and Gibson 1992: 24-30
67	Esdar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987: fig 4.1.
68	Gadot	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002

	Gadot	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBI	Greenberg 2002
69	Gamla	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Steimer-Herbet 2004: 58
70	Gilat	5440	180	4470	4040	n/a	- 4852	- 3695	99.7	Chalcolithic	Levy and Alon 1989: 169
	Gilat	4800	135	3774	3753	n/a	- 4000	- 3018	99.7	Chalcolithic-EB I	Levy and Alon 1989: 169
71	Givat Barnea	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Haiman 1992aa: 39
72	Grar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Gilead 1995
73	Gush Halav	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
74	Hagamal	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Segal and Carmi 1996, Avner and Carmi 2001: 1211
	Hagamal	4115	50	2860	2580	n/a	- 2888	- 2486	99.7	EB II	Segal and Carmi 1996, Avner and Carmi 2001: 1211
75	Hammam Banat Yaqub	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
76	Har Boqer	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
77	Har Dimon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Segal and Carmi 1996, Avner and Carmi 2001: 1211
	Har Dimon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Segal and Carmi 1996, Avner and Carmi 2001: 1211
	Har Dimon	4660	55	3520	3360	n/a	- 3641	- 3109	99.7	Chalcolithic-EB I	Segal and Carmi 1996, Avner and Carmi 2001: 1211
78	Har Dimona	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
79	Har Hame'ara	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1992a
80	Har Harif	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1992a

81	Har Harif E22H	5960	100	4960	4710	n/a	-5228	-4492	99.7	Late Neo-Chalcolithic	Avner and Carmi 2001: 1211
82	Har Horesha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Haiman 1992a
83	Har Horsha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
84	Har Karkom	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1996, Cohen 1999
85	Har Massa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
	Har Massa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
86	Har Nafha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
87	Har Ramon and the 'K' Line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA (EB IV)	Haiman 1992a
88	Har Resisim, Site 126	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
89	Har Saggi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
90	Har Yeroham	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
	Har Yeroham	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1996, Cohen 1999
91	Har Yeroham Group (Har Yeroham and Har Zayyad)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1994
92	Har Zayyad	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1996, Cohen 1999
93	Har Zuriaz	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Haiman 1992a
94	Hatzerim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
95	Hazor	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
	Hazor	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Greenberg 2002
	Hazor	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Vinitzky 1992

96	Hebariyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	Braemer et al. 2004
	Hebariyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Braemer et al. 2004
	Hebariyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Braemer et al. 2004
97	Hijaneh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
98	Horabt Har Zayyad	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
99	Horbat Adhir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
100	Horbat Avnon	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
101	Horbat Baqqara	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
102	Horbat Be'er Hayyal	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
103	Horbat Be'er Ratav	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
104	Horbat Be'er Resisim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
105	Horbat Boles	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
106	Horbat 'En Ha-Me'ara	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
64	Horbat 'En Ziq (Same site as ‘En Ziq)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
108	Horbat Nahal Zalzal	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
109	Horbat Telma	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
	Horbat Telma	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
110	Horvat Beter	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Dothan 1959: 2, site 1
111	Ichud	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
112	Jawa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Helms 1981, 1984; Braemer 1984

	Jawa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Helms 1981, 1984; Braemer 1984
113	Kefar Nahum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
114	Kevish Har Harif	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
115	Khirbet Charaya	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Al-Maqdissi and Nicolle 2006
	Khirbet Charaya	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Al-Maqdissi and Nicolle 2006
	Khirbet Charaya	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Al-Maqdissi and Nicolle 2006
116	Khirbet Dabab	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	Braemer et al. 2004
117	Khirbet 'Ein Zagha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
118	Khirbet el-Hutiyye	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
119	Khirbet Kneifes	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
120	Khirbet Murasras	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
121	Khirbet Rumman O.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
122	Khirbet Sawwan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	Braemer et al. 2004
	Khirbet Sawwan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	
123	Khirbet Suleitin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
124	Khisas	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Khisas	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
	Khisas	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Greenberg 2002
125	Kubor	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
126	Kuntilla	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA?	Haiman 1992a

127	Kushniya	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
128	Kusr Berdawil	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
129	Kvish Harif	5260	60	4230	3980	n/a	-4331	-3820	99.7	Chalcolithic	Rosen 1984, Avner and Carmi 2001: 1211
130	Labweh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Al-Maqdissi and Braemer 2006
131	Large Tel Malhata	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
	Large Tel Malhata	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Amiran 1978, Amiran et al. 1980,
132	Lawiyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	Paz 2002
	Lawiyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Paz 2002
	Lawiyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Paz 2002
133	Lehavot Habashan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Lehavot Habashan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
134	Ma'ayan Barukh tombs	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
135	Makhtesh Hatira	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
136	Maktesh HaBesor Hama'aravi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
137	Maktesh HaBesor Hamizra 'chi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
138	Mashabbe Sade	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
139	Me'arat Nahal Ahdir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
140	Me'arat Nahal Zalzal	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
141	Meron	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992

142	Mezad Aluf	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1982
143	Mezad 'Ateret	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
144	Mizad Aluf Adromite	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
145	Mizad Aluf Atzphani	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
146	Mu'amariyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer in press
147	Mumassakhin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Maqdissi 2000
148	Musha'an	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
149	Naffakh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Dauphin and Gibson 1992; Vinitzky 1992
150	Nahal Ahdir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
151	Nahal Beroqa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
152	Nahal Besor	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
153	Nahal Boqer	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
154	Nahal Efe	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
155	Nahal Hamdal	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
156	Nahal Horsha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
346	Nahal Issaron	5635	70	n/a	n/a	n/a	-4717	-4270	99.7	Chalcolithic	Avner et al. 1994: 97
	Nahal Issaron	7620	80	n/a	n/a	n/a	-6682	-6236	99.7	Late Neo	Avner et al. 1994: 97
	Nahal Issaron	5170	55	n/a	n/a	n/a	-4234	-3782	99.7	Chalcolithic	Avner et al. 1994: 97
	Nahal Issaron	7460	95	n/a	n/a	n/a	-6593	-6051	99.7	Late Neo	Avner et al. 1994: 97

	Nahal Issaron	4990	50	n/a	n/a	n/a	-3957	-3648	99.7	Chalcolithic	Avner et al. 1994: 97
	Nahal Issaron	6680	85	n/a	n/a	n/a	-5840	-5376	99.7	Late Neo	Avner et al. 1994: 97
	Nahal Issaron	5690	55	n/a	n/a	n/a	-4717	-4357	99.7	Late Neo-Chalcolithic	Avner et al. 1994: 97
	Nahal Issaron	5625	70	n/a	n/a	n/a	-4713	-4266	99.7	Late Neo-Chalcolithic	Avner et al. 1994: 97
	Nahal Issaron	7135	95	n/a	n/a	n/a	-6353	-5725	99.7	Late Neo	Avner et al. 1994: 97
	Nahal Issaron	5755	85	n/a	n/a	n/a	-4906	-4348	99.7	Late Neo-Chalcolithic	Avner et al. 1994: 97
	Nahal Issaron	7600	110	n/a	n/a	n/a	-6830	-6076	99.7	Late Neo	Avner et al. 1994: 97
	Nahal Issaron	7100	70	n/a	n/a	n/a	-6212	-5752	99.7	Late Neo	Avner et al. 1994: 97
	Nahal Issaron	6350	90	n/a	n/a	n/a	-5561	-4997	99.7	Late Neo	Avner et al. 1994: 97
	Nahal Issaron	7950	110	n/a	n/a	n/a	-7325	-6470	99.7	Late Neo	Avner et al. 1994: 97
157	Nahal Mingar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
158	Nahal Mitnan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
	Nahal Mitnan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Haiman 1993
159	Nahal Neqarot	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
160	Nahal Nizzana	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1996
161	Nahal Quba'at	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
162	Nahal Refed	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999

163	Nahal Resisim, Site 157	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
164	Nahal Revivim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
165	Nahal Saggi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
166	Nahal Seker	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
	Nahal Sekher	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
167	Nahal Yafruq	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
168	Nahal Zipporim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
169	Near Bazelet Waterfall	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
170	Near Daliyyot Waterfall-north bank	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
171	Near Daliyyot Waterfall-south bank	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
172	Near Ja'adan Stream	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
173	Near Nukheile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
174	Near Tel Malhata	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
175	Near Tel Malhata (2)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
176	Near Tel Masos	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
177	Near Tel Masos (2)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
178	Near Tel Sheva	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
179	Near Tel Sheva (2)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
180	Near Upper Zavitan Waterfall	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
181	Nevatim Aleph	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987

182	Nevatim Bet	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
183	Nevatim Gimel	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
184	north-west of Qaliq	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
185	Osnat Ma'aravi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
186	Point 137	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
187	Qadesh Barnea	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
	Qadesh Barnea and surroundings (i.e. Ain el-Gudeirat) please note that this has been classed by Beit Arieh and Gophna as EB II, however, Cohen (1999) suggests EBA, I have included it as such on the maps of distribution	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA (EB II)	Beit-Arieh and Gophna 1981; Cohen 1999
	Qadesh Barne'a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Late Neolithic	Avner and Carmi 2001: 1211
188	Qadesh Barnea 3	7530	80	6450	6250	n/a	-6633	-6098	99.6	Late Neo	Avner and Carmi 2001: 1211
	Qadesh Barnea 3	7350	80	6340	6070	n/a	-6439	-6009	99.7	Late Neo	Avner and Carmi 2001: 1211
189	Qedesh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
190	Qirata/Qarassa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	pers comm. Braemer 2010
	Qirata/Qarassa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	pers comm. Braemer 2010
	Qirata/Qarassa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	pers comm. Braemer 2010
191	Qiryat Shemona east Dolmens	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Greenberg 2002
		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
192	Ramat Boqer	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
193	Ramat Matred Site 10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999

194	Ramat Matred Site 9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
195	Ramat Matred, Site 14	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1996, Cohen 1999
196	Ramat Matred, Site 3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Haiman 1996, Cohen 1999
197	Ramat Matred, Site 4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
198	Ramat Matred, Site 5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
199	Ramat Matred, Site 7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
200	Ramat Matred, Site 8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
201	Ramat Saharonim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
202	Ramim Dolmen	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Greenberg 2002
		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
203	Ras el-Biyad	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
204	Rasm el-Kabash	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
205	Rasm Harbush (Site 12)	5270	140	4252	3959	97	-4518	-3652	99.7	Chalcolithic	Carmi and Segal 1998
	Rasm Harbush (Site 12)	4945	65	3783	3662	100	-3964	-3528	99.7	Chalcolithic	Carmi and Segal 1998
	Rasm Harbush (Site 12)	5130	70	3988	3805	100	-4234	-3697	99.7	Chalcolithic	Carmi and Segal 1998
	Rasm Harbush (Site 12)	4810	90	3693	3507	93	-3951	-3339	99.7	Chalcolithic-EB I	Carmi and Segal 1998
206	Rekhes Nafha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
207	Rekhes Yeroham	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
208	Reservoir site	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978

209	Rujm el-Hiri	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Zohar 1989, Mizrachi et al. 1996
210	Rukeis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Braemer et al. 2004
211	Safiyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
212	Safsaf	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
213	Sahwawin Gimel	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Macdonald 1932, Levy and Alon 1987
214	Samar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
215	Sede Boqer	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
216	Sha'abaniyye 'ein hariri region	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
217	Sha'abniyeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
218	Sha'ar Hagolan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Vinitzky 1992
219	Shabbe	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
220	Shaharut IV	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III-IV	Avner et al. 1994, Avner and Carmi 2001: 1214
	Shaharut IV	3700	55	2200	1970	n/a	-2346	-1883	99.7	EB IV-MB I	Avner et al. 1994, Avner and Carmi 2001: 1214
	Shaharut IV	3582	130	2140	1740	n/a	-2475	-1493	99.7	EB IV-MB I	Avner et al. 1994, Avner and Carmi 2001: 1214
221	Shamir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
	Shamir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
	Shamir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Greenberg 2002
	Shamir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002

222	Sheluhat Qadesh Barnea	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Cohen 1999
223	Shiqmim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
224	Shiqmim Adromite	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
225	Shiqmim Mizrachi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
226	Sijin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
227	Silo site', near 'Ein el-Faras	5540	110	4496	4254	100	-4728	-3991	99.7	Chalcolithic	Carmi and Segal 1998
228	Site 0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Macdonald 1932, Levy and Alon 1987
229	Site 115	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987: fig.4.1.
230	Site 21, Near Daliyyot Waterfall	5565	60	4455	4355	100	-4602	-4244	99.7	Chalcolithic	Carmi and Segal 1998
231	Site B	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Macdonald 1932, Levy and Alon 1987
232	Site D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Macdonald 1932, Levy and Alon 1987
234	Site E	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Macdonald 1932; Levy and Alon 1987
235	Site F	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Macdonald 1932, Levy and Alon 1987
236	Site M	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Macdonald 1932, Levy and Alon 1987
237	Site A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Macdonald 1932; Levy and Alon 1987
238	Sivuv A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Dothan 1959:2, site 6
239	Sivuv B	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Dothan 1959:2, site 7

240	Siyar el-Kherfan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
241	Small Tel Malhata	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
	Small Tel Malhata	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
242	south-east of Fakhura	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
243	Stone heaps no.4, 6 and 8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
244	Summaqa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
245	T. Doulab	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
246	T. Jin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
247	T. Kurdi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
248	T. Meskene	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
249	T. Shawaqa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
250	Tahunat et-Tabkha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
251	Tanour	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
252	Tayyibeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Braemer 1984
	Tayyibeh	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer 1984, Braemer et al. 2004
253	Tel Anafa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
254	Tel Arad	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Amiran 1978, Amiran et al. 1980,
	Tel Arad	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Amiran 1978, Amiran et al. 1980,

	Tel Arad	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Amiran 1978, Amiran et al. 1980,
	Tel Arad	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Amiran 1978, Amiran et al. 1980,
255	Tel 'Ateret	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Tel 'Ateret	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
256	Tel Dan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
257	Tel Esdar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Cohen 1999
	Tel Esdar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Cohen 1999
258	Tel et-Tawil	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
259	Tel Halif	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
	Tel Halif	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
260	Tel Haror	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
	Tel Haror	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
261	Tel Kinerot	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
262	Tel Masos	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
	Tel Masos	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
263	Tel Na'ama	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Tel Na'ama	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
	Tel Na'ama	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
264	Tel Raqqat	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992

265	Tel Ron	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Tel Ron	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
266	Tel Shahaf	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
267	Tel Sharia	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
	Tel Sharia	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
268	Tel Sheva	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Perrot 1955a, b
	Tel Sheva	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Perrot 1955a, b
269	Tel Shoqet	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987: fig.4.1.
270	Tel Soreg	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Vinitzky 1992
271	Tel Te'o	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Tel Te'o	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
272	Tel Qihati	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
273	Tell Ash'ari	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Braemer 1984
274	Tell 'Ashtara	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer 1984
275	Tell Ektebe	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
276	Tell el-Mallaha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Tell el-Mallaha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
277	Tell el-Wawiyat	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Tell el-Wawiyat	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002

278	Tell es Safa tombs	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB IV	Greenberg 2002
279	Tell Fanus and Surroundings	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
280	Tell Fukhar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
281	Tell Habis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer et al. 2004
282	Tell Shehab	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Braemer 1984, Braemer et al. 2004
	Tell Shehab	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	Braemer 1984, Braemer et al. 2004
	Tell Shehab	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Braemer 1984, Braemer et al. 2004
283	Tell Sluqiyye	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1978
284	Tell Zheir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Braemer 1991
	Tell Zheir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Braemer 1991
	Tell Zheir	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	MBA	pers comm. Braemer 2010
285	Tnuva Ha'yashan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Dothan 1959: 2, site 4
286	Tov	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
	Tov	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Levy and Alon 1987
287	Tulul el Far	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	Cluzan and Taraqji 2009
	Tulul el Far	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	Cluzan and Taraqji 2009
288	Umbashi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Braemer et al. 2004
	Umbashi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Braemer et al. 2004, pers comm. Braemer 2010

	Umbashi, Necropoli East	3845	70	2491	2134	n/a	-2577	-2022	99.7	EB III-IV	Braemer et al. 2004: 37
	Umbashi, VN01.01.202	3585	50	2091	1773	n/a	-2142	-1740	99.7	EB IV-MBI	Braemer et al. 2004: 37
	Umbashi, VN1.01.205	3980	55	2620	2317	n/a	-2861	-2207	99.7	EB III	Braemer et al. 2004: 37
	Umbashi, VN1.01.91	4020	75	2856	2359	n/a	-2886	-2209	99.7	EB II-III	Braemer et al. 2004: 37
	Umbashi, VN1.88	3910	65	2576	2187	n/a	-2836	-2051	99.6	EB III	Braemer et al. 2004: 37
	Umbashi, VS3. 01.1	3195	55	1605	1383	n/a	-1681	-1292	99.7	MB I	Braemer et al. 2004: 37
	Umbashi, VS3.32	2555	65	822	444	n/a	-896	-406	99.7	Hellenistic	Braemer et al. 2004: 37
	Umbashi, VS4. os	4075	160	3020	2179	n/a	-3347	-2016	99.7	EB I-IV	Braemer et al. 2004: 37
	Umbashi, VS4.17	4395	60	3305	2923	n/a	-3351	-2886	99.7	EB I-II	Braemer et al. 2004: 37
	Umbashi, VS4.18	4455	60	3328	2930	n/a	-3367	-2905	99.7	EB I-II	Braemer et al. 2004: 37
	Umbashi, VW14.11	3930	65	2563	2209	n/a	-2852	-2137	99.7	EB III	Braemer et al. 2004: 37
	Umbashi, VW14.11	3635	55	2175	1890	n/a	-2275	-1757	99.7	EBIV-MBI	Braemer et al. 2004: 37
	Umbashi, VW14.22	3190	120	1749	1138	n/a	-1916	-999	99.7	LB?	Braemer et al. 2004: 37
	Umbashi, VW9.01.4	3730	55	2280	1969	n/a	-2458	-1911	99.8	EB IV-MBI	Braemer et al. 2004: 37
289	Uvda 124/IV	4370	100	3310	2880	n/a	-3499	-2581	99.6	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1213

	Uvda 124/IV	4370	50	3090	2910	n/a	-3336	-2881	99.6	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 124/IV	4285	60	3020	2710	n/a	-3323	-2619	99.7	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 124/IV	4280	60	3020	2700	n/a	-3319	-2581	99.7	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 124/IV	4120	60	2870	2570	n/a	-2894	-2475	99.7	EB II-III	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 124/IV	4075	55	2860	2490	n/a	-2887	-2462	99.7	EB II-III	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 124/IV	4030	45	2620	2470	n/a	-2869	-2347	99.8	EB II-III	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 124/IV	4015	40	2580	2470	n/a	-2858	-2347	99.7	EB II-III	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 124/IV	4010	45	2580	2460	n/a	-2861	-2307	99.7	EB II-III	Avner et al. 1994, Avner and Carmi 2001: 1213
290	Uvda 14	5170	55	4050	3810	n/a	-4234	-3782	99.7	Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1215
	Uvda 14	4990	50	3910	3700	n/a	-3957	-3648	99.7	Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1215
	Uvda 14	7460	95	6410	6230	n/a	-6593	-6051	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	7135	95	6160	5890	n/a	-6353	-5725	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	7100	70	6030	5840	n/a	-6212	-5752	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	6680	85	5670	5480	n/a	-5840	-5376	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	6460	70	5480	5360	n/a	-5617	-5223	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	6350	90	5470	5210	n/a	-5561	-4997	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1214

	Uvda 14	6130	70	5210	4940	n/a	-5312	-4799	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	5755	85	4710	4490	n/a	-4906	-4348	99.7	Late Neo-Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	5690	55	4600	4450	n/a	-4717	-4357	99.7	Late Neo-Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	5635	70	4540	4360	n/a	-4717	-4270	99.7	Late Neo-Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 14	5625	70	4530	4360	n/a	-4713	-4266	99.7	Late Neo-Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1215
291	Uvda 151	5670	85	4610	4360	n/a	-4798	-4265	99.7	Late Neo-Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1214
	'Uvda 151	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Late Neolithic	Avner et al. 1994, Avner and Carmi 2001: 1214
292	Uvda 16	4400	60	3260	2910	n/a	-3351	-2889	99.7	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 16	4800	70	3660	3380	n/a	-3789	-3363	99.7	Chalco-EB I	Avner et al. 1994, Avner and Carmi 2001: 1213
	'Uvda 16	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1213
	'Uvda 16	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1213
293	Uvda 166	3850	80	2460	2200	n/a	-2624	-1957	99.7	EB III-IV	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 166	3680	50	2140	1970	n/a	-2287	-1885	99.7	EB IV-MB I	Avner et al. 1994, Avner and Carmi 2001: 1214
	'Uvda 166	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III-IV	Avner et al. 1994, Avner and Carmi 2001: 1214
294	Uvda 17	4100	50	2860	2500	n/a	-2881	-2476	99.7	EB II-III	Avner and Carmi 2001: 1213
	Uvda 17	3870	40	2460	2280	n/a	-2488	-2143	99.7	EB III-IV	Avner and Carmi 2001: 1213

	Uvda 17	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Avner and Carmi 2001: 1213
	Uvda 17	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Avner and Carmi 2001: 1213
	Uvda 17	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III-IV	Avner and Carmi 2001: 1213
295	Uvda 4	5400	110	4350	4040	n/a	-4590	-3809	99.7	Chalcolithic	Avner et al. 1994, Avner and Carmi 2001: 1212
296	Uvda 6	6560	200	5710	5310	n/a	-6049	-4846	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1212
	Uvda 6	6400	70	5470	5310	n/a	-5561	-5079	99.6	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1212
	Uvda 6	6400	60	5470	5310	n/a	-5525	-5214	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 6	6390	60	5470	5310	n/a	-5526	-5211	99.7	Late Neo	Segal and Carmi 1996, Avner and Carmi 2001: 1213
297	Uvda 7	4540	100	3490	3040	n/a	-3635	-2902	99.7	EB I	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1213
	Uvda 7	6410	120	5490	5260	n/a	-5670	-4950	99.7	Late Neo	Avner et al. 1994, Avner and Carmi 2001: 1213
298	Uvda 9	4530	50	3360	3100	n/a	-3501	-2933	99.7	EB I	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 9	4520	60	3360	3100	n/a	-3511	-2920	99.7	EB I	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 9	4440	180	3360	2890	n/a	-3793	-2458	99.7	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 9	4440	60	3330	2920	n/a	-3363	-2903	99.7	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1214
	Uvda 9	4310	90	3110	2700	n/a	-3359	-2576	99.7	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1214

	Uvda 9	4070	100	2860	2470	n/a	-3010	-2200	99.7	EB II-III	Avner et al. 1994, Avner and Carmi 2001: 1214
299	Uvda 9 (124/XVII)	6960	70	5890	5730	n/a	-6026	-5658	99.7	Chalcolithic	Avner and Carmi 2001: 1213
	Uvda 9 (124/XVII)	4130	90	2880	2580	n/a	-3024	-2337	99.7	EB II-III	Avner and Carmi 2001: 1214
	Uvda 9 (124/XVII)	7960	200	7200	6550	n/a	-7581	-6256	99.7	Neolithic	Avner et al. 1994, Avner and Carmi 2001: 1213
300	Uvda 96/III	4250	50	2920	2700	n/a	-3084	-2619	99.7	EB II	Avner et al. 1994, Avner and Carmi 2001: 1212
	'Uvda 96/III	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I-II	Avner et al. 1994, Avner and Carmi 2001: 1212
301	Wadi Batra	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Epstein 1985a
302	Wadi Bureighit	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
303	Wadi Qasab	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
	Wadi Qasab	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
304	Water Tower Site	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Epstein 1998
305	Wawiyat enclosure	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II	Greenberg 2002
306	Yesud Hama'ala	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB I	Greenberg 2002
307	Yotvata 6	3980	60	2580	2350	n/a	-2864	-2205	99.7	EB III-IV	Avner et al. 1994, Avner and Carmi 2001: 1215
	Yotvata 6	3770	50	2290	2060	n/a	-2465	-1977	99.7	EB IV	Avner et al. 1994, Avner and Carmi 2001: 1215
308	Yotvata Hill	5468	55	4360	4240	n/a	-4464	-4052	99.7	Chalcolithic	Segal and Carmi 1996, Avner and Carmi 2001: 1215
	Yotvata Hill	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Segal and Carmi 1996, Avner and Carmi 2001: 1215

	Yotvata Hill	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III-IV	Avner et al. 1994, Avner and Carmi 2001: 1215
	Yotvata Hill	4650	70	3520	3360	n/a	- 3648	- 3092	99.7	Late Chalco-EB I	Segal and Carmi 1996, Avner and Carmi 2001: 1215
309	Ze'elim	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
310	Ze'elim III	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
311	Zeizun	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Braemer 1984
	Zeizun	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB II-III	pers comm. Braemer 2010
	Zeizun	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EB III	pers comm. Braemer 2010
312	Unknown 1 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
313	Unknown 2 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
314	Unknown 3 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
315	Unknown 4 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
316	Unknown 5 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
317	Unknown 6 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
318	Unknown 7 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
319	Unknown 8 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
320	Unknown 9 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
321	Unknown 10 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
322	Unknown 11 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
323	Unknown 12 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992

324	Unknown 13 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
325	Unknown 14 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
326	Unknown 15 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
327	Unknown 16 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
328	Unknown 17 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
329	Unknown 18 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
330	Unknown 19 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
331	Unknown 20 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
332	Unknown 21 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
333	Unknown 22 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
334	Unknown 23 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
335	Unknown 24 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
336	Unknown 25 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
337	Unknown 26 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
338	Unknown 27 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
339	Unknown 28 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
340	Unknown 29 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
341	Unknown 30 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
342	Unknown 31 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
343	Unknown 32 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992

344	Unknown 33 (Vintisky 1992)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Vinitzky 1992
345	Be'er Hayil	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	EBA	Haiman 1996
347	Beer Lea	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
348	Atar Azazma	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
349	Unknown 1 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
350	Unknown 2 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
351	Unknown 3 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
352	Unknown 4 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
353	Unknown 5 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
354	Unknown 6 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
355	Unknown 7 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
356	Unknown 8 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
357	Unknown 9 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
358	Unknown 10 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
359	Unknown 11 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
360	Unknown 12 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
361	Unknown 13 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
362	Unknown 14 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
363	Tel Jemma	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
364	Unknown 15 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987

365	Unknown 16 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
366	Unknown 17 (Levy and Alon 1987)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Levy and Alon 1987
367	Nahal Seker Temp Sites (1)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Gilead and Goren 1986
368	Nahal Seker Temp Sites (2)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Gilead and Goren 1986
369	Nahal Seker Temp Sites (3)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Gilead and Goren 1986
370	Nahal Seker Temp Sites (4)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Gilead and Goren 1986
371	Nahal Seker Temp Sites (5)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Gilead and Goren 1986
372	Nahal Seker Temp Sites (6)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Gilead and Goren 1986
373	Nahal Seker Temp Sites (7)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chalcolithic	Gilead and Goren 1986

APPENDIX 8.5: SUMMARY OF DISCUSSIONS FROM CHAPTER 8

		Chalcolithic	EB I	EB II	EB III	EB IV	EBA
Settlement Patterns	Hauran	Settlement focused around the main river valleys and wadi systems. Fairly localised patterns of clustered settlements	Expansion and increase in settlement from the proceeding Chalcolithic period. Settlements appear in areas away from the main river valley systems.	General continuity in settlement location from the proceeding EB I period. Decline in settlement numbers in the northern Hauran is also suggested	Expansion and increase in settlement. Settlement along the main river valleys appears to continue, but there is further expansion into eastern areas and regions further from the main river valleys.	Decline in settlement and occupation within the region during this period.	Expansion and intensification of settlement is visible across the region. The density of remains appears to increase.
	Jaulan	Settlement focused to the east of Lake Kinneret, with dispersed clusters of settlements being found at distances of around 2-4km from one another	Unknown				Two contrasting patterns are visible; the first would suggest a nomadization of population with a major decrease in settlement, whilst the second suggests continuity and expansion into new regions during this phase.
	Negev	Settlements/activity found clustered in distinct regions along main river valleys, such as the 'Uvda Valley (Southern Negev) and 'Beersheva Valley (Northern Negev). Very little settlement can be seen in the central/Negev Highlands region.	Two hypotheses based on current evidence. The first suggest a major decline in settlement from the proceeding Chalcolithic, whilst the second suggests a general continuity in settlement, with occupation in the central/Negev Highlands region also now being apparent.	Two hypotheses exist. The first suggests a phase of major expansion and sedentarization during this period, on the basis the emergence of Tell Arad. The second hypothesis suggests general continuity (perhaps with a slight increase in settlement numbers) from the proceeding period	Two hypotheses exist. The first characterises this phase as one of decline and nomadization, associated with the collapse of Tell Arad. The second emphasises settlement continuity and expansion, with diversification of settlement forms and expansion into new areas possibly beginning during this period.	Two hypotheses exist. The first suggests this period is characterised by demographic recovery, with sedentarization of groups, following the decline of settlement during the proceeding period. The second again emphasises continuity and expansion and suggests that many of the settlements/activity locales identified are temporary habitations.	Expansion and intensification of activity in areas away from the main river valleys. A more diverse range of occupation/activity locales also become apparent, with activity within the central and southern Negev becoming highly visible during this period.

Architectural Forms	**Hauran**	Broadroom' buildings; chain dwellings and Jellyfish constructions	Pillar houses; 'Broadroom buildings' and chain dwellings; Hypostle halls			Clustered irregular enclosures and structures; 'Broadroom buildings' and chain dwellings	
	Jaulan	Broadroom' buildings	Unknown. Possible some evidence for enclosure structures. Also appearance of 'hilltop' enclosures	Unknown. Possible some evidence for enclosure structures. Also appearance of 'hilltop' enclosures	Unknown. Possible some evidence for enclosure structures. Also appearance of 'hilltop' enclosures	Unknown. Possible some evidence for enclosure structures	Unknown. Possible some evidence for enclosure structures
	Negev	Several different forms of architecture are seen across the region: 'Broadroom' and subterranean dwellings (Northern Negev); 'Pen and Room' structures (Southern Negev)	Unknown				Pen and Room' structures (Southern Negev, Central/Negev Highlands); Rectilinear 'Broadroom' buildings (Northern Negev); Composite dwellings [Pens, courtyards, enclosures and cairns (Southern Negev and Central/Negev Highlands)]
Burial Forms	**Hauran**	Dolmen and Cairns	Unknown				Dolmens and Cairns
	Jaulan	Unknown					Dolmens and Cairns
	Negev	Cairns, Massebot and tumuli	Unknown				Cairns and Massebot

Pottery	**Hauran**	Very little evidence. The predominant form appears to be simple holemouths	Simple globular holemouth forms. Assemblages largely dominated by cooking and storage vessels. Some evidence for decoration on holemouths. From EB I-II contexts, evidence of carinated platters	Platters, bowls and vessels for consumption. Holemouths seen throughout this phase, predominance varies across different sites. Some evidence for specialised use of fabrics in association with function of vessels during this phase. Evidence for surface treatment of vessels e.g. burnishing	Predominance of cooking and storage vessels at Umbashi. Decorated 'grain de ble' holemouth forms. Towards end of period, emergence of MBA type cooking jars. Also Hama goblets and 'northern' forms start appearing in contexts during this period.	
	Jaulan	Storage pithoi (predominant), V-shaped bowls, fenestrated foot vessels, jugs and juglets, spouted kraters. Specific decoration (impressed) of utilitarian vessels. Very few holemouths. Lug and ledge handles.	Unknown		Globular cooking vessels, carinated bowls, spouted teapots, storage jar with folded ledge handles and pedastalled vessels (lamps and chalices). Many of these forms also show analogies to MBA material.	Holemouths and Juglets i.e. Rasm Harbush??
	Negev	Holemouths, Churns, V-shaped bowls, cornets, Tubular goblets. Pie crust/rope and painted decoration (not seen on holemouths). Lug and knob handles.	Unknown			Bowls, Holemouth jars (ovoid and globular), lamps, kraters, v-shaped bowls. Rope decoration
Lithics/Stone and Metal Artefacts	**Hauran**	Tabular Scrapers and Canannean Blades. No basalt vessels		Hammerstone (maceheads)'	Unknown	
	Jaulan	Sickle blades, perforated flakes, discoids, fan scrapers, lentoid fan scrapers. Ad hoc tools include scrapers, borers etc. Basalt 'pillar figurines', bowls and stone vessels	Unknown		Some evidence from dolmens for tanged arrowheads, socketed spearheads, metal blades and scarabs-suggesting a MBA, rather than EB IV date.	
	Negev	Transverse arrowheads, Tabular scrapers, Flake tools, blades and bladelets (possibly latter being produced at specific workshops); Basalt bowls and maceheads. Metal maceheads and sceptres found at Northern Negev sites	Unknown			Canannean Blades, Tabular scrapers, flake tools, blades and bladelets; Basalt bowls

Subsistence	**Hauran**	Hunting and animal herding, possibly some Agro-pastoralism	Unknown			Agro-pastoralism
	Jaulan	Agro-pastoralism. Olive oil production and wool production (spindle whorls) suggested in particular.	Unknown			Animal herding, Agro-pastoralism. Very little data
	Negev	Specialised hunting and animal herding; some agro-pastoralism in the Northern Negev	Specialised animal herding; some agro-pastoralism in the Northern Negev	Specialised animal herding; Agro-pastoralism	Specialised animal herding; Agro-pastoralism; Metal exploitation and production	