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Durham University

# Settlement Patterns, Development and Cultural Change in Northern Oman Peninsula:

## A multi-tiered approach to the analysis of long-term settlement trends

Volume 1 of 2: Text

NASSER SAID ALI AL-JAHWARI

A thesis submitted to Durham University for the degree of DOCTOR OF PHILOSOPHY

Department of Archaeology
Durham University
April 2008

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1 2 JUN 2008

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# ABSTRAT

## Nasser Said Ali AlJahwari

## Settlement Patterns, Development and Cultural Change in the Northern Oman Peninsula: a multi-tiered approach to the analysis of long-term settlement trends

The aim of this thesis is to examine, quantify and re-think the settlement history of the northern Oman Peninsula from the Hafit period (late 4th/early 3rd millennium BC) to recent times. Many surveys have been carried out in the region, but few of them have attempted to provide quantified data on settlement. Their results are good in mapping settlements and providing descriptive information, and when these results are combined, it is possible to obtain a rough and sketchy picture of longer-term regional trends in the growth and decline of settlement intensity but they do not provide a reliable enough dataset to allow quantification.

The thesis attempts to achieve its aims by taking a multi-tiered approach to survey and settlement analysis. At the broadest level it examines sites known from the published literature from the whole of the northern peninsula and uses this information in both a quantitative and qualitative way to look at broad regional and sub-regional trends. At the next level it takes a 'local' perspective, looking in more detail at the published results of field surveys carried out within a defined area of study to give insights into the nature of the data and the local pattern of development. At the next level it uses the extensive fieldwork carried out by the present researcher in a single wadi - the Wadi Andam - to produce quantified evidence on settlements, tombs and other archaeological finds at a macro level using a methodology that was specifically designed for this task and this region. At the lowest level it examines the organisation and layout of some individual sites to give insights into the social structure of the societies that inhabited this area.

The conclusion attempts to bring together the large amount of data accumulated from the different 'levels' of survey and to write them into a coherent narrative outlining the development of settlement over the *longue durée* in the northern Oman Peninsula.

## DECLARATION

The data presented in this thesis is entirely the work of the stated author. It has not previously submitted for a degree or diploma in any university. All contributions made by other researchers have been appropriately referenced.

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# CHAPTER ONE:

# INTRODUCTION

# CHAPTER ONE: INTRODUCTION

This chapter outlines the research aims and questions as well as the nature and importance of the selected study area (Wadi Andam) and the reasons behind choosing it. It will also highlight the current state of research in Oman and the problem of quantifying settlement in Arabia. Research limitations and problems as well as the thesis structure will also be presented in this chapter.

## 1.1- RESEARCH AIMS AND PROBLEMS:

### 1.1.1- INVESTIGATING SETTLEMENT PATTERNS AND LONG-TERM TRENDS:

The ultimate aim of this research is to attempt to examine the settlement history of the Oman Peninsula[1] (Map 1) from prehistoric to recent times. This covers, in particular, the northern part of the peninsula, as the southern part[2] has a very different settlement history (cf. Costa & Kite 1984; Zarins 1994, 2001; Cleuziou & Tosi 1999). The research is intended to demonstrate and examine continuity and discontinuity in settlement patterns, and to examine the landscape of ancient agricultural settlements from the watersheds in the north to the flat gravel interfluves zones in the south (Map 2).

This bold aim will be achieved, partly, through archaeological field survey and particularly by examining the small 'wadi villages' that are scattered along the wadi banks in areas that have available agricultural land and some access to water. Many archaeologists refer to these wadi villages as 'oases'. However, the term 'oasis' is not used here as it normally refers to a fertile area or spot in the middle of a desert that includes water resource and trees, mainly date palms[3]. In fact, the wadi villages in the Wadi Andam Survey study area, as is the case with other wadis, are settlements that are predominantly concentrated along and near wadi banks, foothills and on some gravel terraces adjacent to each other or separated by just few a hundred meters. A key point that

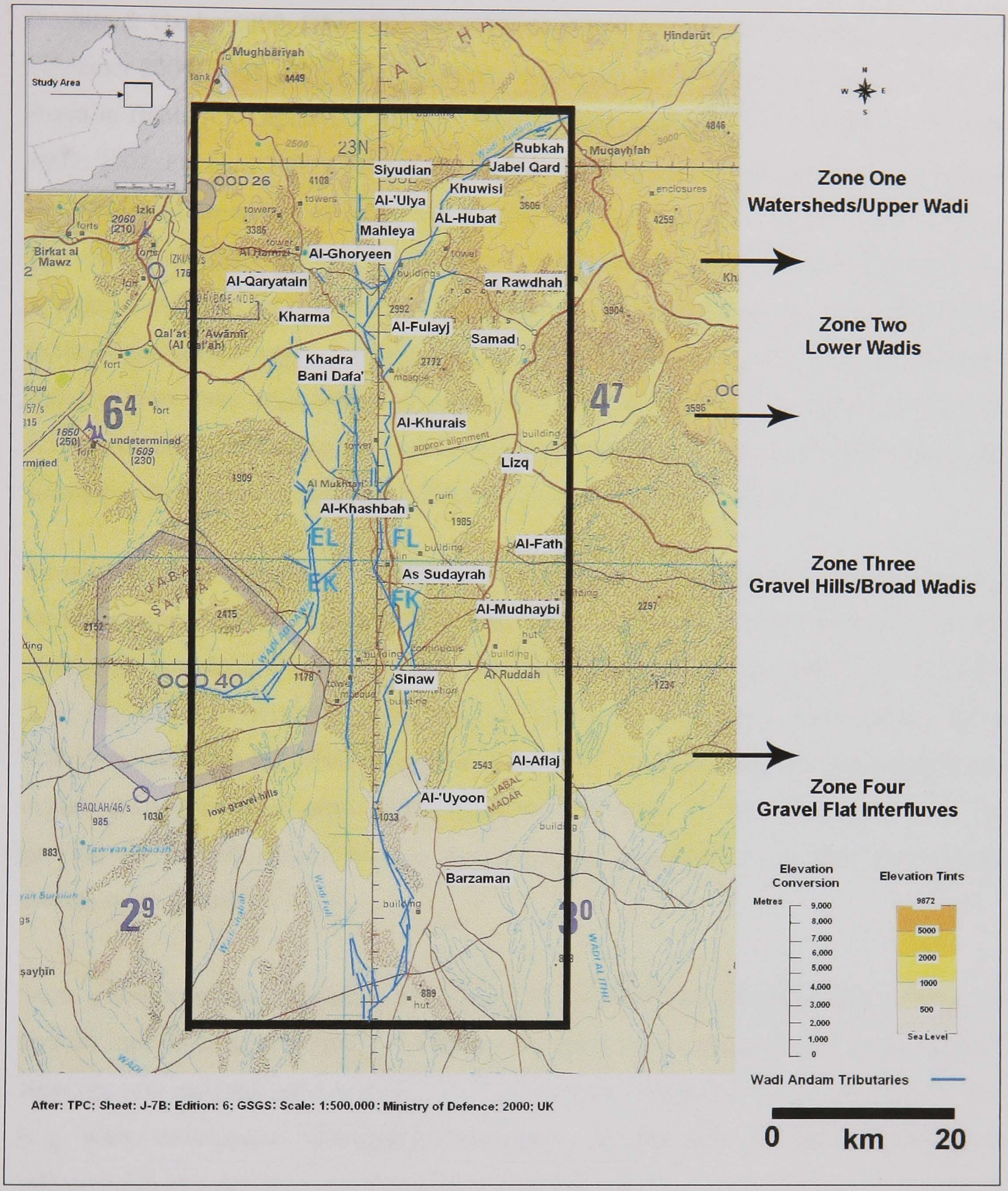
---

[1] The Oman Peninsula currently includes the Sultanate of Oman and the United Arab Emirates (UAE)
[2] The southern part here means the Dhofar region.
[3] The majority of dictionaries (e.g. *The Concise Oxford Dictionary of Archaeology*), refer to the term 'oasis' as a localized fertile area within a desert (Darvill 2002: 293).

underlies the approach taken here is that topography has been a major factor in defining and constraining the location and distribution of these villages. This means that the settlement pattern in the Wadi Andam Survey area is tightly constrained and therefore presents a particular set of problems and opportunities to archaeological field survey (see 1.1.2.1 below). The wadi villages have clearly played a significant role since they were founded. They appear to be primarily agricultural and they constitute one of the lowest levels in the local settlement hierarchy at all times. As such they contain important clues to the economic, social and political development of the region.

**Map 1 Location of the Oman Peninsula in the Arabian Peninsula**

**(after: Ministry of Water Resources 1995: Fig.1, p: 1)**




After: TPC: Sheet: J-7B: Edition: 6: GSGS: Scale: 1:500.000 : Ministry of Defence: 2000: UK

**Map 2 The study area**

To the best knowledge of the present researcher, no concerted attempt has been made to study and survey the smaller wadi villages such as these, as most surveys have concentrated on larger ones (see Chapter Five). These include, for example, the work of the Omani-German project in the western Hajar from Wadi Bani 'Awf through Balad Seet and al-Hamra, Izki, Manah, Bahla and Nizwa, Ibra and the coastal site of Tiwi (cf.

Ibrahim & Gaube 2000; Häser 2000 & 2003; Nagieb et al. 2004; Schreiber & Häser 2004; Schreiber 2004, 2005, 2007a-b). They also include the wadi villages of Firq in Nizwa and Bisya in Bahla (cf. Orchard & Stanger 1994 & 1999; Orchard 1995; Orchard & Orchard 1997, 2002; Orchard 2000). This neglect is potentially serious as the smaller wadi villages may represent an aspect of settlement history that is not reflected in the larger villages. The current research has therefore decided to pay particular attention to this aspect of the settlement record. This is in order to investigate whether or not they have a similar history to the larger wadi villages, and to answer questions related to changes through time in the way that they have been settled. It is hoped that an understanding of these changes will help us to grasp settlement movements and developments over time and show how people adapted to their environment and to the expansion or decline in settlement.

Continuity or discontinuity of occupation in a specific locality can be understood through various types of archaeological survey. This can show whether or not there was a period of expansion or decline within a specific settlement, and in which period(s) this happened. This can assist in postulating the reasons behind a settlement's development. When numerous examples are studied together changes in settlement density, development and organisation over large areas and long periods of time can be elucidated which can provide crucial and unique insights into economic, demographic, political and cultural change more generally.

Such changes might ultimately be related to environmental factors (e.g. changes in climate, rainfall), the availability of natural resources (e.g. water, fertile lands, strategic location, raw material [metal, stone]) or to economic, religious, political or social factors (e.g. wars, colonization, population movements, disease, etc). All of these may have influenced man's decision in settling or moving from one locality to another over time. Of these, water resources play an important role in settlement shifts as water is a key factor in the location of settlement in this predominantly arid region.

## 1.1.2- THE PROBLEM OF QUANTIFYING SETTLEMENT IN ARABIA:

Most surveys in Europe and the Mediterranean as well as other parts of the Near East apply systematic methodologies of fieldwalking and surface-survey sampling techniques. One of the prime objectives of an archaeological field survey is to quantify settlement in a way that allows inter-period and inter-regional comparisons to be made. To this end systematic methodologies of sampling, fieldwalking and of defining and counting sites have been developed (see discussions in Bintliff & Sbonias 1999; Francovich, Patterson & Barker 2000; Wilkinson TJ 2003). Such methodologies have led to a much clearer understanding of settlement history in many parts of the world including the Near East. For example, the seminal work of Adams in Mesopotamia (1965; 1981) has identified periods of settlement growth, decline and intensification over long periods of time, adding enormously to our understanding of the history of settlement in that region (Figure 1).

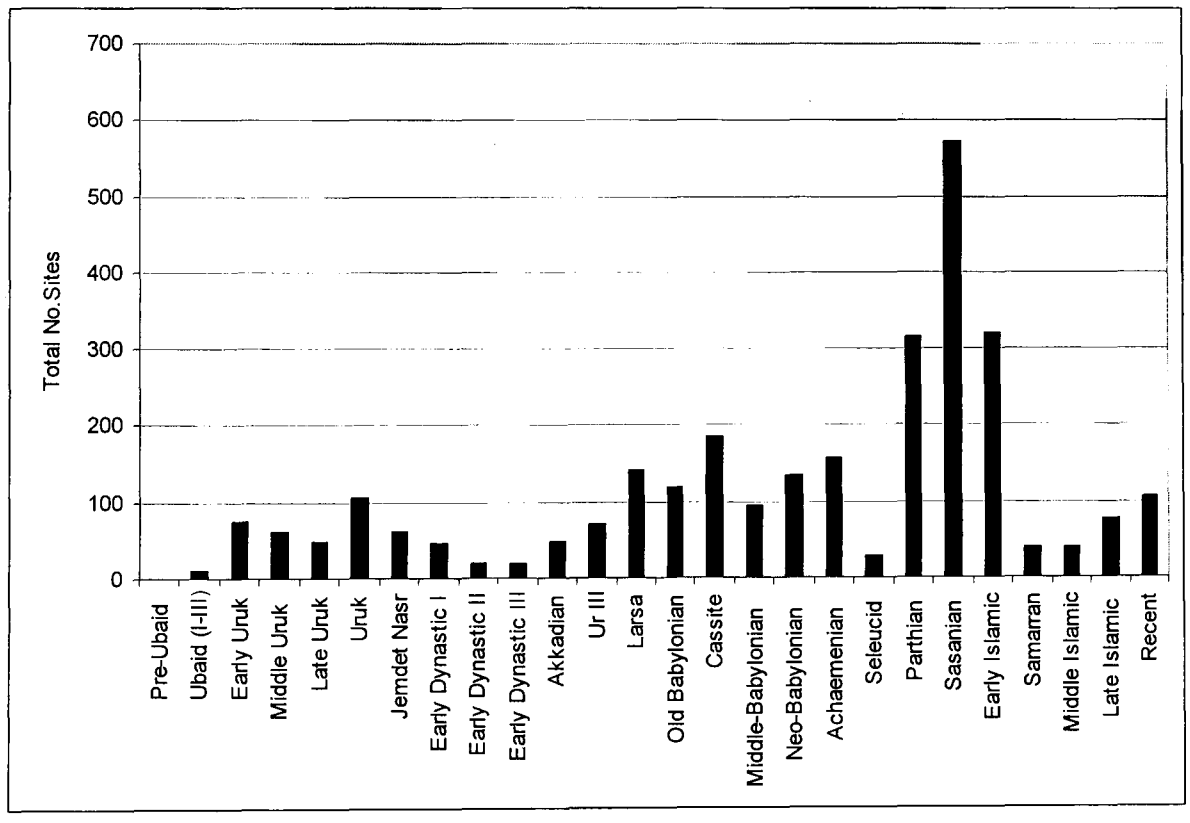



**Figure 1 Total number of recorded sites by period from Adams 1981.**

Most of these methods depend on two things. Firstly, a systematic, probabilistic approach that allows the collection of statistically valid data and secondly, the ability of the archaeologist to define and to count 'sites'- that is to say discreet and definable areas of archaeological scatter with a discreet and definable period of occupation. This concept of a 'site' was developed in the relatively flat, ploughed fields of Northern Europe. the

Mediterranean and Mesopotamia where it is easily applicable for the most part. However, the concept is not universally applicable due to differences in the nature of ancient occupation, differences in surface geography and differences in agricultural techniques, all of which may have affected the preservation and recovery of archaeological deposits in a variety of ways.

### 1.1.2.1- PECULIARITIES OF THE ARABIAN ENVIRONMENT:

It is difficult to apply these fieldwalking techniques in the cultivated areas of the Arabian Gulf, particularly in the wadi and mountain environment of the Oman Peninsula (Kennet 2002: 154). This is because the landscape is very different. Unlike those regions where archaeological sites can easily be identified on the surface of a flat landscape and where people have the choice to move over time from one location to another, the arid landscape of the Oman Peninsula presents very few locations suitable for settlement. It is largely characterised by high, rugged mountain and rocky hills, with very steep slopes and little or no soil cover (Plates 240-243). These are intersected by wadis which are narrow and steep in their upper reaches and broader in their lower reaches where they are associated with flat, arid interfluves that have only limited soil cover. Very little of this environment is suitable for agricultural settlement, being either too steep, too narrow, lacking in soil cover or lacking in water (Satchell 1978: 201-209). There are only a few places in the landscape that are suitable for agricultural settlement and these are generally on the banks of the larger wadis in the parts where sufficient space is present between the wadi channel and the hill slopes (Plates 244-246). Such places tend to have been occupied over and over again, obscuring earlier settlement and making impossible the definition of individual sites with a limited chronological span. Therefore, single or short-period occupation sites cannot be identified as people are constrained by the nature of geography or landscape so they do not have the range of choice in locating settlements. Good locations, therefore, tend to have been occupied over and over again throughout history; later occupation and agricultural activity disturbing and obscuring the remains of earlier settlements and, for the most part, rendering impossible the definition of sites with a limited chronological or spatial extent. Instead of the landscape presenting a broad canvas onto which a settlement pattern can be drawn, it presents a very limited number of potential locations that have

generally been occupied throughout history (see Chapter Four, Section One 4.1.2.1.5.1 & Figure 7).

This situation is replicated in many other parts of Arabia where a similar geography prevails. This makes the Arabian environment distinctive which means that site counting, as used, for example, in Europe and the Mediterranean is not possible. This problem has already been noted and discussed by various field workers in the region but has never been completely resolved (e.g. Wilkinson TJ 1974: 123-132; Costa & Wilkinson TJ 1987: 79-88; Kennet 2002: 154).

### 1.1.2.2- TRADITIONAL SURVEY METHODS:

Besides the problem related to the nature of geography, it is important to highlight the fact that numerous surveys have been carried out in Eastern Arabia (e.g. Humphries 1974; Hastings, Humphries & Meadow 1975; de Cardi 1977; de Cardi, Collier & Doe 1976; de Cardi, Doe & Roskams 1977; Doe 1977; Weisgerber 1980, 1981; Yule & Weisgerber 1988; Orchard & Stanger 1994, 1999; Ibrahim & Gaube 2000; Häser 2000, 2003; Schreiber 2004, 2005, 2007a-b) but few of them have been concerned with collecting quantified data on settlement. They have instead, for the most part, set out to locate, explore and describe areas or settlements or to answer specific research questions[4]. They often provide excellent descriptive data on settlement and, when their results are viewed together, it is possible to gain an anecdotal picture of longer-term regional trends in the growth and decline of settlement intensity. Unfortunately, however, the lack of systematic, probabilistic methodologies means that such trends are unverifiable and potentially biased and misleading. Some surveys have attempted to use methodologies that give data that is more reliable statistically, but they are in the minority (e.g. Costa & Wilkinson TJ 1987; de Cardi, Kennet & Stocks 1994; Kennet 2002). They were set out to serve different aims and to cover only a small arbitrary area, while the Wadi Andam Survey technique covers a large area of different geographical zones and concentrating on wadi villages and their surrounding areas as well as other areas along wadi systems. No tried and tested methodology of quantifiable field survey has yet been established for the region, which

[4] For full details of the current state of survey in the region and methods, see Chapter Five 5.5.1

the current researcher is trying to rectify in this thesis where quantification is the key issue of discussion (see Chapter Four, Section One).

## 1.2- THE NEED FOR A SOLUTION:

### 1.2.1- A DEVELOPED METHODOLOGY:

Bearing in mind the above mentioned problems, there appears to be a need for a developed quantified methodology that is capable of taking into consideration the nature and peculiarities of the Arabian landscape. Accordingly, a sample area of Wadi Andam was selected (for reasons of selection see 1.4.3 below) to apply this methodology. The aim of carrying out the Wadi Andam Survey was to employ a rigorous, probabilistic sampling technique in order to collect data that is free from period bias, testable and suitable for quantified analysis in order to allow analysis of activity and settlement intensity over time. In this respect, a method of large-scale surface pottery collection was developed and tested by surveying six selected wadi village locations and their surroundings along the banks of the wadi and its tributaries (for full details of the methodology see Chapter Four, Section One, Levels 4–6). The results of this methodology will be presented and discussed in Sections Two and Three of Chapter Four.

### 1.2.2- BROADER LEVEL OF ANALYSIS:

This researcher's own material analysis is based on a localised area of the Wadi Andam, and it is important for such an analysis to be extended and discussed in a much boarder academic context. In other words, it is important to compare the results of the Wadi Andam Survey with those of other surveys carried out within the northern Oman Peninsula. Therefore, a review of some of the previous surveys and a quantification of their results will be made based on two levels: a local level (see Level 3 in Chapter Four, Section One and Chapter Five) and regional and sub-regional level (see Levels 1–2 in Chapter Four, Section One and Chapter Six). The first will concentrate on those surveys carried out in areas within and surrounding the Wadi Andam. The second includes all the surveys carried out in the northern Oman Peninsula. This analysis will be done in order to provide a wider framework for the Wadi Andam Survey and to offer comparative material

to the material collected during this survey. This will allow a proper understanding of the different levels of activity on a much broader level. In other words, it is intended as a comparison of trends in the wider area, with those documented in the Wadi Andam, but taking into account differences in survey methodologies and project objectives. It will initially deal with the evidence from other surveys and then undertake a period by period comparison between this data and that from the Wadi Andam. To achieve this, a sites' database was created from the literature. It will be analyzed and its trends discussed and interpreted in Chapters Five and Six.

### 1.2.3- HAFIT CAIRNS AND BEEHIVES:

Another study feature of the wadis' landscape is cairns. These cairns represent another aspect to the occupation of the area. They do not appear to be associated with settlements and are widely spread across the area. To the best of the current researcher's knowledge, no systematic survey has so far been carried out in the Oman Peninsula to examine and attempt to understand their distribution over a large area. Only a few examples have been excavated in sporadic areas (see below). No single study has attempted to do excavations of examples from different areas in order to examine regional differences and similarities. Moreover, dating these cairns is one of the big problems of Omani Archaeology (see Chapter Three 3.2). Thus, one of this research's aims is making a rough distribution of Hafit and Beehive tombs from the northern watershed to the southern gravel flat interfluves along the Wadi Andam (Map 2). This is in order to locate them and understand their distribution and density. As will be seen later in Chapter Four (Section Three 4.3.2). apart from some piled stones of possible platforms, no associated settlements with and around these cairns were found during this survey (the 'Wadi Andam Survey' hereafter). Therefore, another research aim is to attempt to understand the occupation of the builders of these cairns. This will be based on the Wadi Andam Survey results (Chapter Four, Section Three 4.3.2) and the previously recovered archaeological evidence (see Chapters Six and Seven 7.1.2) such as the few excavated Hafit cairns in northern Oman at, for instance, Jebel Hafit and the Buraimi Oasis (Frifelt 1975a; Cleuziou 1976/7); Ibri (Frifelt 1975a & 1975b); and Tawi Silaim (de Cardi, Doe & Roskams 1977; de Cardi, Bell & Starling 1979). This will enable understanding of the differences between, for example,

Hafit and Beehive tombs, and their development together with the subsequent Umm an-Nar tombs.

## 1.3- WHY SURVEY NOT EXCAVATION:

It is important to highlight the idea behind carrying out a survey instead of an excavation. In fact, excavating one or two sites does not give a comprehensive overview of the settlement history of the area under study. By contrast, a survey gives the opportunity to examine long-term settlement history and patterns, land-use, human activities and settlement remains. This can be done in less time and at lower cost than would be possible for an excavation. However, surveys sometimes can include small-scale excavations or soundings of some features or sites. In many cases, excavations of sites are the result of areas being surveyed, unless they came to light by coincidence due, for example, to construction works. Surveys can also help in:

- Finding sites of different periods and types in a large area, which cannot be done by excavation;
- Making a typology of different features or functions ranging from architectural remains to surface collections;
- Defining sites for detailed survey or excavation, in particular those in danger and in need of an urgent salvage excavation;
- Plotting and mapping recorded sites, using different techniques such as GPS, GIS and Arch-view;
- Quantifying and identifying settlements and their changes as well as levels of activity over time using proper sampling techniques; and
- Documenting resources.

## 1.4- SCOPE AND RESEARCH HISTORY OF THE STUDY AREA:

### 1.4.1- THE STUDY AREA (Map 2):

During two seasons of fieldwork lasting for almost 23 weeks (around six months), the researcher carried out a survey in the Wadi Andam in al-Sharqyiah Region in the Sultanate of Oman[5]. Wadi Andam is one of the larger wadis that cross the ophiolite complex of the Eastern Hajar Mountains (*Jebel al-Hajar al-Gharbi*) (see Chapter Two 2.2.1 & 2.9.3). This wadi lies approximately between 22° 45' N and 57° 98' E, and it is one of the major wadis that cross the Wilayat al-Mudhaybi and Sinaw for hundreds of kilometres in the Sharqyiah region (ElMahi & AlJahwari 2005: 57) (Map 2). It passes most of the villages in al-Mudhaybi and runs into the Wadi Halfayn basin, reaching the Arabian Sea close to the Hijj area in Wilayat Mahout in the south. It includes a large mountainous area crossed by several wadi tributaries and gravel plains that have formed the base for human settlements. All of these tributaries are dry for most of the year but, along with the Wadi Andam, are the only locations in the area with surface and subsurface water.

### 1.4.2- RESEARCH HISTORY:

The first archaeological investigations in the Wadi Andam occurred during the early 1970s when the Harvard Archaeological Expedition (see Chapter Five 5.4.1) carried out a rough survey using a traditional methodology with the aim of locating settlement sites, particularly those dated to the 3rd millennium BC (e.g. Pullar 1974; Humphries 1974; Hastings, Humphries & Meadow 1975; Meadow, Humphries & Hastings 1976). Other investigations were carried out in this wadi at this time by the British Archaeological Mission (see Chapter Five 5.4.2 and de Cardi, Collier & Doe 1976; de Cardi 1977; de Cardi, Doe & Roskams 1977; Doe 1977) as well as the work carried out by the German Archaeological Mission in the al-Sharqyiah region, mainly the Samad-Maysar area, some years later (see Chapter Five 5.4.3 and Weisgerber 1980, 1981; Yule & Weisgerber 1988; Yule & Kazenwadel 1993; Yule 1993, 2001a). The latter project focussed on recording

[5] For a fuller outline of the survey and its methodology, see Chapter Four, Section One

specific types of site, namely Late Iron Age/Samad tombs in order to understand the distribution and chronology of activity of this period in the Sharqiyah and al-Dakhliyah (Central Oman). It is important to indicate here that at least two of these surveys focussed principally on recording sites only of specific periods and it seems likely that this has led to a biased picture of the settlement history of the area (see Chapter Five 5.5.1).

Wadi Andam was described by Lorimer early in the 20th century. He gave details about the wadi and some of the villages located along its banks by stating that it is "a valley of considerable importance in the Sultanate of 'Omān: it begins in the Eastern Hajar, in a part of the hills called Jebel 'Ulya عليا, and runs southwards across the western end of the Sharqīyah district to Wādi Halfain" (Lorimer 1908: 77). He also states that "Wādi 'Andam issues from the hills about midway between 'Ulya and Washāl, and its junction with Wādi Halfain is said to take place 2 miles below Mutaili'. The Bani Ruwāhah of this valley belong to the Aulād 'Aqīd, 'Awāmir, Wilād Harmal, Wilād Hasan, Wilād Husain, Bani Na'amān and Wilād Sulimān-bin-'Umar sections of the tribe. The total number of inhabitants is about 6,000 souls. Among them are some of the Hādiyīn tribe. Livestock are estimated in all at about 200 camels, 350 donkeys, 350 cattle and 2,500 sheep and goats: these are divided proximally in proportion to the size of the villages. Wādi 'Andām forms, from Khadra Bin-Daffā downwards, the boundary between the districts of 'Omān Proper on the west and Sharqīyah on the east. The affluent called Wādi Qant, which comes in at Majāzah, has its head at Saddi in 'Omān Proper and forms the boundary, from that place to Khadhra Bin-Daffā', between 'Omān Proper and Sharqīyah" (*ibid*: 78-79). He also provides a detailed description of each village and its position as well as the total number of its houses, inhabitants and their livestock (see Appendix D, Table D.1).

### 1.4.3- WHY WADI ANDAM?

There are different reasons behind choosing Wadi Andam to be the study area for this thesis. Before deciding the area to be investigated, and at the beginning of the project, a few days' general reconnaissance was made during which different areas within the northern Oman Peninsula were investigated, such as the Batinah, al-Hajar Mountains and the gravel fans. This was done in order to understand the topography and landscape of each area, and to choose the most appropriate area for the aims set out for this project. The

Batinah was excluded on account of the problem of high alluviation which would mean that sites would be difficult to detect. Different criteria lie behind the selection of the Wadi Andam:

1- It is a very typical region of Oman with a cross-section of the terrain from the desert in the south to the mountains. It includes four different geographical zones (Map 2):

a- Watersheds and upper wadis in the far north.

b- The lower wadis.

c- Gravel hills and broad wadis.

d- The gravel flat interfluves zone in the south.

2- Wadi Andam provides a wide area that has not been previously explored intensively. As has been indicated above, few traditional surveys have been carried out in this area since the early 1970s almost all of which have problems in their results and none of which provides a reliable, quantified analysis of the settlement history.

3- A lot of work has been done in the northern part of the Oman Peninsula, namely in the northern Emirates, and not that much in the southern part of northern Oman where the Wadi Andam is located.

4- The general reconnaissance carried out by the current researcher at the beginning of the project showed that this wadi has lot of potential for archaeological research.

## 1.5- RESEARCH LIMITATIONS:

There are some difficulties that were encountered while carrying out this research, both in the field and in analysing the data. One of the main research difficulties was the large area to be surveyed which, as indicated earlier, covers around 400 $km^2$ and the time limitation. To tackle this problem, the whole area of study was investigated at a general level (Level 4: see Chapter Four, Section One 4.1.2.1.4) in order to understand its landscape, and then select the areas to be studied in detail. Therefore, as indicated earlier, the study area was defined into four geographical zones, and a systematic survey was carried out in some selective 'wadi villages' and surrounding areas, which could represent all the geographical zones (see Chapter Four, Section One 4.1.2.1.5).

Getting access to adequate maps and aerial photographs was another difficulty during the survey. Only 1:100,000 topographical maps were available from the Department of Geology in the College of Science at Sultan Qaboos University. These were photocopied both in colour as well as black and white. Geological maps for the study area with the same scale of 1:100,000 were borrowed from the Directorate of Minerals at the Ministry of Commerce and Industry[6].

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04

per chronology for the evidence from the Wadi
is disagreement among scholars working on the
garding the chronology of some periods where
e presented. Although there does seem to be a
these periods, it is not possible to construct one
distinction is rarely made. Therefore, an attempt
y of the Oman Peninsula and the periodization
Chapter Three). It will review the evidence that forms
sentation of the chronology and terminology adopted
at the end of the discussion of each period, indicating
chosen.

ers which **CHAPTER ONE** is an introduction to the
questions as well as the nature and importance of
and the reasons behind choosing it. It will also
Oman and the problem of quantifying settlement
limitations as well as the thesis outline structure
will also be presented in this chapter.

**CHAPTER TWO** provides a geographical and environmental background of the northern Oman Peninsula. It shows the geography, topography and geology of the peninsula as well

[6] I am indebted to Mr. Salah Al-Masrori, the office director of the Undersecretary for Administrative and Financial Affairs in the Ministry of Commerce and Industry for his great help in obtaining these maps.

as the question of settled and nomadic ways of life, the extent to which it is possible to identify their remains and, finally it will provide a description of the characteristics of the defined sub-regions for the purpose of this thesis.

**CHAPTER THREE** offers a period by period discussion of the chronology set out by different scholars for the peninsula. It presents the different periodizations and terminologies set out for sequences of different sites based on their stratigraphy and related finds as well as the available different types of evidence for such chronology. Then it states the adopted chronology within this thesis and why this specific chronology had been chosen. This chapter serves as a reader guide for the chronology of the Oman Peninsula.

**CHAPTER FOUR** is intended to present the results of the Wadi Andam Survey. It is divided into three sections in which the first will introduce the sample area, its selected units and the reasons for selecting them. It will also present the survey methodology and the different strategies used to define the surveyed areas and record sites as well as the sampling methodology that was particularly developed for the landscape of the northern Oman Peninsula. Section two will offer a quantified analysis based on the pottery collected during the survey. It will outline the questions set out for such analysis and be followed by discussing the results of this analysis, starting with the general evidence from the whole survey. This evidence will then be broken down based on the survey areas. The third section of this chapter gives a description of the recorded evidence from the survey and the main findings and their significance. It will describe each of the main sites and archaeological features from each period followed by a summary discussion of the evidence and what it tells us about activity during that period.

**CHAPTER FIVE** provides an evaluation and review of some of the previous surveys within the Wadi Andam Survey study area and surrounding areas, which will be referred to as the 'Local Area'. This is in order to provide a wider framework for the Wadi Andam Survey material, allowing a proper understanding of the different levels of activity at a broader level. It starts by defining the geographical extent of the 'Local Area' and the reasons behind its selection. It also provides a brief description of the methodology applied in defining the data used for the analysis. This will be followed by reviews of

some of the previous surveys in chronological order, starting from the oldest and ending with the most recent surveys. The review will include a brief description of the nature of the evidence recorded by these surveys, as well as the quantification of sites and problems that are encountered in such quantification. A review of the methodologies and the reliability of the surveys' results will be presented at the end, together with a comparison of the settlement pattern from these surveys and the Wadi Andam Survey.

**CHAPTER SIX** attempts to define the regional and sub-regional levels of activity by chronological period based on the published quantified archaeological evidence in the northern Oman Peninsula using a database of sites created for this analysis. It starts by defining the geographical extent of the area under study and the total area of the sub-regions that were used. It also outlines the methodology used in populating the database and its structure, followed by a presentation of the general picture of the evidence at the regional and sub-regional levels. It also looks at the relationship between area and site density, as well as the types of site that were encountered and the relationship between tombs and settlements.

**CHAPTER SEVEN** offers a discussion and interpretation of the most important ideas and conclusions that can be defined from the whole northern Oman Peninsula from three levels of survey and data presented here: the first is based on previously published and known ideas or conclusions (Level 1); the second is based on the Wadi Andam Survey conclusions (Levels 4–6); the third is based on the quantified data from the local area within and around Wadi Andam (Level 3) and the quantified data from the whole northern Oman Peninsula (Levels 1–2). All of these conclusions will briefly be presented and a comparison will be made between them. In turn, some possible interpretations will be offered in an attempt to understand and explain trends that emerged from the evidence. Ultimately, the chapter will end by stating the must important contributions of the thesis and some recommendations for further work.

A list of all the materials used in populating the site database and in presenting the evidence within the chapters will be provided in the bibliography. The thesis is also supplied with a second volume that includes all the appendices and illustrative materials (maps, plates, figures). It has been preferred to use a separate volume for these due to their

large number. Some important illustrations are incorporated within the text. Finally, the inner back cover of the thesis includes a CD of the site database used in the quantified analysis. This database includes a massive amount of data that have been used in the quantified analysis within Chapters Five and Six.

## 1.7- GLOSSARY:

There are some important terms or abbreviations which will be used throughout the thesis chapters. Table (1) presents a glossary of some of these terms. For the full list and a description of all types of sites and features, the reader is advised to turn to Appendix B.

| Term | Description |
|---|---|
| CS | A symbol chosen to refer to the Wadi Andam Survey. It is only used for the purpose of numbering system during the recording of sites. |
| *Falaj* | An artificial channel dug into the ground, or on the surface, and is either open or covered. It is used to gather underground water, spring water or surface water which is carried over long distances naturally through the *falaj* channel by gravity alone. The water carried by the channel is used mainly for land irrigation and domestic purposes. |
| Hafit Survey | Besides the survey within the PCAs, OVAs and UWA, a survey of Hafit and Beehive tombs was carried out over a wide landscape within the study area. This was made in order to establish a rough distribution and density of these tombs (see also Chapter Four, Section Three 4.3.2). |
| Other Structures | The term here used to refer to any other types of structure other than tombs such as settlements, stone structures, villages, towers, artefact scatters, earthworks, agricultural installations, etc (see Appendix B). |
| OVAs | This refers to the 'Other Villages Areas' where a survey was carried out in an area of potential interest around and beyond each wadi village (see Chapter Four, Section One 4.1.2.1.5.3.2.1). Two areas were chosen for investigation within this larger area of interest: 1) a preliminary, surrounding survey was carried out on foot around each wadi village to a distance of between 1 $km^2$ and 2 $km^2$ in order to check for archaeological features and collect pottery that might show the extent of each village. This included checking all agricultural and land-moving activities; and 2) a survey of around 5 $km^2$ was carried out by car and on foot in randomly selected locations away from the wadi villages (ca. 1 km-2 km away from each village) in one direction of the area of potential interest. This survey was carried out in order to check for evidence of other types of occupation and activity unrelated to the wadi villages PCAs (see below and Appendix B) like artefact scatters, fortifications, agricultural installations, workshops, any traces of occupation, etc. |
| PCAs | This refers to the 'Pottery Collection Areas' of the survey carried out at the six selected small wadi villages within the study area where a number of arbitrary areas were selected and divided for large-scale surface pottery collection sampling, each up to about 4 hectares in size and each of which was numbered (see also Chapter Four, Section One 4.1.2.1.5.3.1). |
| Pers.Comm. | Personal Communication |
| Site | Site mentioned in the thesis could mean any archaeological feature: PCAs, tombs, settlements, structural remains, earthworks, artefacts, etc. (see Chapter Four, Section One 4.1.2.1.5.6 and Appendix B). |
| The Northern Oman Peninsula | This term is used in this thesis to refer to the northern part of the peninsula which includes the entire peninsula to the north of Dhofar (See Maps 3 & 8). |
| The Oman Peninsula | This term includes the modern countries of the Sultanate of Oman and the United Arab Emirates (See Map 1). |
| UWA | This refers to the 'Upper Wadi Andam'. This is the area of the survey along the Upper Wadi Andam (UWA) conducted in order to provide supporting evidence to that yielded by the survey from the PCAs and OVAs. This survey covers an area around 39 km by 2 km along the wadi edges and its hills and gravel terraces. All types of evidence were recorded during the survey of these areas, such as stone structures, tomb fields, villages, towers, etc. (see also Chapter Four, Section One 4.1.2.1.2.3.2.2 & Appendix B). |
| Wadi Village | A village, mainly modern, along the water courses and near the foothills, wadi banks and its gravel terraces. It consists of a water resource such as a *falaj*, date palm groves, a group of houses and other related buildings such as public buildings, workshops, mosques/temples, agricultural land and installations, defensive buildings and towers, etc. This is different than the term 'oasis' that is loosely used nowadays by many archaeologists to refer to 'wadi village' (see also section 1.1.1 above). |

**Table 1 Important terms and abbreviations used in the thesis**

# CHAPTER TWO:

# GEOGRAPHY AND ENVIRONMENT

# CHAPTER TWO: GEOGRAPHY AND ENVIRONMENT

## 2.1- GEOGRAPHY:

The Oman Peninsula is located between latitudes 16°40′ and 26°20′ north at the head of Musandam and longitudes 51°50′ and 59°40′ south-east at Ra's al-Hadd (Ministry of Information 2002/3: 36) as well as between latitudes 22°50' and 26° 5' north and longitudes 51° and 55°25′ east of the U.A.E (Abdul Nayeem 1999: 45) (Map 1). Being located north and south of the Tropic of Cancer, it is a hot and dry area. The peninsula is surrounded by three seas: the Arabian Gulf in the north; the Gulf of Oman in the north–east and the Arabian Sea in the south–east. This location has given the peninsula a long coastal strip that extends for almost 3,915 km: the Sultanate of Oman has one of 3,165 km (Ministry of National Economy: 2007)[7], and the U.A.E one of 750 km (Abdul Nayeem 1999: 55). This coastal strip includes several natural seaports that have been exploited over time either for fishing or for local and regional trade.

## 2.2- GEOLOGY:

Geologically, the Oman Peninsula can be divided into different parts (see Map 3).

### 2.2.1- THE HAJAR MOUNTAINS:

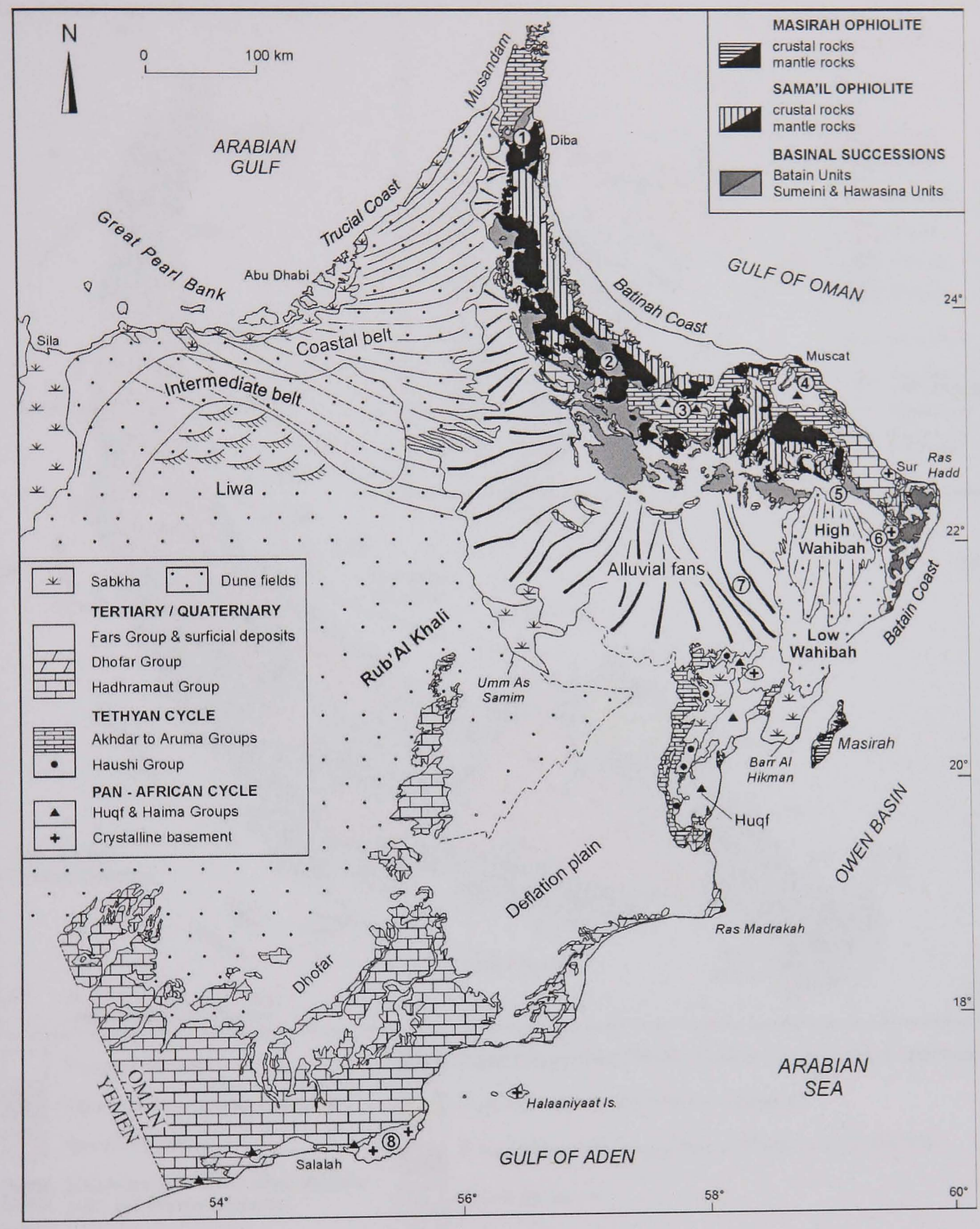
This part is characterised by a long mountainous area called the Hajar Mountains (Map 4). It covers the area located between the Batinah Coast and Central Oman's gravel fans. They extend over an area of around 700 $km^2$ from the Straits of Hormuz in the far north to Ras al-Hadd in the south–east and range in width between 30 and 130 km (Glennie et al. 1974: 19). They can be found in two of the study's defined sub-regions (see below, 2.9): the Hajar Mountains sub-region (HM) and the Musandam and Northern Emirates sub-region (MNE), where the rugged mountains of Musandam (Rous al-Jibal) rise to 1,800 m (Ministry of Information 2002/3: 38). The highest elevation of the Oman Mountains is the Jebel Akhdar that reaches around 3,000 m. Moreover, the mountains' foothills include

[7] The total length of the Omani coasts has recently been modified from 1,700 km to 3,165 km as there was an error in estimating this length (National Survey Authority 2007: Pers. Comm.)

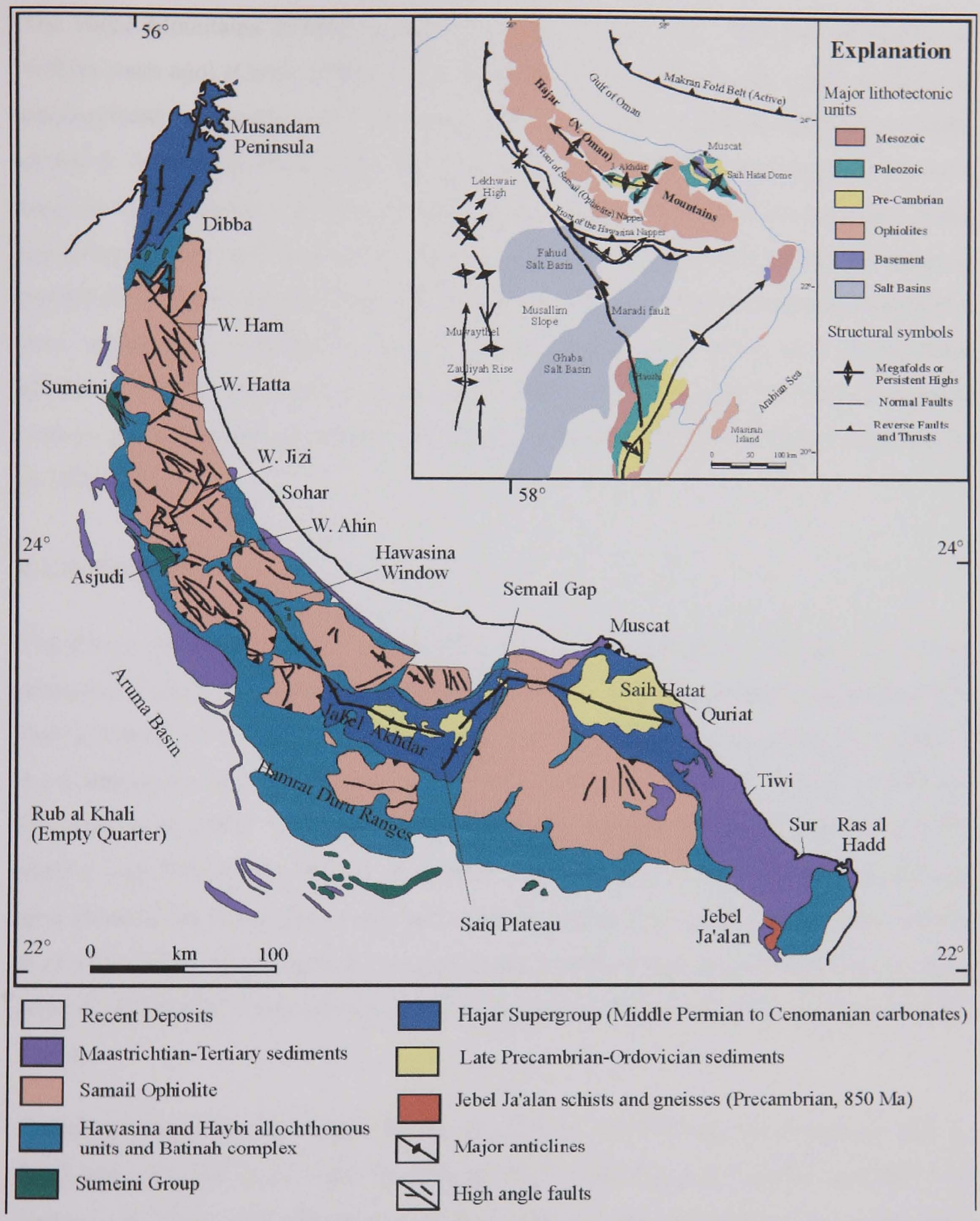
several oases located on gravel plains and are often bounded in the west by sand dunes and higher mountains in the east (al-Tikriti 1981: 8). These plains consist of a combination of sand, gravel, silt and clays. They are also cut by several wadis, which deposit different amounts of gravel and sand (*ibid*: 8).

Glennie and others (1974:29–30) have identified six major sequences within the Oman Mountains. From bottom to top they are:

1- A pre–Mid–Permian orogeny basement that consists of granites, gneisses, partly metamorphosed siliciclastic and carbonate sediments and meta-volcanics.
2- Mid–Permian to Late–Cretaceous (Senonian) shallow-marine carbonates (limestones, dolmites and marls).
3- The Sumeini Group-Local thrust sedimentary sequences comprising Permo–Triassic limestones, dolmites, sandstones and marls; Late Triassic coarse boundstones; Triassic calcareous mudstones, boundstones and conglomerates; and Jurassic to Mid–Cretaceous partly-slumped and conglomeratic calcareous grainstones and mudstones and minor red chert. These sequences are stratigraphically overlain by Senonian silicified conglomerates, grainstones and cherts.
4- The Hawasina– a complex association of folded and faulted lithological sequences comprising quartz sand and carbonate turbidites, silicified limestones and radiolarian cherts containing fossils of Triassic to Cenomanian age, and blocks of white, fractured and partly recrystallised shallow-marine limestones of the Permian and Triassic ages that are either associated with deeper-water sediments or have a substrata of sheared basaltic pillow lavas.
5- Semail ophiolites: a thick sheet of basic and ultrabasic rocks comprising peridotities, gabbros, diabases and spilitic lavas that overlie the Hawasina with a discordant contact.
6- Shallow-marine Maastrichtian and Early Tertiary carbonates, locally conglomeratic, that overlie all older sequences.




**Map 3 Geologic sketch map of the Oman Peninsula (after Garzanti et al. 2003: Fig.2, 575)**




**Map 4 Geological map of northern Oman that shows the Hajar Mountains and major structures (after Kusky, Robinson & El-Baz 2005: Fig.2, 873)**

The Hajar Mountains possibly started to rise during the late Oligocene times (ca. 30 million years ago) (Carter 1997a: 15). They form an ophiolite complex resulting from the emplacement of oceanic crust and shelf deposits of the Mesozoic–age Tethys Ocean (Pease & Tchakerian 2002: 418). The sequence of this ophiolite reveals several rock units such as extruded pillow basalts, intrusive gabbro, and a lower portion composed of the upper-mantle rock peridotite (*ibid*: 418). To the far northern part of the peninsula is located the Musandam Peninsula, which forms part of the Arabian Shelf and consists of a thick sedimentary sequence of marine carbonates that formed during the Permian times (Carter 1997a: 15). In terms of geology, this peninsula includes high cliffs and drowned valleys, and a morphology related to incipient subduction beneath the Zagros (Garzanti et al. 2003: 574).

### 2.2.2- DESERTS:

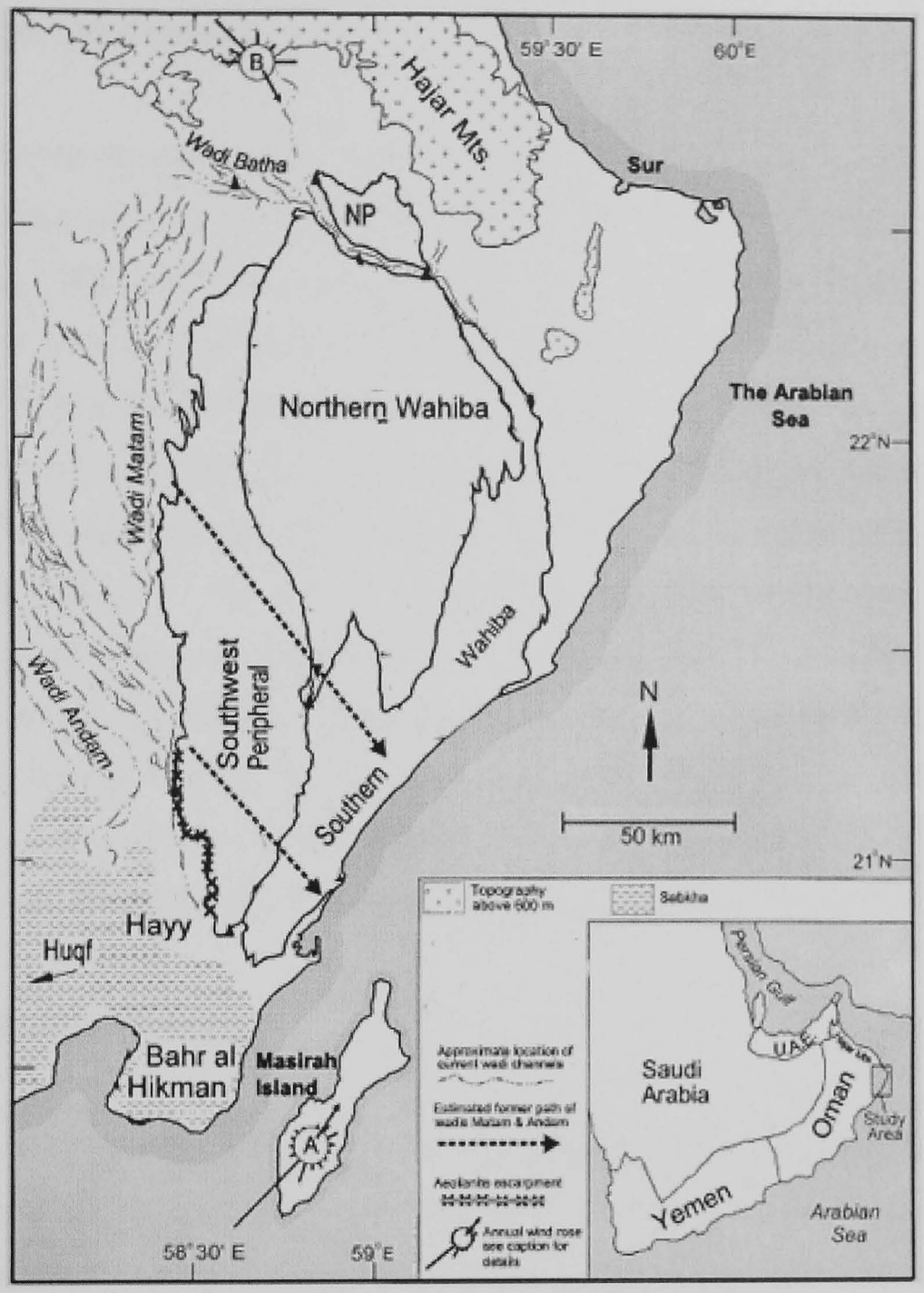
The Oman Peninsula consists of two main deserts that surround it from its eastern part along the Arabian Sea coast (the Wahiba Sands) to its western and southwestern parts (the Rub' al-Khali). The Wahiba Sands are situated to the southwest of the Oman Mountains at the southeastern edge of the Arabian Peninsula and cover an area of around 16,000 $km^2$ (Preusser et al. 2005: 396) (Map 5). The peninsula borders the Indian Ocean where the shelf is only 80 km wide (Radies et al. 2004: 1361). It is positioned in a local subsidence area between the Oman Mountains and south in the Huqf–Jebel Ja'alan anticline (Radies et al. 2005: 112). This formation has created the Wahiba Sedimentary Basin that covers an area of 10,000 $km^2$ filled with up to 150 m of aeolian deposits (Radies et al. 2004: 1361–1362).

Geomorphologically, the Wahiba Sands are divided into different physiographic (two to four) units (Goudie et al. 1987; Pease et al. 1999: 236; Pease & Tchakerian 2002: 416; Radies et al. 2004: 1363; Preusser et al. 2005: 396). It is beyond of the scope of this study to present these units in detail. Thus, they can be combined within two broad units that represent the main geomorphologic features in the Wahiba Sands: the Northern and Southern Wahiba Sands (Map 5). The first consists of a large mega-ridge system, while the second comprises active linear and transverse dunes, nabkha fields, and sand ridges (Pease & Tchakerian 2002: 416).

It is suggested that the central and northern parts of Oman, including the Wahiba Sand Sea (see below) and the surrounding wadis might be one of the main suppliers of regional dust over the Arabian Sea (Pease, Tchakerian & Tindale 1998: 478). The field data results demonstrate that the Northern and Southern Wahiba sands do not originate from the same source (Pease & Tchakerian 2002: 416). The first comprises a high composition of mafic minerals and originate from local wadis that drain from the Hajar Mountains, while the second consists of a high composition of quartz-rich minerals originating from the Oman coast or adjacent sabkha plains (*ibid*: 416).

Chronologically, Pease and others (1999: 236) state that Warren in 1988 believed that the Southern Wahiba Sand are younger than the Northern and represent a more recent landscape. Older surface aeolinatite deposits can be seen in the southeast coastal area, in the southwest peripheral sands as an escarpment, and in several dune trenches all over the Southern Wahiba (Pease & Tchakerian 2002: 419). Furthermore, the Southern Wahiba is an area of lower elevation than the Northern Wahiba (*ibid*: 418).

The Rub' al-Khali Desert, on the other hand, extends over an area of approximately 600,000 $km^2$ in which 100 $km^2$ are the extension of the major linear dunes of the sand sea (Pease, Tchakerian & Tindale 1998: 480). The desert contains several aeolian bedform types, such as linear, transverse, crescentic and star dunes (Goudie et al. 2000: 1011). The Oman Peninsula includes the eastern part of the Rub' al-Khali Desert that reaches the oasis zone along the edges of the western piedmont of the Hajar Mountains, while it extends as far as the Gulf Coast from the western and northern parts (Carter 1997a: 19). Along the coast of the U.A.E to the south–east extends an area over 240 km of sabkha complexes (Pease, Tchakerian & Tindale 1998: 480). The large composition of the mineral content (e.g. carbonate & quartz) demonstrates that the sand sources are mainly the ultrabasic rocks forming the ophiolitic sequence of the Oman Mountains from the acidic rocks of Iran and from the coastal zone (Goudie et al. 2000: 1011–1012).




**Map 5 The Wahiba Area and its main divisions (Modified after Pease, & Tchakerian 2002: Fig.1, 417)**

## 2.2.3- GRAVEL FANS:

The transitional region between the mountains and the interior lowlands is the inner foothill and wadi region (Compiler 1981: 8). Pease and Tchakerian (2002: 418) argue that, at present, large wadi and alluvial-fans drain most of the mountain basins south onto the lowland plains. Few rainfall records are available from this region, but generally most rain falls during winter and early spring (Compiler 1981: 8).

### 2.2.4- ABU-DHABI COAST:

Abu-Dhabi has the longest coast as well as hinterland on the Arabian Gulf and consists of around 200 islands scattered along the coast (al-Tikriti 1981: 3). The main feature of this coastal area is a flat sabkha that extends along the coast including Sabkhat Matti in the western part of Abu-Dhabi. It comprises sand, salt and lime, and extends inland for about 90 km (*ibid*: 3). Abu-Dhabi is situated within a structural depression between the Arabian Shield in the west and the Oman mountains in the east. Moreover, the majority of its islands are sandy. They were probably formed by sea withdrawal and sedimentation, and are similar in geology to the nearby sabkha. However, some islands are composed of Cambrian Volcanic Miocene deposits (*ibid*: 5). Around half of the Abu-Dhabi area is covered by aeolian sands dunes, which began just few kilometres away from the coast. Their level increases towards the inland in which they reach around 100 m or more, particularly at Liwa (*ibid*: 6). Gibb and Partners (1969: 17) believe that the sand dune layer was formed during the late Holocene and Pleistocene (Post–Tertiary Deposits).

### 2.2.5- THE BATINAH COAST:

The Batinah plain stretches almost 280 km from Muscat in the south–east to Rus al-Jibal in the north–east of the peninsula (al-Tikriti 1981: 9) with an approximate 25 km wide coastal strip between the Hajar Mountains and the Gulf of Oman (Ministry of Information 2004/5: 20). This plain was formed over millennia by the outwash coming from the mountains (al-Tikriti 1981: 9). The main sources for rainfall over this coast are the air winter-streams from the Mediterranean which blows over the Arabian Gulf and the Gulf of Oman (Compiler 1981: 5). The annual average of rainfall on this region varies between 76 and 100 mm (*ibid*: 5). Additionally, groundwater is plentiful as a result of the runoff water from the mountains, and the area consists of large agricultural lands that are irrigated by wells and *aflaj* (al-Tikriti 1981: 9).

### 2.2.6- THE EASTERN COAST:

The Oman Peninsula is bordered in the northeastern part by the Gulf of Oman and in the southeastern part by the Arabian Sea. These two seas were formed by the oceanic crust

from the late Precambrian era to the present day, with periods of climatic intervals (Abdul Nayeem 1996: 11). In this southeastern corner of the Oman Peninsula lies the Ja'alan region that includes a large sandy coastal plain between the Eastern Hajar Mountains and the Wahiba Sands (Hawley 1995: 73). In centre between the Gulf of Oman and the Arabian Sea lies the town of Sur, which is an ancient seaport that has played a vital role in the development of trade between Oman, East Africa and India (Ministry of Information 2004/5: 23).

## 2.3- PALAEOENVIRONMENT:

Although our knowledge of the palaeoenvironment in the Oman Peninsula has recently increased (e.g. Burns et al. 1998 & 2001; Fleitmann et al. 2003; Radies et al. 2005; Parker et al. 2006: 465-476; Parker et al. 2006: 125-130), it is fair to say that the data at hand is still insufficient and palaeoenvironmental research is still in its infancy. Lacustrine sediments available from different parts of the Arabian Peninsula demonstrate that the early Holocene Period is characterised by pluvial conditions (Parker et al. 2006: 465). McClure (1976: 755) argues that there are several lake beds in the Rub' al-Khali have been dated to the mid–Holocene Sub–Pluvial (ca. 7,000–5,000 BC). The archaeological record from this area points to the existence of human activity during this period. In the Oman Peninsula, several lake beds have also been found such as the lake beds at Ain al-Faidha in the Buraimi/al-Ain Oasis, in the Wadi Dhaid Mountains in Sharjah, and in the seabed of the Arabian Gulf. All of them yielded evidence dated to the mid–Holocene Period (Carter 1997a: 24–25).

Recent fieldwork data from desert parts of the Oman Peninsula, mainly the Wahiba Sands in the south–eastern part of the peninsula and in the north–eastern part of the Rub' al-Khali (see below), have thrown light on our knowledge about the palaeoclimatic conditions within the region. Fieldwork in the sediments at Wahiba Sands Sea has revealed remains of invertebrate and trace fossil assemblages suggesting environmental changes influenced by the Indian Ocean monsoon variations during the wet Early Holocene Period (ca. 9,300–5,500 years ago) (Preusser, Radies & Matter 2002: 2018–2019; Radies et al. 2004: 1359). At the onset of this period, a large increase in rainfall resulted in the development of the lacustrine sediments of the Central Sand Sea (Radies et al. 2005: 109). These sediments

demonstrate that there was a short-lived but permanent lake(s) supported by a climate that provided vegetation as well as enough moisture and adequate temperature for the "aeolian-dominated ecosystem" (*ibid*: 122).

Additional recent evidence has been found from two palaeolake sites from Ras al-Khaimah in the eastern part of the Rub' al-Khali desert (Awafi and Wahalah) that have yielded significant evidence for climate change over the past 10,000 years (Holocene Period) (Parker et al. 2006: 125). The sediment analysis at Awafi has been dated to around 6,550–1,050 cal. BC (2 sigma); a time in which there was a sudden change in lake level, regional aeolian activity and vegetation (*ibid*: 130) (Figure 2 & Tables 2 & App.D.48). The evidence from Awafi demonstrates that there were "floristic changes" during the Holocene, which might be as a result of the changes in the Indian Ocean monsoon levels during the early– to mid–Holocene and winter cyclonic rainfall during the mid– to late–Holocene (Parker et al. 2006: 466).

Speleothems from the Oman Mountains dating from about 10,000 years to 5,500 years BP (Early Holocene wet period), moreover, offer evidence of increased amounts of rainfall and wet periods (Fleitmann et al. 2003: 1737–1739; Radies et al. 2005: 122). These were followed by gradual decreasing moisture until 2,700 years BP (*ibid*: 122). Speleothems isotope analysis from the Hoti Cave in northern Oman presents evidence for periods of "continental pluvial" that extended for four glacial to interglacial cycles (Burns et al. 1998: 499 & 2001: 623). In addition, during the high interglacial times there was a monsoon rainfall shift to the north of its current location (Burns et al. 2001: 623). It is suggested that as a result of the connection between the continental pluvial periods and the high interglacial conditions, the continental moisture during the glacial-interglacial times was controlled by the glacial boundary conditions not by changes in solar radiation (*ibid*: 623).

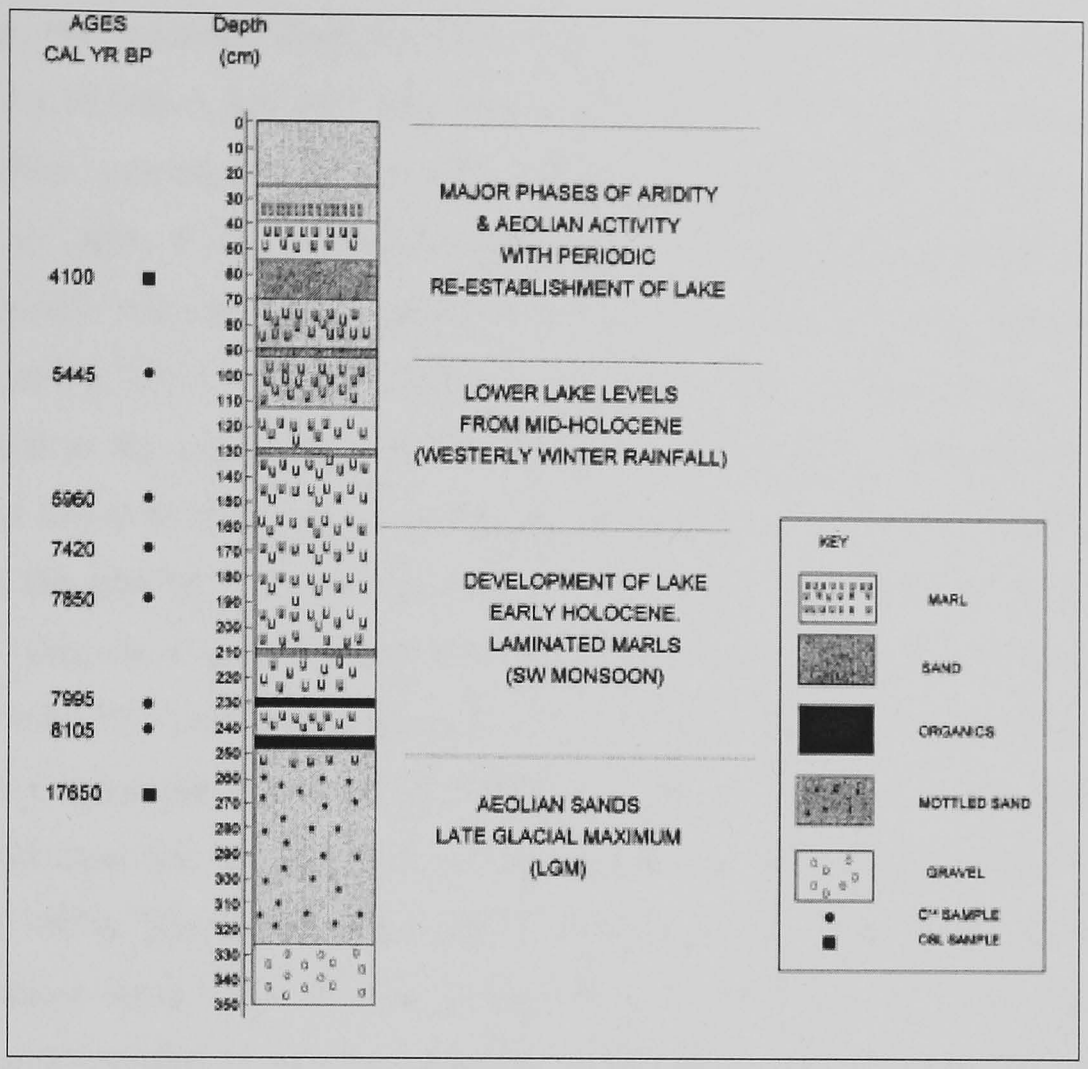



**Figure 2 The Awafii sediment profile showing the main stratigraphic units and position of the samples dated (after Parker et al. 2006: Fig.2, 469)**

| Period | Sub-period | Dryness |
|---|---|---|
| Late Glacial and earliest Holocene (18000–8500 BP) | ?? | Hyper-arid conditions with major dune emplacement |
| The early Holocene Lacustrine (8500–6000 BP) | Neolithic (8500–6000 BP) | Wet with short-interval increased arid phases at 8200, 7900 & 7600 BP |
| The mid–Holocene lacustrine (6000–4200 BP) | 6200–5400 BP | Changes/fluctuations |
| | 6000/5900 BP | Onset of aridity |
| | 5900–5400 BP | Arid |
| | 5400–5200 BP | Major aridification |
| | Hafit (5200–4500 BP) | Moist |
| | U.Nar (4500–4200 BP) | Moist |
| | 4200 BP | Desiccation/arid |
| The Late–Holocene (4000 BP–Present) | 4000–3000 BP | Major aridity with a short lived wet phase |
| | 3000–2000 BP | Increased aridity |
| | 2000 BP–Present | Increase aridity |

**Table 2 Summary of the climatic change based on the Awafi sediments**

To sum up, the evidence from the Hoti Cave and Awafi shows that during the Early Holocene (ca.10,000–5,500 BP) there was a wet phase. The Awafi sediments; however, show that there were short intervals of increased arid phases at 8,200, 7,900 and 7,600 BP (Parker et al. 2006: 472). Speleothems from the Oman Mountains indicate that after an intensive rainfall and wet period during the Early Holocene there was gradual decreasing moisture until 2,700 years BP (Radies et al. 2005: 122). The evidence from Awafi indicates that at the end of the mid–Holocene (ca. 5,500–5,200 BP) there was a major aridification followed by a wet phase during the Late Holocene (ca. 5,200–4,200 BP). And after 4,200 BP until the present day there has been increased aridity (Parker et al. 2006: 472–474). Thus, the evidence shows that there was occupation during the Hafit and Umm an-Nar periods. This can also be supported by evidence from the Rub' al-Khali desert and from Bat in Central Oman, indicating climate conditions could have supported human life in the period from the end of the 4$^{th}$ millennium BC to the middle of the 3$^{rd}$ millennium BC (Carter 1997a: 25). By the end of the 3$^{rd}$ millennium BC, there was a main arid period in the transition from Umm an-Nar to Wadi Suq, which seemed to continue during the Iron Age and resulted in the introduction of the *falaj* system which continues to the present day (Parker et al. 2006: 474).

## 2.4- MODERN CLIMATE:

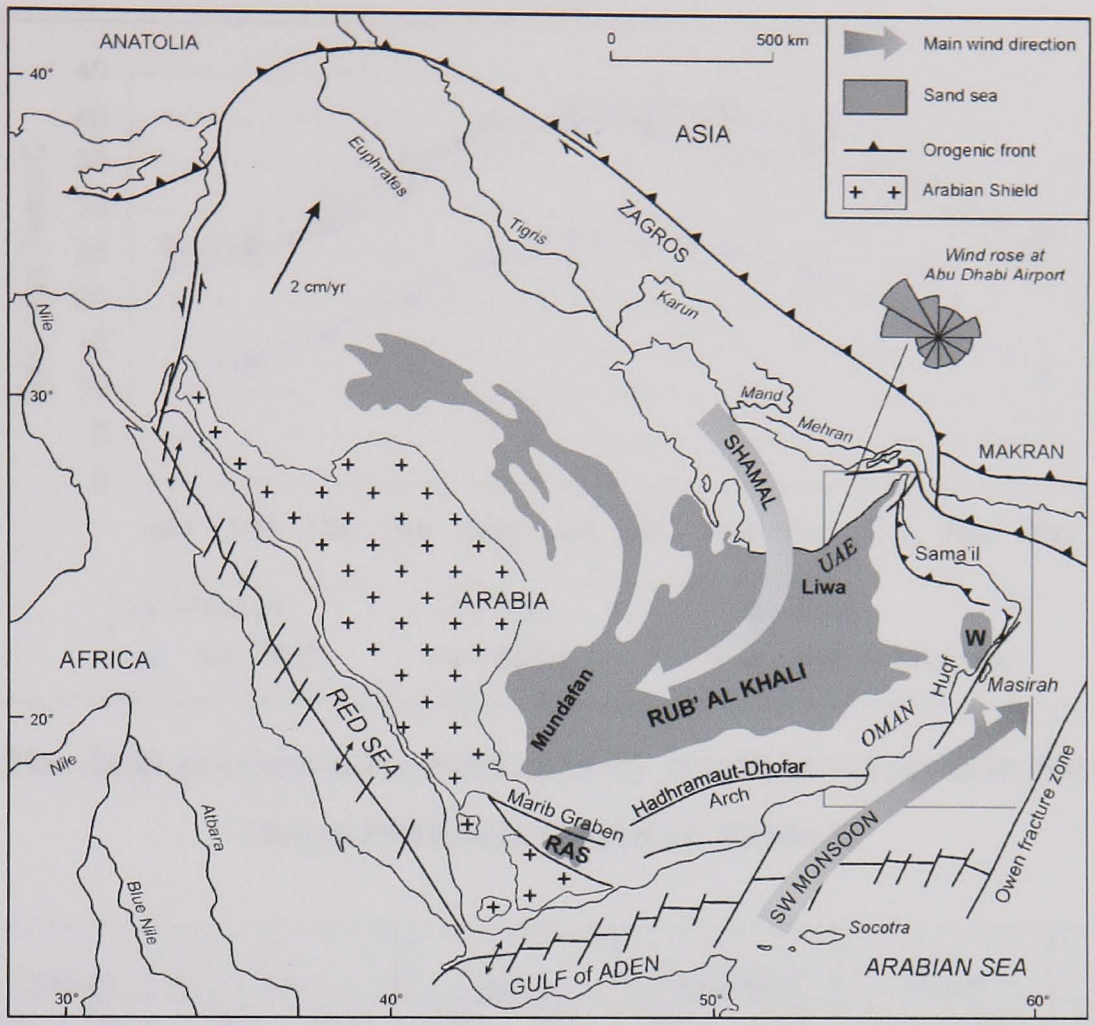
High temperatures during the summer and very low and irregular levels of rainfall, mostly during the winter, are the principal features of the present-day climate in the Oman Peninsula (Carter 1997a: 23). Climate differs from one area to another (Figures 3–4 & Tables 3–4), but generally speaking, it is hot and humid in the coastal areas while hot and dry in the interior. The only exceptions are the higher mountain areas like Jebel Shams or the Saiq Plateau (Figures 3–4 & Table 3) where the temperature average is moderate (Ministry of Information 2000: 24). The temperature during the summer is around 31–48°C (June) and it is pleasantly cool in the winter with around 20–25°C (January) (*ibid*: 164).

There are local variations in the present rainfall over the Oman Peninsula (Figure 5 & Table 5). There are two main sources of the present-day rainfall over Arabia (Glennie & Singhvi 2002: 853) (Map 6):

(1) Atlantic late-winter depressions, moving eastwards over the Mediterranean Sea, southeast to the Oman Peninsula and southwest across the Rub' al-Khali; and
(2) Humid winds of the southwest monsoon that between about July and September blows parallel to Arabia's southeastern coastline.

The average amount of rainfall is around 100 mm per annum (Carter 1997a: 23), while in the coastal areas, particularly the Batinah coast, the annual mean of rainfall is 80 mm (Ministry of Communications 1975: 10). However, over the Oman Mountains, as is the case with Saiq Plateau, the present-day annual level of rainfall exceeds 200 mm (Glennie & Singhvi 2002: 853), but during the few winter storms, the annual average rainfall reaches 450 mm (Garzanti et al. 2003: 574). This often results in wadi floods. Rainfall during the summer (June–September) can also be caused by the sporadic Arabian Sea cyclone. Occasionally rain does occur in July as a result of the Asiatic monsoon (al-Tikriti 1981: 10). The interior of Oman, mostly the Jebel Akhdar, is more influenced by these monsoon cyclones. In addition, humidity is high along the coasts of the Arabian Gulf and the Gulf of Oman, while the interior is less humid (*ibid*: 10).

It is also suggested that regional seasonal monsoons and local winds are important sources for the transport of sand sediment from wadis and the coastline to the deserts, particularly the Wahiba Sand Sea (Pease & Tchakerian 2002: 416). Sediment analysis over the Arabian Sea indicates that the highest levels of dust took place during the winter and spring seasons, and that its source is India/Pakistan/Iran and the Arabian Peninsula (Pease, Tchakerian & Tindale 1998: 477). It is also suggested that the Arabian Peninsula and particularly Oman are the major providers to the dust levels in the region throughout the year (*ibid*: 477). In Oman, several major dust-producing areas can be found, including the alluvial/fluvial complexes at the foot of the Hajar Mountains in northern Oman, the Wahiba Sand Sea and the Coastal Lowlands (*ibid*: 478).




**Map 6 Deserts sands of Arabia and winds systems (after Garzanti et al. 2003: Fig.1, 573)**

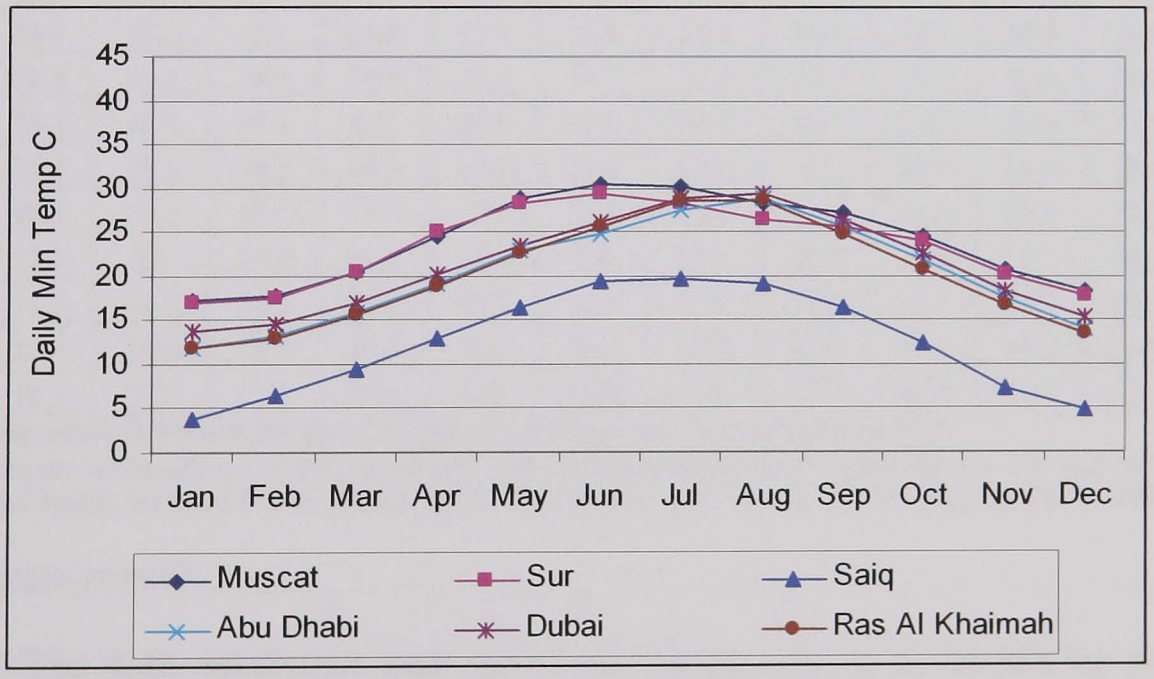



**Figure 3 The daily minimum temperatures by month at six areas in the northern Oman Peninsula (based on Table 3)**

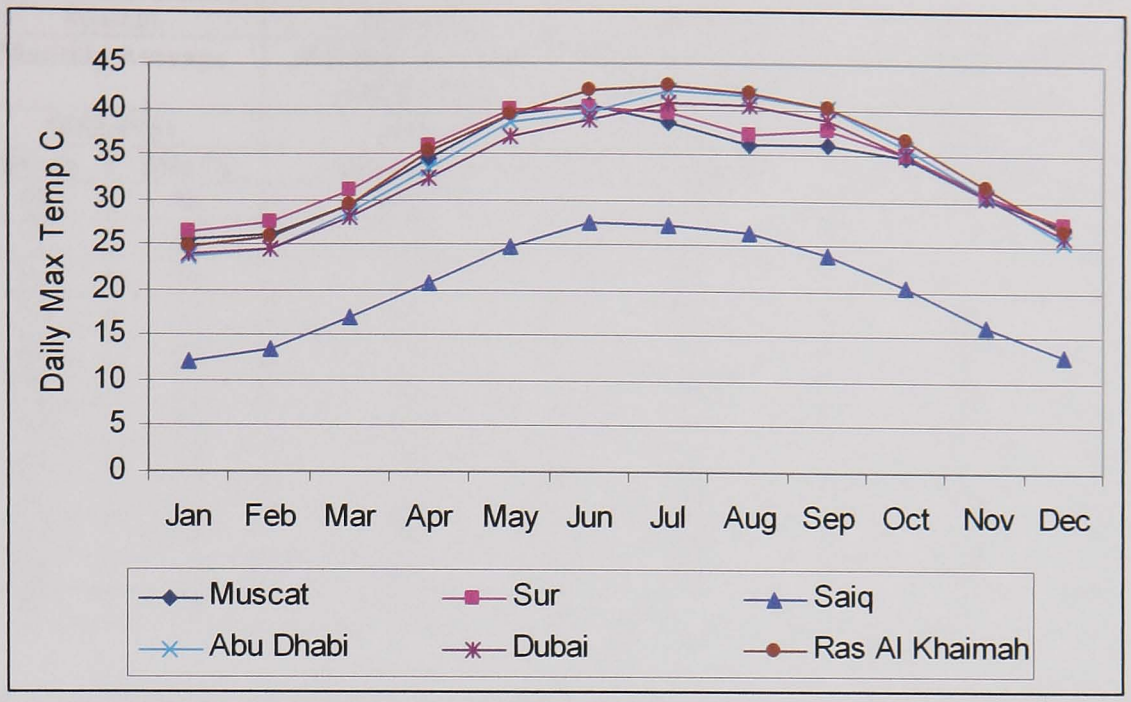



**Figure 4 The daily maximum temperatures by month at six areas in the northern Oman Peninsula (based on Table 3)**

| Month | Muscat | | Sur | | Saiq | | Abu-Dhabi | | Dubai | | Ras Al Khaimah | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily Min. Temp | Daily Max. Temp | Daily Min. Temp | Daily Max. Temp | Daily Min. Temp | Daily Min. Temp | Daily Min. Temp | Daily Max. Temp | Daily Min. Temp | Daily Max. Temp | Daily Min. Temp | Daily Max. Temp |
| Jan | 17.2 | 25.5 | 16.9 | 26.4 | 3.7 | 12 | 11.8 | 23.8 | 13.7 | 11.8 | 11.8 | 24.8 |
| Feb | 17.8 | 26.2 | 17.6 | 27.4 | 6.4 | 13.5 | 13.2 | 24.6 | 14.5 | 12.9 | 12.9 | 25.9 |
| Mar | 20.4 | 29.4 | 20.6 | 30.9 | 9.5 | 16.9 | 15.8 | 28.6 | 17 | 15.5 | 15.5 | 29.5 |
| Apr | 24.4 | 34.6 | 25 | 35.8 | 12.9 | 20.8 | 19.1 | 33.4 | 20.1 | 18.9 | 18.9 | 35.2 |
| May | 28.8 | 39.4 | 28.3 | 39.9 | 16.5 | 24.7 | 22.8 | 38.4 | 23.5 | 22.6 | 22.6 | 39.3 |
| Jun | 30.4 | 40.3 | 29.3 | 40.1 | 19.4 | 27.6 | 24.8 | 39.6 | 26.1 | 25.6 | 25.6 | 42.1 |
| Jul | 30.2 | 38.5 | 28.2 | 39.5 | 19.8 | 27.3 | 27.6 | 42 | 28.9 | 28.5 | 28.5 | 42.7 |
| Aug | 28.3 | 36.2 | 26.5 | 37.1 | 19 | 26.4 | 28.7 | 41.5 | 29.3 | 28.6 | 28.6 | 41.9 |
| Sep | 27.2 | 36 | 25.7 | 37.6 | 16.4 | 24 | 25.6 | 40.1 | 26.3 | 24.7 | 24.7 | 40.1 |
| Oct | 24.5 | 34.7 | 24.1 | 35.1 | 12.5 | 20.5 | 21.8 | 35.8 | 22.7 | 20.7 | 20.7 | 36.7 |
| Nov | 20.7 | 30.4 | 20.1 | 30.7 | 7.2 | 16.1 | 17.5 | 30.6 | 18.3 | 16.6 | 16.6 | 31.4 |
| Dec | 18.3 | 27.1 | 17.7 | 27.6 | 4.9 | 12.9 | 14.1 | 25.7 | 15.4 | 13.5 | 13.5 | 26.8 |

- Mean temperature at Muscat are based on monthly averages for the period 1974–2000
- Climatological information is based on WMO Climatological Normals (CLINO) for the 10–year period 1982–1991 (Abu-Dhabi); for the 18–year period 1974–1991 (Dubai) and for the 15-–year period 1977-–1991 (Ras al-Khaimah)
- Temperatures are on $C^{o}$

**Table 3 The daily minimum and maximum temperatures by month for six areas (Data for Muscat, Abu-Dhabi, Dubai and Ras al-Khaimah are obtained from the World Meteorological Organization (2007), while for Sur and Saiq are obtained from World Climate-Charts 2007)**

| Month | Muscat | | Darsait | Rustaq | Nizwa | Al Wafi |
|---|---|---|---|---|---|---|
| | Monthly Average | | Monthly Average at 09.00 hrs | Monthly Average at 09.00 hrs | Monthly Average at 09.00 hrs | Monthly Average at 09.00 hrs |
| | 1952-1961 | | 1978 | 1978 | 1978 | 1978 |
| | Max % | Min % | Average % | Average % | Average % | Average % |
| January | 88 | 46 | N.A. | 76 | 71 | 77 |
| February | 91 | 46 | 64 | 78 | 67 | 79.4 |
| March | 90 | 36 | 62 | 65 | 57 | 79.6 |
| April | 90 | 33 | 53 | 58 | 49 | 79 |
| May | 87 | 20 | 78 | 51 | 46 | 74 |
| June | 90 | 23 | 84 | 59 | 45 | 53 |
| July | 92 | 45 | 62 | 69 | 59 | 74 |
| August | 94 | 51 | 68 | 53 | 51 | 80 |
| September | 90 | 47 | 85 | 68 | 58 | 88 |
| October | 86 | 38 | 56 | 58 | 52 | 79 |
| November | 82 | 35 | N.A. | 57 | 61 | 78.5 |
| December | 87 | 44 | 57.5 | N.A. | 67 | 80.5 |

**Table 4 The relative humidity by month from five areas in the Oman Peninsula (From: Compiler 1981: Table.4; 107): N.A.= Not Available**

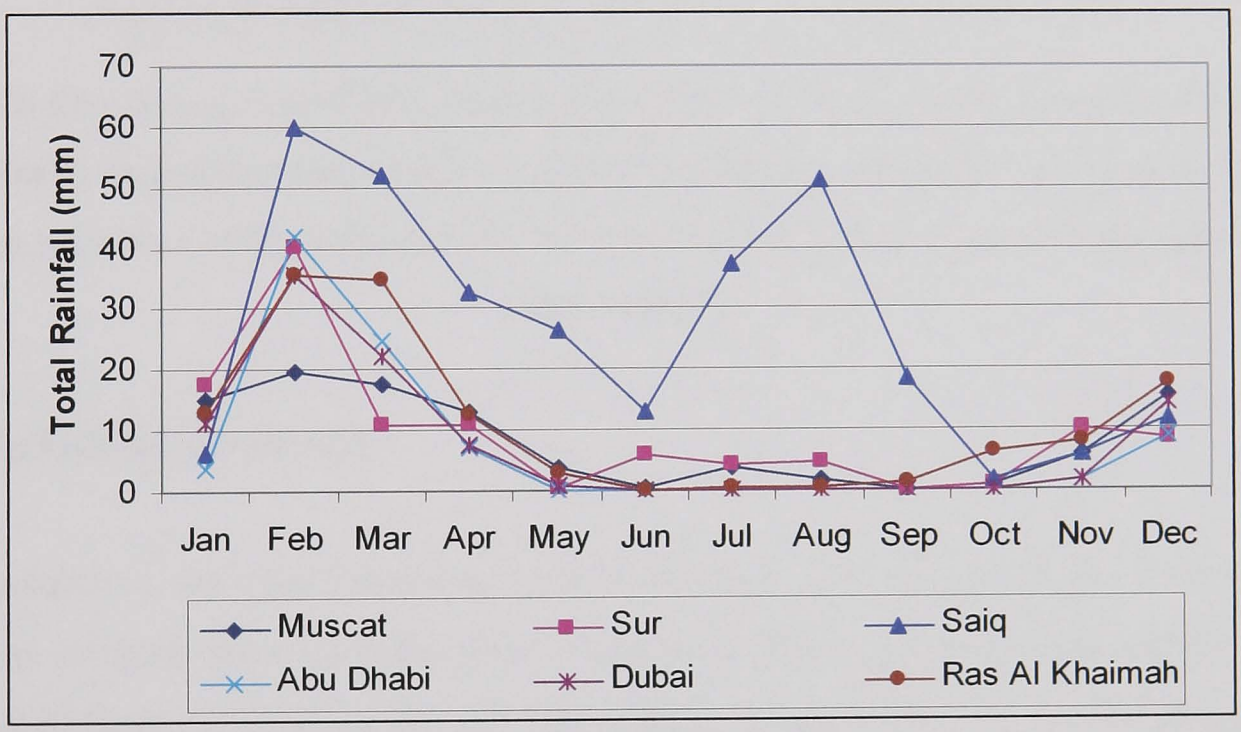



**Figure 5 The total rainfall in millimetre by month at six areas in the northern Oman Peninsula (based on Table 5)**

| Month | Muscat | Sur | Saiq | Abu-Dhabi | Dubai | Ras al-Khaimah |
|---|---|---|---|---|---|---|
| Jan | 15.2 | 17.7 | 6.2 | 3.9 | 11.3 | 12.8 |
| Feb | 19.7 | 40.3 | 60.1 | 42 | 35.7 | 35.7 |
| Mar | 17.7 | 11.1 | 51.9 | 24.8 | 22.4 | 35 |
| Apr | 13.2 | 11.0 | 32.6 | 7.3 | 7.6 | 12.5 |
| May | 3.7 | 0.5 | 26.2 | Trace | 0.7 | 2.8 |
| Jun | 0.6 | 5.8 | 13 | 0 | 0 | 0 |
| Jul | 3.7 | 4.1 | 37.2 | Trace | Trace | 0.6 |
| Aug | 1.8 | 4.8 | 51.2 | 0.1 | Trace | 0.3 |
| Sep | 0 | 0.0 | 18.6 | Trace | 0 | 1.3 |
| Oct | 0.9 | 1.0 | 1.6 | 0 | Trace | 6.4 |
| Nov | 5.9 | 10.2 | 5.8 | 1.8 | 1.8 | 8 |
| Dec | 15.3 | 8.2 | 11.7 | 9 | 14.3 | 17.4 |

- Mean total rainfall at Muscat is based on monthly averages for the period 1975–2000
- Climatological information is based on WMO Climatological Normals (CLINO) for the 10–year period 1982–1991 (Abu-Dhabi); for the 18–year period 1974–1991 (Dubai) and for the 15–year period 1977–1991 (Ras al-Khaimah)
- Trace = Mean total rainfall less than 0.1 mm - Total rainfall is on mm

**Table 5 The average rainfall in millimetre by month for six areas (Data for Muscat, Abu-Dhabi, Dubai and Ras al-Khaimah are obtained from the World Meteorological Organization (2007), while for Sur and Saiq are obtained from World Climate-Charts (2007).**

## 2.5- WATER RESOURCES:

The rainfall level over the Oman Peninsula is insufficient for dry agriculture. Thus several irrigation methods have been developed, benefiting from both occasional surface-water and groundwater (Compiler 1981: 29). The region is characterised by a very high aridity, which increases the water evaporation percentage (Ministry of Communications 1975: 19). Moreover, the water is absorbed as a result of the high porosity of the sediments which cover the region (Carter 1997a: 17). Around 80% of the rainfall evaporates, 5% flows into the sea and only 15% reaches the groundwater stocks (Ministry of Information 2004/5: 24). The estimated annual average of runoff water within the majority of Oman wadis is around 85 million cubic meters per wadi (Compiler 1981: 30). The bulk of this water runs off rapidly within the wadis, which reduces the chance of making use of it for agriculture (*ibid*: 30). However, a considerable flow of surface-water or seasonal-floods can occur during the heavy rainfall seasons (Carter 1997a: 17). In the foothills, this flood surface-water can be used for crop irrigation by diverting it to the fields (Costa 1983: 286–287) (Figure 6), using stone barrages or *gabarbands*. This is a type of structure that seems

to date back to the 3rd millennium BC (Meadow, Humphries & Hastings 1976: 111; Weisgerber 1981: 178 & 1983: 274). This situation is similar to that along the Batinah Coast and the eastern coast of the Oman Peninsula.

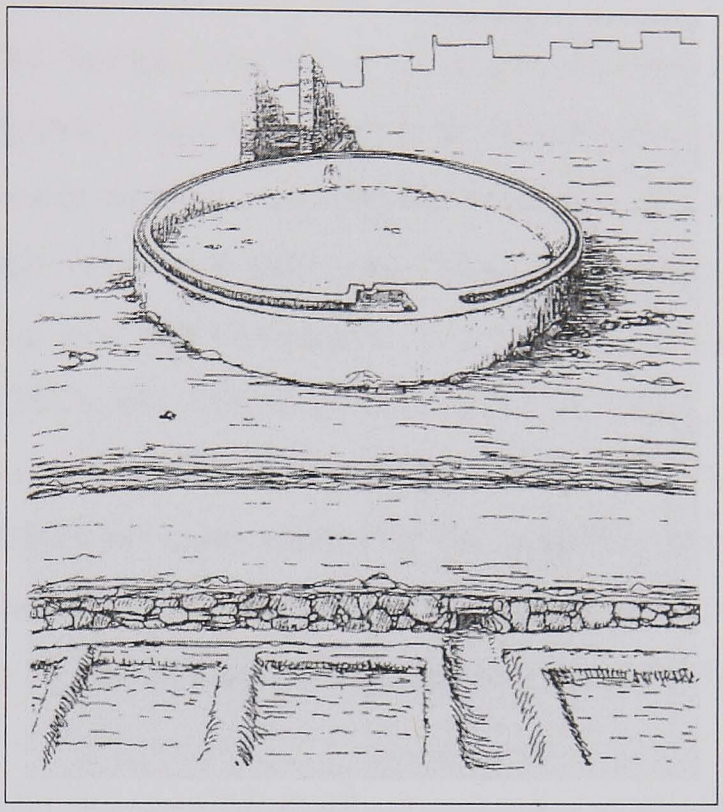


**Figure 6 A sketch plan of the cistern of Bir al-Qat'a at Nizwa and the outlet of the irrigation channel into the fields (after Costa 1983: Fig.3, 287)**

In the Oman Peninsula, all agriculture and daily life depend basically on groundwater supplies that feed the wells and the *falaj* systems. Nowadays, several large wadis flow over the alluvial-fans coming from the mountain basins towards the lowlands in the south (Pease et al. 1999: 236; Pease & Tchakerian 2002: 418). Other wadis run out from the mountains passing the Batinah region towards the Gulf of Oman where they terminate (Compiler 1981: 7). In contrast, other wadis drain inland toward the Rub' al-Khali, and others (e.g. Halfain and Andam) run from the central and southeastern parts of the Hajar Mountains toward the southeast coast near Masirah and Ras al-Hadd (*ibid*: 7). The majority of these wadis store groundwater underneath their surface (Ministry of Communications 1975: 45), particularly in the gravel and silt fill, which is available in varied depths and qualities (University of Durham 1978: 9–10 & 37–41). The estimated amount of subsurface water in these wadis varies. A rough estimation from the Nizwa and Halfain wadis indicates between 5 and 10 million cubic meters (Compiler 1981: 33). Larger water quantities can be found in the alluvial and piedmont plains that have greater

potential to store underground water as they consist of coarse gravels to a depth of about 100 m, overlying clayey cemented conglomerates (*ibid*: 33).

The region along the western extreme of the mountains between the foothills and the desert benefits from the terminal out-wash of wadis draining from the highlands, providing a fresh underground water-table and surface-water during the wet times (Carter 1997a: 18). Groundwater can be reached by digging wells and *aflaj* channels into alluvial-fans to tap the water-table (Compiler 1981: 36). These are a major source for irrigation and daily usages since the Iron Age (Wilkinson JC 1977: 122–134 & 1983: 177–194; al-Tikriti 2002a: 137 & 2002b: 67; Magee 2005b: 225–228; Häser 2004: 417–419), and possibly even earlier during the 3rd millennium BC (Orchard & Stanger 1994: 86–87 & 1999: 96–101). The quantity of water yielded by the *falaj* channels varies significantly. Some might produce more than 120 litres per second, but generally, the mean for all *falaj* channels ranges between 15 and 20 litres per second (Wilkinson JC 1977: 92).

On the Batinah Coast and the Arabian Gulf, groundwater is plentiful. On the Batinah, within a short distance of the coast it is readily accessible. However, as one moves inland, wells require to be dug deeper (Carter 1997a: 21). Additionally, *aflaj* can be found but irrigation methods are largely based on wells. Agriculture on the northern coastal plain along the Arabian Gulf is based on wells around which extensive date palm plantations can be found (*ibid*: 22).

In the desert forelands, the availability of fresh water is largely dependent on the sand distribution (Compiler 1981: 34). The sandy areas are subject to rapid penetration, low capillary rise, rapid fall off of evaporation rates below the surface, and high reservoir potential (*ibid*: 34). Water in this region is brackish or saline, and is accumulated in a saturated zone at the base of the dune. It is estimated that the total amount of water stored within all these shallow aquifers in northern Oman may be from 6 to 7 billion cubic meters annually (*ibid*: 34).

## 2.6- FLORA:

The Oman Peninsula flora is of a desert and semi-desert nature and is largely restricted to acacia and bushes (al-Tikriti 1981: 15). Due to water salinity and the shift to pump irrigation, soils in many areas in the peninsula, particularly the Batinah Plain, are encountering a soil salinity problem, which effects cereal cultivation (Ministry of Communications 1975: 180–186). Sands in the deserts also influence cultivation within these areas (Compiler 1981: 84). Since the 4$^{th}$ millennium BC, the Rub' al-Khali desert has been inhospitable for human occupation. However, during times of heavy rainfall, its fringes can be used by pastoralists (Carter 1997a: 19). Moreover, due to the hyper-arid climate, many desert plants are short-lived annuals. Nevertheless, small plants and flowers such as northern-type flowers (e.g. tiny wild pansies and cowslips) appear after heavy rainfall seasons (Hawley 1995: 83).

Many plant species have been identified within the peninsula and described in several publications (e.g. Satchell 1978: 212–214; Compiler 1981: 56–62; Hawley 1995: 83–85). Among these species are: *Acacia, Ziziphus, Spina-christi, Prosopis, Nerium mascatense, Pteris, Anagallis arvernsis-Primulaceae, Compositae, Tecomella, Acridocarpus, Euphoriba larica, Convolvulus, Lavandula subnuda, Reptonia mascatense, Olea Africana, Juniperus macropoda, Sageretia spiciflora, Euryops, Ebenus, Dodonaea, Cheilanthes, Viola cinerea, Dionysia mira, Carthamus tinctorius* and *Myrtus communis*.

## 2.7- FAUNA:

The peninsula includes different types of domestic and wild animals like mammals, avifauna (around 372 species), herpetofauna and invertebrates (Satchel 1978: 214–218; Compiler 1981: 67–68 & Tables 3, 5–7, Appendix VI; Hawley 1995: 85–91). Among the mammals there are bats, rodents, wolves and hyaenas, the red fox, the sand fox, cats, the South Arabian leopard, the Arabian tahr, the Arabian oryx, gazelles, the Nubian ibex, wild goat and Asiatic mouflon. Herpetofauna consist of reptiles, geckos, lizards, vipers, a boa, snakes and toads. Invertebrates include molluscs, moths and butterflies and mammalian ectoparasites. There are also different types of birds and there used to be ostriches as

evidenced by the rock art and egg-shells found in several sites. At present hawks and falcons are the most common birds (al-Tikriti 1981: 22–24).

## 2.8- SUBSISTENCE ECONOMY:

### 2.8.1- AGRICULTURE:

Agriculture is the major economic activity in most parts of the peninsula, particularly the coastal strips of the Batinah Coast, along the Hajar Mountains' foothills and in the interior of Oman as well as some desert and gravel zones. Cultivation is totally based on irrigation from wells and *afalaj* that are the main sources for irrigating date palms, vegetables and fruits (Wilkinson JC 1977: 28–31). The total area of cultivated land in Oman is 61,500 hectares. The total agricultural production is 1,214 thousand tons, and there are around 103,000 citizens working in this sector (Ministry of Information 2002/3: 162). Most cultivation is of date palms of which there is a wide range of types and quality (Wilkinson JC 1977: 29). A rough estimation of date palm trees from different parts of the peninsula is provided by Lorimer (1908) (see Appendix D, Table D.2). Besides the date palm, there are other crops cultivated in the peninsula (see Appendix D, Table D.3).

The Batinah Coast is the most populated part of the peninsula and consists of fertile lands that are suitable for agriculture. The most suitable soils are those located in close proximity to the ocean in which finer alluvial particles are deposited, while the less suitable soils for agriculture are those located further up the gravel-fans which comprise coarser material (Ministry of Communications 1975: 177). This coastal strip is plentiful in groundwater and well-based agriculture in which extensive date palm plantations dominate (Carter 1997a: 22). This is also true for the northern coastal plain on the Arabian Gulf and Eastern coasts. In the interior, agriculture is also the main source of employment where again date palms and other food and animal fodder-crops are cultivated. Wilkinson JC (1977: 28) argues that fodder-crop cultivation plays a significant part in village-land use and that animals participate in the economy either by their products (e.g. milk, meat, wool and manure for fertilizing lands) or by acting as beasts of draught and transport. On the slopes of Jebel Akhdar, terraced cultivation can be seen in which peaches, apricots and

walnuts are planted on the upper slopes while the lower ones are planted with dates, onions and grain crops (Lawton 1980: 10).

Archaeologically speaking, floral remains in the peninsula are scarce and found only in a few settlement sites which date from range of different periods. The most ancient floral evidence comes from Hili 8 settlement. This yielded naked six-row barley, bread wheat, date-palms, wild oats and melon from Hafit period context (Cleuziou 1989a: 79). Other evidence for agricultural practices has been found at both coastal and inland sites such as at Ras al-Jinz (cf. Costantini & Audisio 2000), Umm an-Nar Island (Willcox 1995: 257–259), Maysar 1 (Weisgerber 1981: 191–197), Tell Abraq (Potts 1990c: 124), Shimal (Vogt & Franke-Vogt 1987: 57–96), Bat (Brunswig 1989: 27–28), and Rumeilah (Boucharlat & Lombard 1985). Among the floral remains found at these sites are barley (e.g. *Hordeum distichon, H. vulgare & H.sp*), emmer (*Triticum dicoccum*), wheat (*Triticum aestivum or Trit durum.*), wild jujube (*Zizyphus sp.*), date-palms (*Phoenix dactylifera*) and *acacia or prosopis.* Moreover, they yielded remains indicating agricultural practices, including date stones, grinding stones, a high occurrence of dental caries, a socketed bronze hoe and charred edible fruits (e.g. *Zizy pluses* and *Ziziphus*), as well as traces of ancient field and terrace garden deposits.

### 2.8.2- HUNTING AND LIVESTOCK-HERDING:

There are several areas which provide grazing lands for the herdsmen such as those within the mountains and desert zones where shepherding and husbandry are practised. Different domestic animals were and are kept and raised by the inhabitants, including goats, sheep, cattle, chickens, horses, donkeys, camels, dogs, rabbits, poultry, etc. These animals are either used for domestic consumption (self-sufficient economy) or for small-scale trade or exchange. They provide meat, milk, leather, wool, oil and other products. Other animals (e.g. camels, horses, donkeys) were and still used for loading and burden as well as riding and racing. There is also some sort of exchange between the different zones of the peninsula in which livestock figured is among the goods exchanged (see trade below) (Wilkinson JC 1977: 17). It is also known that horses were largely exported from Oman (e.g. from Qalhat, Msucat and Khor Fakkan) to India (Hawley 1995: 89). Additionally, Lorimer (1908) gave a detailed account of the major domestic animals kept and raised by

the inhabitants of the towns that he had visited (see Appendix D, Table D.4). in which sheep and goats were the most numerous. Wild animals (e.g. gazelle, tahr, oryx, ibex, hare, etc.) were also found in several areas and they were hunted and featured as part of the local economy (Carter 1997a: 17).

Several excavated sites within the peninsula have provided evidence of the exploitation of both wild and domestic animals. Additionally, evidence from the rock art shows a wide range of animals such as camels, horses, gazelles, ibexes, ostriches, oryx, dogs, goats, cattle, snakes, birds, etc. (cf. Clarke 1975a-c, Preston 1976; Jäckli 1980). Fossilized bones from a lake bed site (dated to around 20,000–8,000 BP) in the south–west of the Rub' al-Khali show evidence of the Asiatic wild ass, a large bovid, a small bovid, gazella sp., and water buffalo (al-Tikriti 1981: 24). Excavated sites like Ras al-Jinz (Bökönyi 1992; Cleuziou & Tosi 2000), Ras al-Hadd (Mosseri-Marlio 2002; Martin 2002), Suwayh (Méry & Charpentier 2002), Umm an-Nar Island (Hoch 1979 & 1995), Ghanadha Island (al-Tikriti 1985: 9–19), Hili 8 (Cleuziou 1989a: 79–80), Shimal (Vogt & Franke-Vogt 1987; Franke-Vogt 1991), Tell Abraq (Potts 1990c: 124), and Rumeilah (Boucharlat & Lombard 1985: 65) have provided large quantities of domestic and wild animal bones of different species and periods. Among the domestic animals are goats, sheep, domestic dogs, donkeys, cattle and dromedaries as well as a domestic hen from the Ras al-Jinz (RJ-2) (Cleuziou & Tosi 2000: 43). The wild animals include gazelle, asses, oryx, birds, the red fox and sand fox, wolves, rodents, quids and pigs.

### 2.8.3- MARINE RESOURCES:

Fishing in some coastal parts is almost the only activity practised by the inhabitants. It is a seasonal livelihood during the winter while pearling is a summer livelihood (Wilkinson JC 1977: 19). Mangrove swamps along the Gulf coasts provided a good environment for different species of shellfish and breeding-grounds for fish (Potts 1990a: 389). During prehistoric times, fishing in the coastal settlements was not limited to catching animals from the sea but the catch passed through several stages such as storing, preserving, packing and shipping for trade and exchange (Cleuziou & Tosi 2000: 24). Nowadays, the fishery sector is one of the most important industries (Human Development Report 2003: 138). Different species of fish can be caught (see Appendix D, Table D.5).

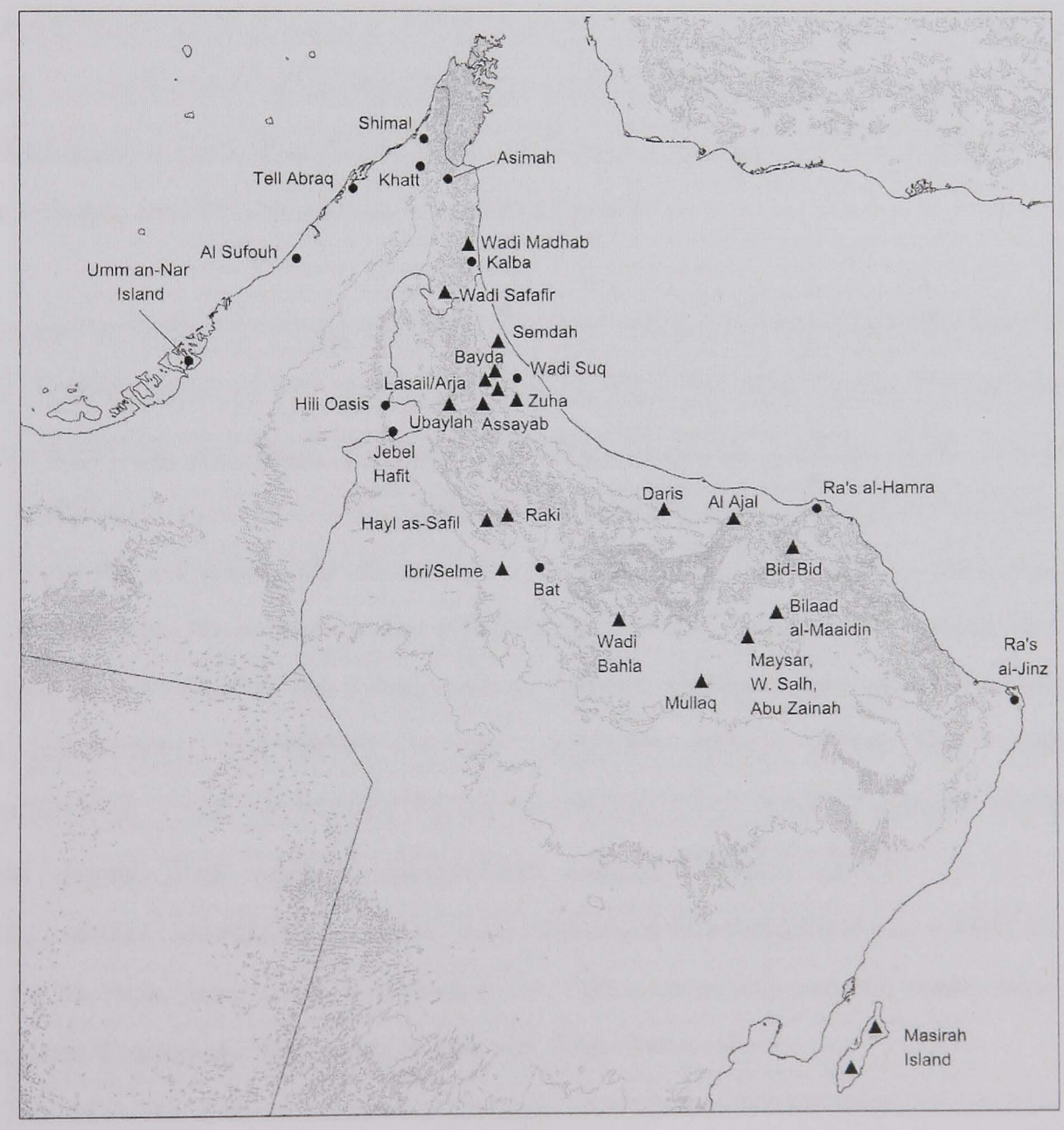
Archaeologically, there is large evidence for the exploitation of marine resources along the coasts of the peninsula. Several coastal settlements, both permanent and temporal, provided evidence of different types of marine animals and shellfish. These settlements range in date from the Late Stone Age up to the Islamic periods. Their economy has mainly based on marine resources (e.g. fishing, gathering marine and mangrove swamp molluscs, pearling, hunting marine mammals and turtles, sea-faring and local, regional and overseas trade). Among these excavated sites are Kalba (Carter 1997a-b), the Umm an-Nar Island (Hoch 1979), Ghanadha 1 (al-Tikriti 1985: 9–19), Shimal (Vogt & Franke-Vogt 1987), Tell Abraq (Potts 2000: 59–64), Ras al-Hamra (Biagi et al. 1984; Coppa et al. 1990), Dalma Island (King 1998: 47–66), Ras al-Jinz (Cleuziou & Tosi 2000: 41–42), Ras al-Hadd (Mosseri-Marlio 2002: 197–208), Suwayh (Méry & Charpentier 2002: 189; Martin 2002: 169) and al-Hamriyah in Sharjah (Jasim 1996: 1). These sites yielded large evidence of marine animals and shellfish remains and large quantities of shell, bone, copper and stone artifacts.

### 2.8.4- MINERALS AND OTHER RESOURCES:

At present, natural resources like oil and gas are the most dominant resources of the economy. They are exported to several countries all over the world. Furthermore, the Hajar Mountains include different types of rocks that have been exploited by man since prehistoric times. They comprise different rock units with a number of copper deposits such as those from the Semail Ophiolite and Masirah Island (Weeks 2004b: 12–14). They also consist of other natural minerals such as sliver, coal, asbestos, chromites, manganese, iron ore, lead, zinc, nickel, silver, gold, phosphate, limestone, chert, jasper, chlorite/steatite, marble, limestone, gypsum, salt, tin, carnelian, timber and radiolarite (cf. Compiler 1981: 27; Weeks 2004a-b).

The Oman Peninsula has, perhaps as early as the late $4^{th}$–$3^{rd}$ millennium BC, exported minerals, particularly copper, to the neighbouring regions such as Mesopotamia, the Indus Valley, Iran, central Asia and the Central Gulf (Potts 1990a: 84–85, 1993a & 2003; Weeks 2004b). Several ancient copper mines and sites (Map 7) have been discovered in the peninsula's mountains, particularly in the Wadi Jizzi (e.g. al-Sayab, Arja, Semdah Site 7,

Wadi Fizh 1 & Zahra Site 1) west of Sohar and in the middle way between Buraimi/Sohar (e.g. Weisgerber 1978; Costa & Wilkinson TJ 1987); and in the Samad–Maysar area (e.g. Maysar M1, M2, M16 & M49) (e.g. Weisgerber 1978, 1980, 1981, 1983). Other sites yielded evidence for copper are the settlements in the Umm an-Nar Island (Hauptmann 1995: 246–248), Hili 8 (Cleuziou 1978/9: 36 & 1989a: 73–74), Tell Abraq (Potts 1990a: 122), Asimah (Vogt 1994a), and others (Weeks 2004b: fig.2.2: 11). The archaeological evidence also indicate that other natural minerals have also been exploited, and possibly exported such as lead, tin, sulfur, iron, arsenic, nickel and cobalt (Weeks 2004a-b); limestone which was used as a building material (e.g. tombs or buildings like Umm an-Nar towers); and chlorite (e.g. vessels and ornaments), as well as tools from lint, chert, jasper and carnelian.




**Map 7 The major copper deposits and metallurgical sites of southeastern Arabia (triangles) and third millennium settlements (small circles) (after Weeks 2004: 11)**

### 2.8.5- TRADE:

There is some sort of exchange among the peninsula's different zones (e.g. coastal, mountain and desert zones) (Wilkinson JC 1977: 17). Among the items exchanged between these zones are pearls, dried fish, dried fruits and livestock (donkeys, camels, horses, etc.) (*ibid*: 17; table 7: 67). Inland settlements are supplied with dried fish and imported goods from the coastal settlements where maritime trade has always played a vital role in their economy. Lorimer (1908: 65) remarked that the Ja'afarah, a section from the tribe of Bani Bu 'Ali, catch sharks, seer-fish and other fish, and salt them for export to Sur and Makalla. Moreover, a survey carried out by the University of Durham (1978: 70) in the northern Oman showed that Ibri is supplied with dried and salted fish from the Batinah and south–eastern coasts of Oman. Other goods such as dates and dried limes are exported. Lorimer (1908: 679) described the trade at Balad Bani Bu Hasan. He stated that "... boiled dates called Bisr are exported to Bombay through Sur and Masqat Town". At present, oil, gas and fish are the most exported goods.

Surveys and excavations along the coastal strips of the Arabian Gulf, the Gulf of Oman and the Arabian Sea yielded several settlements that had relied basically on fishing and pearling, seafaring and local, regional and overseas trade. Overseas trade was practised during prehistoric times as it is evidenced by the discovery of imported finds such as pottery from the neighbouring regions (e.g. Mesopotamia, Indus Valley, Iran, etc.). These trade contacts and the evidence for different goods are presented in details in Chapters Three and Seven. During the Umm an-Nar period, foreign trade of mainly cooper and steatite production, contributed in the economic system where they exported to Mesopotamia as it can be attested by the cuneiform texts, which indicates imported and exported goods from Magan, particularly copper (Weeks 2004b: 14–17). Besides exporting, several commodities were imported from the neighbouring countries such as luxury items from India (e.g. a carved ivory comb or a cast copper stamp seal with an inscription in Harappan writing) (Cleuziou & Tosi 2000: 41).

## 2.8.6- SETTLED AND NOMADIC – HOW TO IDENTIFY:

One of the key themes that will run through the discussion of various periods in this thesis, most notably the Hafit, Wadi Suq/Early Iron Age and Sasanian-Early Islamic is the possibility that the population inhabiting this region turned, for periods of time, to a nomadic/pastoralist subsistence economy that resulted in a notable change in the nature of the archaeological evidence they have left behind them. Whilst in other periods, for example the Umm an-Nar, Late Iron Age/Samad and the late Islamic period there is clear evidence for a substantial sedentary population. The identification of sedentism and nomadism in the archaeological record is a problematic issue for archaeologists. It is often settlement size, density, layout and distribution, as well as the amount and type of archaeological material and remains recovered from a site that all play a significant role in defining the nature of occupation within that site – whether occupied by a settled or nomadic population.

In order to examine the broader debate, let us begin with sedentism before moving on to look at nomadism.

### 2.8.6.1- SEDENTISTS: THE VISIBLE CULTURE:

#### 2.8.6.1.1- WHAT IS 'SEDENTARISATION'?

Salzman (1980b: 1) defines sedentarisation as a 'change; change from a more nomadic to a less nomadic way of life, from a nomadic to a more sedentary way of life'. It is 'an increase in the agricultural production and the development of handicrafts' (Khazanov 1984: 198). It is argued that a large amount of archaeological evidence can be left by sedentary populations, and it is rare that they do not leave any material remains (Finkelstein & Perevolotsky 1990: 67–68). This appears to be true, not only for the Wadi Andam Survey, but for the whole northern Oman Peninsula where some periods (e.g. Umm an-Nar, Iron Age) have yielded a considerable amount of evidence for settled life.

### 2.8.6.1.2- REMAINS OF SETTLED PEOPLE:

There is strong evidence for sedentary life during some archaeological periods such as the Umm an-Nar, Iron Age, Hellenistic–Parthian and later Islamic times (see Chapter Seven). The evidence the from Umm an-Nar period and Iron Age (see Chapter Seven, 7.1.3.5 & 7.1.5.5) might show some degree of social structure and hierarchy, based perhaps on kinship, tribal or elite control. The development of these structures during the Umm an-Nar period seems to be due to exploitation and trade of copper and other natural resources. It might also be related to climatic change (see 2.3 above). Additionally, the dramatic cultural change during the Iron Age and Hellenistic–Parthian periods has been widely attributed to the introduction of the *falaj* irrigation system during the Iron Age and the widespread use of iron during the Hellenistic–Parthian period.

The evidence for this includes a large number of settlements and tombs that can be found all over the peninsula, as well as large monuments (Umm an-Nar tower buildings and Iron Age platforms and mudbrick buildings), and large Umm an-Nar multi-chambered collective burials. Several settlements show a degree of 'internal complexity', with demarcations of arrangement, indicating a varied architectural tradition. There is evidence for different types and sizes of structures such as dwellings, fortifications, workshops, tombs, agricultural installations, storehouses/rooms and, most importantly, the *falaj* system (see below). Several settlements are large in size, sometimes reaching up to 90 hectares, as was shown by the Wadi Andam Survey (see Chapter Four, Section Three, 4.3.3).

Tombs can also be good indicator of settled populations. Umm an-Nar tombs, for example, have been reported from different areas within the peninsula and they show similar construction, funerary items and burial customs. They contain between two and ten separate chambers, holding the skeletal remains of up to 438 individuals (Blau 2001: 560). The large number of buried people as well as the huge funerary architecture and amount of deposited material indicate a large population, who settled the area and used these tombs over a long period of time.

There is also strong evidence for full-time specialisation from the Umm an-Nar, Iron Age and Hellenistic–Parthian periods (e.g. a large number and good quality and variety of pottery types, metalwork and stone object production, as well as the considerable exploitation of iron during the Hellenistic–Parthian periods), as well as evidence for regional and overseas exchange and trade. Regional and overseas trade can be evidenced by the discovery of a large number of foreign materials and the recovery of a number of industrial places or workshops, indicating local copper, iron and softstone tool production for local use and export. The evidence for monetisation or coins in circulation that began in the Hellenistic period also supports this type of trade contact. There is also clear evidence for the practice of a multi-economy, varying between farming, herding, copper mining and smelting, fishing and the exploitation of marine resources. All this evidence suggests a settled, developed, specialised and socially structured and integrated society. This development in the local economic system and regional exchange network led to a remarkable increase in the population size as well as the number of settlement and tomb sites, as is already attested during the Umm an-Nar, Iron Age and Hellenistic–Parthian as well as the later Islamic periods. It is suggested that this population growth was in the form of concentrations, perhaps as villages or towns (Brunswig 1989: 38).

### 2.8.6.2- NOMADS: THE INVISIBLE CULTURE – CAN WE IDENTIFY ITS REMAINS?

A more difficult question for the archaeologist concerns the identification of ancient nomadic remains. This issue is not as simple as one would expect. Several scholars (e.g. Hole 1978, 1979; Gilbert 1983; Gorecki 1985; Rosen 1987a–b, 1988, 1992, 1993; Finkelstein 1984, 1988, 1989, 1990, 1992, 1995; Finkelstein & Pervelotsky 1990; Cribb 1991a–b; Rosen & Avni 1993; Avni 1996) have discussed the idea of 'nomads' and to what extent it is possible to identify their sites archaeologically. Since the investigation of 'nomadism' is not the main aim of this thesis, it is not necessary to look here at all the details of these issues, about which a great deal has been written (e.g. the origin of nomadism [e.g. Gilbert 1983: 105–119; Khazanov 1984: 85–118; Rosen 1988; Sadr 1991: 1–12; Cribb 1991a: 9–22] and the relationship between nomads and sedentary people [e.g. Nelson 1973; Salzman 1980a; Khazanov 1984; Cribb 1991a: 149, 156–161, 1991b: 372–373; Avni 1996: 75–76]). However, because nomadism as a topic is important in some

periods, I shall briefly highlight what is meant by 'nomadism' and to what extent it is possible to identify such sites archaeologically in the work that is presented here.

### 2.8.6.2.1- WHAT IS 'NOMADISM'?

There has been a long-running debate among scholars about the definition of 'nomadism'. Most attempted definitions have been made by anthropologists (e.g. Nelson 1973; Salzman 1980a; Khazanov 1984; Janzen 1986; Salzman & Galaty 1990; Carmichael 1991), with only a few proposed by archaeologists (e.g. Rosen 1988, 1992, 1993; Finkelstein 1989, 1990, 1992, 1995; Finkelstein & Pervelotsky 1990; Gamble & Boismier 1991; Cribb 1991a; Zarins 1992; Rosen & Avni 1993; Avni 1996). Khazanov (1984: 17), for example, defines pastoral nomadism as: 'a distinct form of food-producing economy in which extensive mobile pastoralism is the predominant activity and in which the majority of the population is drawn into periodic pastoral migrations'. However, Cribb (1991a: 16) believes that 'nomadic pastoralism' includes two independent aspects: nomadism and pastoralism. There are several duplicities within each of these aspects, such as 'nomadic/sedentary, agricultural/pastoral, the desert and the sown', which enable us to understand the relationship between the two aspects (*ibid*: 16). Therefore, a distinction is made by some scholars between 'actual nomads' and the other types of pastoralists using 'specialized pastoral production' (cf. Sadr 1991: 2–6).

Several scholars (e.g. Bates 1971: 112; Vincze 1980: 392; Ingold 1980: 24–25, 144–263; Khazanov 1984) refer to nomadic pastoralism as a 'mode of production', where nomads are defined as mobile groups who depend largely on their herds as their main subsistence and travel seasonally in search of pastures. However, Cribb (1991a: 17) believes that nomadic pastoralism is a 'mode of subsistence'. In other words, it means: 'some configuration of productive forces and relations permitting the exploitation of natural resources and reproduction of the social groups involved' (*ibid*: 17). Thus, nomadism embraces 'the regular migration of a community together with much of its productive base within a single ecological niche' (*ibid*: 20). To this point, it is claimed that neither hunter-gatherers nor mobile pastoralists/cultivators can be considered as nomadic as they have very little in common that allows them to be combined under a single term (Khazanov 1984: 15; Cribb 1991a: 20 & 22, 1991b: 372–373). That is to say that they differ in their

economy bases: food-extracting and food-producing, which makes their reasons for being mobile and the nature of mobility different (Khazanov 1984: 15). The first group is more mobile, but makes use of different resources and zones that include a mobile productive base, while the second group might well make use of a single zone without moving the productive base (Cribb 1991a: 20 & 22). Accordingly, Khazanov (1984: 15–16) describes hunter-gatherers who are not involved in a sedentary way of life with the term 'wandering' (likewise, semi-wandering, semi-sedentary, etc.), and mobile widespread pastoralists with the term 'nomadic'. He argues that defining pastoral nomadism as a specific type of food-producing economy must be made on the grounds of the totality of these economic characteristics, which vary from other types, forms and ranges of economic activity (*ibid*: 16).

### 2.8.6.2.2- CAN WE IDENTIFY THE REMAINS OF NOMADIC SITES?

Several scholars maintain that it is difficult for archaeologists to understand ancient nomads and to identify their site, due to the fact that nomads do not leave many, or any, material or architectural remains (e.g. Finkelstein 1990: 40–41, 1992: 87–88; Finkelstein and Perevolotsky 1990: 68). However, others have claimed that it is possible to identify some aspects of nomadism by employing systematic archaeological examinations (e.g., Rosen 1987b: 29–42, 1992: 75–85, 1993: 441–451; Rosen & Avni 1993: 189–190; Avni 1996: 13; Cribb 1991a: 65–83). Wilkinson TJ (2003: 173) argues that nomadic pastoralists can leave different traces of occupation, which can provide an understanding of a wide variety of 'functional, environmental, cultic, and ideational strategies'.

As has already been indicated in Chapter One, there are several stages in the preservation and loss of archaeological sites. Many nomadic sites have been subject to change and disappearance over time due to the nature of occupation (perishable architecture) and environmental conditions (e.g. aridity, lack of water and pasture, etc.), which makes them difficult to identify. Furthermore, it is argued that the lack of finds recovered from nomadic sites might be because their inhabitants did not use many ceramic objects due to the fact that they are heavy and fragile (see below), making them difficult to carry whilst travelling (Avni 1996: 46). They possibly made more extensive use of objects made of leather and basketry (Cribb 1991a: 65).

The difficulties related to archaeological remains of nomads have led some scholars to attempt to interpret the lack of physical traces of occupation and gaps in the archaeological record of a specific region as the result of nomadism (cf. Finkelstein 1989; Finkelstein and Pervolotzky 1990). Finkelstein (1992: 87) argues that the absence of material remains might be interpreted this way, rather than pointing to a 'human void'. It is often suggested that the unexpected emergence of a new culture in a specific region might be associated with the advent of a group of nomads who left no other evidence (Cribb 1991a: 66). Other possible interpretations for the lack of physical traces of occupation have also been suggested, including demographic decline and 'abandonment', and demographic increase, colonisation, and population invasion, (e.g. Baron 1981; Rosen 1987a, 1992). However, Avni (1996: 14) claims that if we are able to find the remains of short-lived settlements, then any lack of archaeological evidence can only be seen as reflection of a time of non-habitation rather than an increase in nomadism.

It is sometimes possible to identify ancient nomadic sites and their cultural material; particularly those that do not disappear over time (cf. Gorecki 1985: 187–188). This can, for instance, be done by comparing the evidence from intensive archaeological fieldwork with the ethnographic data derived from more recent nomadic populations (cf. Hole 1978, 1979; Cribb 1991a: 4–6; Rosen 1992: 79–80; Avni 1996: 14). Such comparisons can provide a basic understanding of short-lived sites and other aspects of nomadic occupation (Avni 1996: 18). It is argued that modern Bedouin groups can leave, and have left, many traces, some of which can be preserved archaeologically (Rosen 1992: 79). Such sites include remains of tent outlines, stone arrangements, traces of fires, ashes, dung and scatters of artefacts such as pottery. This can allow some archaeological remains to be interpreted as encampments and other temporary sites, which can be used as an index for and increase in the nomadic population during specific periods (Rosen 1992: 79; Avni 1996: 14). Several of these ancient campsites can sometimes be identified by irregular rows of stones that were possibly foundations, platforms or floors etc., related to perishable architecture (e.g. tents).

Ekvall (1961: 1258–1259) argues that there are two factors that control mobility and play a significant role in the nomad's subsistence technique and way of life. The first is their ability to collect and pack all essential equipment in a short time, leaving behind only

unnecessary items. The second is the ability to move with maximum speed. Although portable tents are made of perishable cloth and poles, they are frequently associated with more substantial features and fixtures. Examples of these include 'raised or levelled floors, mud or stone-lined hearths, stone storage platforms, alcoves, tent foundations and sometimes substantial walls' (Cribb 1991a: 66).

Cribb (*ibid*: 68) argues that there are three main dimensions of nomadic material culture. The first is related to the 'degree to which items of material culture exist permanently on a site – whether occupied or unoccupied – or are circulated from one site to the next'. In this respect, two items can be distinguished according to their function, size and weight: '*fixtures* and *portables*'. The second dimension varies between '*durable* and *perishable*' items, according to their decay and disappearance over time. Perishable items are more likely to be frequently changed rather than circulated; however, they are less likely to be visible in the archaeological record. The last dimension relates to the value of items based on the difficulty or cost of obtaining or replacing them. Here, two types of item can be differentiated '*valuables* and *expendables*'. The first are more likely to be preserved in context and carried from site to site, while the second are more likely to be left on the site and, if durable, preserved in context.

The location of any item in terms of these three dimensions will reveal both its role in the organisation of material culture and its likelihood of surviving within the archaeological context (*ibid*: 68–69). This is to say that portable, perishable and valuable items (e.g. carpets) represent common nomad material culture and are more likely to be archaeologically invisible. By contrast, fixtures (e.g. stone hearths) are durable and expendable and have very low value, and thus, they are more likely to be 'site-specific' and have higher visibility (*ibid*: 69). Wilkinson TJ (2003: 173) provides an example of this in the *shawawi* sheep herders in Oman who live under any convenient tree, with the result that traces of their occupation can be imperceptible. He goes on to suggest that camps related to the same nomadic groups can, however, leave traces depending on the different geological and surface conditions where the camp is situated and the time of occupation. He provides a good hypothetical example by stating that 'for a hypothetical migration path through the sedimentary desert of sand and silt plains, stone tent foundations and architectural features will be minimal; in rocky areas, structures will be

visible and often semi-constructed; in the marginal zone of the semi-desert edge, periodic sedentary settlement and agriculture may mask or remove the remains of pastoral nomadic camps; in the sub-humid areas of the rain-fed zone, pastoral nomadic camps will be virtually invisible because of the high background noise left by sedentary communities, especially where nomads camp on tells' (*ibid*: 173).

In the light of these dimensions, ceramics can play a significant role in our understanding of nomadic material culture (Cribb 1991a: 76). It is suggested that two types of ceramics are likely to exist on nomadic sites (*ibid*: 76). The first are small, portable and, mostly valuable, items (e.g. teapots, cups, jars or clay pipes) that will be moved from one campsite to the other. These items will only infrequently enter the archaeological record once they are broken or lost. The second type of ceramics is represented by large items (e.g. cooking pots, storage jars or bowls) that are likely to remain as fixtures on sites with a higher degree of breakage or desertion and therefore incorporation into the archaeological record. In order to be able to differentiate between nomadic and sedentary sites based on pottery scatters, Cribb (*ibid*: 76) suggests that the use of pottery by nomads is perhaps not as intensive as for settled sites, and the vessel types and sizes are, most probably, narrower than for sedentary sites sharing the same cultural complex.

It is not only the lack of material remains that is behind our limited knowledge of nomadic sites, but the fact that these sites also have a much wider distribution and very low density over the landscape (*ibid*: 133 & 1991b: 383–384). Wilkinson TJ (2003: 173) argues that there seems to be some level of flexibility in the location of Arabian pastoral nomadic campsites. They can be found in different locations: close to water sources and pasture; on mud flats and basalt plateaus; or in unnoticeable locations in side valleys. It is argued that this variation in location might play a significant part in the broader distribution and dispersal of archaeological features over a large area (*ibid*: 173). These different factors play a vital role in the location of nomadic campsites, which, when linked to a specific area, might help in finding signs of ancient campsites by surface surveys (cf. Cribb 1991a: 133–139).

### 2.8.6.2.3- REMAINS OF NOMADIC SITES FROM THE OMAN PENINSULA:

The evidence from the Wadi Andam survey (Chapter Four) and from the whole Oman Peninsula (Chapters Five & Six) shows that there are possible periods of growth, decline and abandonment in the settlement pattern. The lack of archaeological evidence for a specific period, compared to the evidence from previous or later periods, might be interpreted as an indication of a diminishing of the population size, accompanied by a decline in the number of settlements, tombs and other recoverable remains (cf. Finkelstein 1992: 88; Kennet 2007). This can be clearly seen when a site has yielded a large number of archaeological finds for a specific period and none or a very limited number for the following period. However, it is not always possible to understand the reasons for such a change.

The evidence suggests that nomadic sites might be attested by the lack or low amount of recovered finds as well as the nature, size, density and distribution of occupational remains and tombs. Based on this approach, the archaeological evidence suggests that there may have been nomadic populations during the Hafit, Wadi Suq and Sasanian–Early Islamic periods. The evidence from these periods indicates very low numbers of settlements and a marked change in settlement patterns, funerary customs and pottery types. There are very few pottery surface scatters, with a very few sites yielding very simple structural remains or archaeological layers (e.g. Hili 8 [Hafit period]; Tawi Said, Hil 8, Hili 3 and Ras al-Jinz RJ-1 [Wadi Suq period]; and ed-Dur, Jazirat Siniyah, Mleiha and 'Arja [Sasanian–Early Islamic]). This evidence might be best explained by seasonal campsites that were established by nomadic or semi-nomadic populations, perhaps shifting between the coast and the interior. These sites seem to be small, dispersed discrete settlements with perhaps perishable structures, which are subject to disappearance over time due to continuous alluvium and erosion. A nomadic way of life is also suggested by the low amount of pottery and the fact that it comes mostly from tombs, as well as the re-use of occupational remains and tombs from earlier periods.

It has been shown that the Hafit period shows signs of high levels of activity in the form of numerous tombs but also shows very limited occupational or settlement activity. Together this evidence might be used to suggest a nomadic population.

Very little pottery, much of it imported from Mesopotamia, was recovered from this period. In spite of the lack of occupational remains, there is some sort of occupation activity and continuity during this time, as is shown by the evidence from the Hili 8 settlement and the Ras al-Jinz area (see Chapter Seven, 7.1.2.4).

Hafit cairns recovered during the Wadi Andam Survey are clustered as massive tomb fields that spread across the region in areas from where there is really no evidence at all in later periods, indicating a very significant change in occupation as well as burial patterns between the Hafit and the Umm an-Nar periods. Thus, this evidence might be indicative of a nomadic or semi-nomadic way of life at this time.

As is the case with the Hafit period, the Wadi Suq period shows signs of activity in the large number and variety of tombs, but also evidence for a decline in the number of settlements. This might also be interpreted as evidence for a possible nomadic or semi-nomadic population. The only difference is that the Wadi Suq settlements and tombs are found in areas that also yielded evidence for other periods, which is not true of the Hafit period. This might be indicative of different sorts of nomadism – this is an area that needs to be further investigated through the collection of carefully targeted survey and excavation data.

Apart from few settlements in the north with large structural remains (e.g. Tell Abraq, Kalba 4, Shimal) and both overground and subterranean tombs, suggesting a possible settled or semi-settled population, there is very little evidence of occupation (e.g. Tawi Said, Hili 8 (Period III), Hili 3) and a large number of smaller subterranean tombs, suggesting, again, perhaps a nomadic or semi-nomadic population. The evidence also indicates that there were changes in both the quantity and quality of pottery, with less decorated pottery and fewer types, and this is probably associated with changes in production and distribution systems (cf. Mēry 2000).

The construction of single subterranean tombs that are spread in isolated positions across the countryside might also indicate a nomadic population who perhaps were travelling around in search of pasture for their animals. Many of these tombs are grouped into

cemeteries close to older settlements but are not associated with any evidence for contemporary occupation, which might also be taken to indicate a nomadic or semi-nomadic population who, for one reason or another, were returning to these sites to bury their dead and perhaps living in some type of perishable structures.

To sum up, the vast majority of Wadi Suq sites are of small size, indicating a relatively low population and level of social organisation (Carter 1997b: 94–95). Additionally, the number of larger sites from this time is small, suggesting perhaps a decline in settlement and population and/or economy (*ibid*: 96–97).

Unlike the Iron Age and Hellenistic–Parthian periods where the evidence indicates a large growth in the level of activity, pointing toward a settled way of life, little is known about the Sasanian–Early Islamic periods. Despite a large amount of fieldwork, Sasanian–Early Islamic sites are absent not only from the Wadi Andam area but also from the whole Oman Peninsula. Thus, it is argued that the Sasanian–Early Islamic period evidence shows a remarkable decline in population size and activity compared with the Hellenistic–Parthian period, which yielded a great deal of evidence of flourishing sites (Kennet 2007).

**2.8.6.3- SUMMARY:**

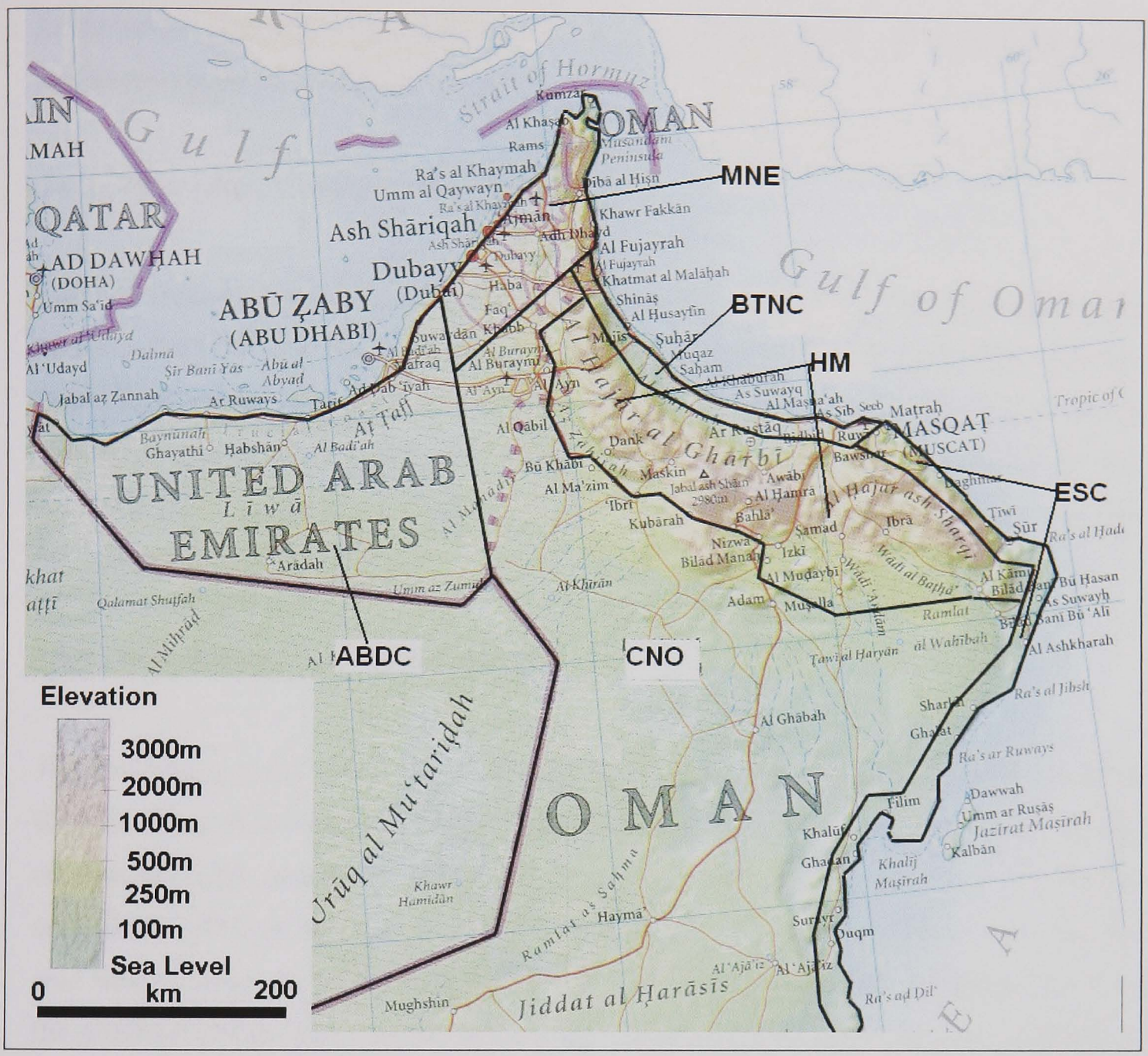
As has already been seen in the discussion above, a large amount has been written about nomadism and sedentarisation, much of it by anthropologists. However, several questions related to this issue are still unclear and require more work. There is still no clear or definite answer to the question of the identification of nomadism and nomadic sites archaeologically. There appears to be disagreement among scholars in the definition of nomadism, as well as in the ability of archaeologists to find the remains of ancient nomads.

The question of nomadism in the Oman Peninsula has not been dealt with in great detail here. Based with the data at hand, it is not possible to reconstruct a full picture of nomadism in the peninsula. In order to be able to clarify some of the ambiguity regarding nomads and their sites, it is important for future work to develop methodologies and techniques that enable examination of these sites. Theories must be proposed and tested.

In the course of the Wadi Andam Survey it was difficult to identify with certainty, nomadic sites within the surveyed area, which prevents a proper understanding of nomadism and its different implications in this area. However, it has been possible, using the methodology developed here, to come much closer to identifying a nomadic component in certain periods than previous surveys have been able to do. It is hoped that systematic excavations on some of the sites that might be nomadic campsites might add more to our understanding of nomads and their relationship with sedentary populations and the surrounding environment.

## 2.9- SITES' DATABASE DEFINED SUB-REGIONS (Map 8):

After setting out the general environmental and geographical background of the whole northern Oman Peninsula, the following brief description includes those six sub-regions defined for the purpose of the sites' database analysis (see Chapter Six). This definition is to facilitate making comparisons and to allow giving possible interpretations for any available evidence. It should be kept in mind that this definition is not intended to be a standard for future studies. These sub-regional distinctions have been made on the basis of attempting to create workable sub-divisions with some degree of similarity of landscape and environment, even though there is considerable variation within each area. The following presentation includes a description of the geographical extent of each defined sub-region, starting from the far northernmost sub-region, namely the Musandam and Northern Emirates. The geological characteristics of these sub-regions are presented in the geological section above.




**Map 8 The topography of the six defined regions within the northern Oman Peninsula (Modified after: Dorling Kindersley World Atlas 1997: 147)**

## 2.9.1- MUSANDAM AND THE NORTHERN EMIRATES (MNE):

This sub-region covers the northern part of the peninsula from the Straits of Hormuz in the far north to Dubai in the north–west along the Arabian Gulf and Fujairah in the north–east along the Gulf of Oman. It covers two main areas (1) Musandam which includes the Musandam Peninsula and the Strait of Hormuz, and which consists of mountains in the southern part which overlook the Gulf of Oman to the east and the Arabian Gulf to the west; and (2) the Northern Emirates which cover an area extending from Ra's al-Khaimah

in the north to Dubai in the north–west along the Arabian Gulf, and from Daba in the north–east down to the border of Fujairah.

### 2.9.2- THE ABU-DHABI COAST (ABDC):

This sub-region covers the area which extends from Dubai in the north–east to the border between the UAE and Qatar in the north–west along the Arabian Gulf. It also covers the inland areas to the south close to the border with Saudi Arabia. The southern limits of this sub-region and its border with Saudi Arabia extend from the Umm az Zumul desert and the Liwa Oasis in the south–east to the Sabkhat Matti in the south–west. This coast also includes a group of islands.

### 2.9.3- THE HAJAR MOUNTAINS (HM):

This sub-region is the backbone of the peninsula and covers an area that extends from the Buraimi Oasis in the north down to the al-Mudhaybi area in the south. It includes a large mountainous area crossed by wadis and gravel plains that have formed the base for human settlements. This sub-region covers three main areas (1) the Eastern Hajar, covering the area which extends from the southern foothills of Jebel Akhdar to the al-Mudhaybi area in the southeast of the peninsula, which consists of a mountainous area with wadis and gravel plains; (2) the whole of Jebel Akhdar and its surrounding area (known as al-Jauf), which extends from the foothills down to the fringes of the gravel plains and includes major wadi villages such as Bahla, Nizwa and Izki; and (3) the Western Hajar that covers an area which extends from Buraimi in the north to the northern foothills of the Jebel Akhdar, and includes a mountainous area that is crossed by wadis and gravel or semi-sandy plains.

### 2.9.4- THE BATINAH COAST (BTNC):

This long coastal strip covers the area that extends from Fujairah in the north down to As-Seeb in Muscat along the Gulf of Oman. This sub-region also includes parts of the inland area between the Eastern Hajar Mountains and the coast. It is characterised by a long coastal strip, agricultural land, and a high population.

### 2.9.5- THE EASTERN COAST (ESC):

This sub-region covers the area which extends from Muscat in the north–east along the Gulf of Oman to Sawqirah in the south–west along the Arabian Sea. The northern part of this coast covers an area extending from Muscat to the fishing port of Qurayat along the Gulf of Oman, while its southern part covers the area that extends from Sur to Sawqirah along the Arabian Sea. The latter part includes a vast gravel plain and wadis, particularly the area around Ja'alan.

### 2.9.6- CENTRAL OMAN (CNO):

This sub-region covers a large area that includes gravel fans and vast deserts which are located mainly within the central part of the peninsula. The gravel fans cover an area extending from southern Buraimi in the northeast to the border of the Wahiba Sands at the south–eastern corner of the peninsula. This sub-region also covers the Wahiba Sands in the east of the peninsula close to the costal strip of the Arabian Sea, and the Empty Quarter (the Rub' al-Khali) that covers a vast harsh desert along the border of Saudi Arabia.

# CHAPTER THREE:

# DEFINITION OF CHRONOLOGICAL PERIODS

# CHAPTER THREE: DEFINITION OF CHRONOLOGICAL PERIODS

This chapter presents the chronology of the Oman Peninsula and the periodization normally used in the literature (Tables 6–7). It will review briefly the evidence that forms the basis of the chronology. A presentation of the chronology and terminology adopted within this thesis will be made at the end of the discussion of each period, indicating why the specific chronology has been chosen. It is important to point out here that the chronology presented in this thesis (Tables 6–7) is set out only to serve as a broad chronology for the purpose of discussion and material interpretation.

| Period | Dating |
|---|---|
| Hafit | 3,500/3,400–2,500 BC |
| Umm an-Nar | 2,500–2,000 BC |
| Wadi Suq | 2,000–1,300 BC |
| Early Iron Age | 1,300–300 BC |
| Late Iron Age/Samad | 300 BC– 100/200 AD |
| Sasanian–Early Islamic | 100/200–900/1,000 AD |
| Middle Islamic | 900/1,000–1,300 AD |
| Late Islamic | 1,300–1,800 AD |
| Recent | 1,800 AD onwards |

**Table 6 Proposed chronology for the Oman Peninsula adopted for the evidence from the Wadi Andam Survey (Chapter Four)**

| Period | Dating | Sub-periods | Dating |
|---|---|---|---|
| Stone Age | Earlier than 7,000 to 3,500/3,400 BC | Early Stone Age | Earlier than 7,000 BC |
| | | Late Stone Age | ca. 7,000–3,500/3,400 BC |
| Hafit | 3,500/3,400–2,500 BC | — | — |
| Umm an-Nar | 2,500–2,000 BC | — | — |
| Wadi Suq | 2,000–1,300 BC | — | — |
| Iron Age | 1,300–300 BC | Early Iron Age | 1,300–600 BC |
| | | Late Iron Age | 600–300 BC |
| Hellenistic–Parthian | 300 BC– 100/200 AD | — | — |
| Sasanian–Early Islamic | 100/200–900/1,000 AD | — | — |
| Islamic | 1,000 AD onwards | Middle Islamic | 900/1,000–1,300 AD |
| | | Late Islamic–Recent | 1,300 AD onwards |

**Table 7 Proposed chronology for the Oman Peninsula adopted in the discussion of the levels of activity in Chapters Five and Six**

## 3.1- STONE AGE:

The Stone Age covers the whole Post–Pleistocene to the Bronze Age, and its start cannot be precisely established (Uerpmann 1989 & 1992). The term 'aceramic' was used to indicate the Late Stone Age sites in the Oman Peninsula (cf. Durante & Tosi 1977; Pullar & Jäckli 1978; Pullar 1985). However, Uerpmann (1992: 67) argued that this term should be avoided due to the fact that 'Ubaid pottery has been found in some coastal sites and their contexts dated to the Late Stone Age. Sites from the Early Stone Age are very few[8] while for the Late Stone Age, several sites have been recorded in different parts of the peninsula (see below). However, it is difficult to interpret the evidence from these sites due to the lack of other remains and excavations at stratified Stone Age sites in the peninsula (*ibid*: 66).

Fieldwork carried out by the Joint Hadd Project along the eastern coast of Oman between Muscat in the north, and Shuwayr in the south yielded evidence of human occupation during the period from the Neolithic to the Early Bronze Age periods (from the 6$^{th}$ to the end of the 3$^{rd}$ millennium BC) as represented by several aceramic shell-middens. Biagi (1988b: Table 1: p. 286-290; 1994a, Table 4: p. 23) published several radiocarbon dates from some of these shell-middens, indicating that they were probably occupied during the middle of the 5$^{th}$ millennium BC and that their number increased around 4000 BC. At Ra's al-Hadd and Ra's al-Jinz, the project yielded a group of surface shell/lithic scatters[9] that were tentatively assigned to the Late Stone Age based on typological comparisons of artefacts (Charpentier 1986/7; Usai 2000).

The first excavated stratified sites from the Stone Age are those in the Ra's al-Hamra–Qurum area in Muscat. Excavations at the shell-midden of Ras al-Hamra RH5 yielded a graveyard and settlement with six different stratified layers (Layers 0 to 6) corresponding to seven settlement phases, spanning the period from the last quarter of the 5$^{th}$ and a larger part of the 4$^{th}$ millennium BC (ca. 4,100–3,300 BC) (Maggi et al. 1985; Santini 1987; Gaggi & Gebel 1990; Biagi 1994a; Biagi & Nisbet 1992; Salvatori 1996 & Usai 2005). Moreover, the shell-midden of RH6 revealed a very detailed occupational sequence dated from the mid–5$^{th}$ to the early 4$^{th}$ millennium BC (Maggi

[8] They include those possibly dated to the Early Palaeolithic recovered in 1973 in north–central Oman: Awaify, Fahud and Natih (Field 1955; Pullar 1974), Saiwan, Bustan, Ghubara and Wadi al Umayri (Villiers–Petocz 1989; Biagi 1994b), Jebel Huwaya at the Buraimi Area (Copeland & Bergne 1976), Wadi Bahla (BB 17 and BB 18) (Pullar 1974).

[9] These include, for example, HD96, HD97, RJ–2, RJ–16, RJ–32, RJ61, RJ65, and RJ84.

1990; Biagi & Nisbet 1992; Biagi 1994a: 21 & 1999). Excavations at RH10 also allowed the distinction of three main periods of occupation spanning the period from the late 7th to the 2nd millennium BC (Santini 1987). Dating these sites was based on typological comparisons of lithics, 'Ubaid pottery from RH5 and on a series of radiocarbon determinations from different samples of charcoal, carbonized seeds, ashy sediments, shells and fish bones (Biagi 1994a: 18–19, Table 1)[10]. Other $C^{14}$ dates were obtained from other sites in the Ra's al-Hamra such as RH3 (4th millennium BC), RH4 (5,000–3,000 BC) and RH7 (late7th to 6th millennium BC) (Biagi et al. 1984: 57, Table 1; IsMEO 1983: 336, Table 2; Biagi 1994a: 19, Table 2).

Sites excavated by the Joint Hadd Project at Ras al-Hadd and al-Jinz included the settlement sites at RJ–1 dated from the 4th to the 2nd millennium BC and HD–5 dated to the 5th and 3rd millennium BC (Cleuziou & Tosi 1996). Dating these sites was based on typological comparisons of artefacts, mainly lithics. Recent excavations by this project at the flint artefacts scatter of Ash Shāb 1 (GAS1) yielded some relatively well-preserved settlement structures, a cemetery and assemblage dated to the end of the 5th to the early 4th millennium BC (Tosi & Usai 2003; Gaultier et al. 2005; Usai 2006). This dating was based on typological comparisons of artefacts, mainly lithics, and on a single $C^{14}$ date of a charcoal sample from Grave 4 (GX–17881: 5,127 ± 80 BP; 2 sigma: 4,250–3,700 cal. BC) (Usai 2006: 275). However, another charcoal sample from a safe archaeological context suggests that the site's occupation continued until about 3,650 BC (Beta–201729: 4,860 ± 70 BP; 2 sigma: 3,800–3,500 cal. BC) (*ibid*: 275). The earliest dated sites by this project in the area of Ja'alān are those excavated at Suwayh–1 and Suwayh–11 (Charpentier 1998; Méry & Charpentier 2002), which yielded dwelling structures with remains of light architectural structures, indicating the earliest structures known so far in the Oman Peninsula (6th to 5th millennia BC). Suwayh–2 also yielded round structures outlined by postholes and dated to the second half of the 4th millennium BC. These structures were compared to similar ones from RH 5 dated to the 4th millennium BC and from Dalma dated to the 5th millennium BC. Dating these sites was also based on typological comparisons of artefacts, mainly lithics, as well as the recovery of Indus pottery sherds from Suwayh SWY–3 sites (Méry & Charpentier 2002: 193).

[10] For other $C^{14}$ dates see Gnoli 1981; Biagi et al. 1984: 57, table 1; Maggi 1984; Biagi 1987; Isetti & Biagi 1989: 6, Table 1; Biagi & Nisbet 1992: 574, Table 1; and IsMEO 1983: 336, Table 2.

In the UAE, surveys in Sharjah (al-Qassimiya and Hamriyah), Ajman (al-Zuhra area) and Umm al-Qaiwain (Site 69) yielded sites with evidence of painted 'Ubaid-sherds and flints of late 5th and 4th millennium BC sites (Boucharlat et al. 1984; Millet 1991; Haerinck 1991 & 1994; Jasim 1996; Spoor 1997). Dating these sites was based on the presence of the 'Ubaid-type pottery, lithic artefact comparisons and radiocarbon dates. Another important Late Stone Age site from Sharjah is al-Buhais 18 which yielded burial grounds and settlement features dated by $C^{14}$ determinations to the 5th millennium BC and flint artefacts of the so-called 'Arabian Bifacial Tradition (ABT)' (5,200–4,000 BC) (Uerpmann, Uerpmann & Jasim 2000; Kiesewetter, Uerpmann & Jasim 2000; De Beauclair, Jasim & Uerpmann 2006). Ten $C^{14}$ determinations were obtained based on ashes and charcoal from several pits and around the graveyard, and the dates are clustering around 4,700 cal. BC and ranging from about 4,300 to 5,100 cal. BC (Uerpmann, Uerpmann & Jasim 2000: 230)[11]. Other 5th millennium BC painted 'Ubaid pottery sherds, together with lithic artefacts, have been recovered from Jazirat al-Hamra in Ra's al-Khaimah (Sites 1, 4, 38, 40, 43, 45, 55, 56) (Jasim 1996: 9) and possibly from Akab Island in Umm al-Qaiwain (UAE) (Jousse et al. 2002).

The Abu-Dhabi Islands Archaeological Survey (ADIAS) recovered a group of important Late Stone Age sites such as Rumaitha (Kallweit & Hellyer 2003), Abu-Dhabi Airport sites (Kallweit 2004), Dalma Island (Flavin & Shepherd 1994; Beech, Elders & Shepherd 2000; Beech & Glover 2005), Marawah Island (Charpentier 2004; Beech et al. 2005) and Kharimat Khor al-Manāhil (Kallweit, Beech & al-Tikriti 2005; Beech et al. 2006). Several of these sites yielded lithic artefacts attributed to the so-called ABT. At Dalma, excavations at DA11 site yielded evidence for the 'Ubaid period represented in a settlement with structures and middens. Two radiocarbon dates from carbonized date-stones were analysed, which, together with the 'Ubaid pottery and flint artefacts, allowed dating the site from the late 6th to the early 5th millennium BC (Beech & Glover 2005). Excavations at the Marawah Neolithic sites yielded different microliths and lithic industries dated from the 6th to the 5th millennium BC; a date which was supported by $C^{14}$ calibrated dates and the recovery of painted 'Ubaid

[11] It is also important to indicate that it was impossible to obtain dating based on the human skeletal remains due to the inadequate preservation of the bone collagen. Moreover, structural carbonate from the bone mineral of two individuals yielded dates of 5,630 ± 60 and 5,824 ± 40 BP (GrA–17400 and GrA–26140), corresponding to calibrated ages of 4,519–4,366 BC (at 1 sigma) or 4,592–4,345 BC (at 2 sigma); and 4,771–4,617 BC (at 1 sigma) or 4,781–4,551 BC (at 2 sigma). Besides these, a sample of perforated *Polinices* shells from the graveyard yielded a result of 6,434 ± 32 BP (HD-21072), corresponding to c.4,550 BC if an additional reservoir effect of ΔR=400 years is applied (De Beauclair, Jasim & Uerpmann 2006: 175).

pottery sherds (cf. King 1998; Charpentier 2004; Beech et al. 2005). Recently, work carried out by the Abu-Dhabi Culture and Heritage Authority (ADCHA)[12] in the area of Khor al-Manahil (KAM) and Kharimat Khor al-Manahil (KHM) north of Umm az-Zamul in the South–Eastern desert of Abu-Dhabi has revealed Neolithic settlement sites. Dating these sites was based on the recovered lithic tools which belong to the so-called ABT and on using the Optical Stimulated Luminescence (OSL) technique on quartz grains within the sediment (cf. Kallweit, Beech & al-Tikriti 2005; Beech et al. 2006).

In an attempt to structure the evidence from the Stone Age of the Oman Peninsula, M. Uerpmann (1992) defined a number of facies for the Late Stone Age based on recovered groups of chipped stone artefacts as well as radiocarbon dates and observations on economy and ecology from sites located along the coast of Oman. In summary, she argued that there is evidence of human occupation in the region during the early Holocene. However, there is insufficient material for the first quarter of this era. By contrast, the second quarter of the Holocene witnessed occupation by a coastal population on the Gulf of Oman with a chipped stone industry (Wadi–Wutayyah–Facies) contemporary with the so-called Qatar B blade–arrowhead group in the interior of the Oman Peninsula. This facies was replaced during the early 5$^{th}$ millennium BC by another group of facies called the Saruq–Facies which can be seen as a local alternative of the ABT. It is argued that the Late Stone Age coastal settlement reached its peak early in the 4$^{th}$ millennium BC from which different local facies have been found (e.g. Ra's al-Hamra–Facies around Muscat and the Bir–Bira–Facies in the area around Sur). The final phase of the Late Stone Age is represented by the so-called 'Bandar–Jissa–Facies' which is characterised by aceramic occupation on the coast of the Gulf of Oman and by the use of a simple stone tool industry alongside metal artefacts. This facies corresponds with the Early Bronze Age occupation of the Oman interior along the southern and south–western edges of the Hajar Mountains.

In 1993, Potts introduced a periodization for prehistory of the Eastern Arabia in which three periods are related to the Stone Age: Late Prehistoric A (ca. 5,000–4,500 BC), Late Prehistoric B (ca. 4,500–3,800 BC) and Late Prehistoric C (ca. 3,800–2,800 BC)[13] (Potts 1993d: 172–179; fig.1: 169). Sites which belong to the first period are those

[12] This project is formulated as a joint team from the Abu Dhabi Islands Archaeological Survey (ADIAS) and the Department of Antiquities and Tourism in Al–Ain.
[13] The Stone Age includes only part of this period, lasting until around 3,400 BC.

attributed to the Qatar B group and the Wadi Wutayyah facies. The second period is represented by a large number of sites classified as part of the so-called ABT from the coast and the interior. The third period is represented by the Ras al-Hamra–Facies (early 4th millennium BC), the contemporary Bir Bir'a–Facies and the Bandar Jissa–Facies.

Apart from this periodization set by Potts, no other chronological periodization has been introduced for the Stone Age in the Oman Peninsula. Uerpmann (1992) only defined a series of lithic industries (facies) which are more or less workable for the evidence from the eastern coast of Oman. The periodization set out by Potts covers the whole of Eastern Arabia in order to combine the evidence from different sites. It must also be stressed that many of the published sites do not present enough evidence to allocate them to any period of those set out by Potts. Moreover, no evidence for the Stone Age occupation was gathered from the Wadi Andam Survey. Therefore, it was preferred in this thesis to use the general and widely-used term 'Stone Age' to present the evidence for this period of the Oman Peninsula. This term covers a broader timespan. Thus, it was divided into two sub-periods: the Early Stone Age (earlier than 7,000 BC) and the Late Stone Age (ca. 7,000–3,500/3,400 BC).

Several characteristics have been taken into consideration when making this distinction between the Early and Late Stone Age. The distinction is mainly based on the technological and typological differences of tools such as their shape and method of manufacture as well as the order of succession of stone industries. Dissimilarities between the Early and Late Stone Age assemblages are significant in terms of worked materials, particularly the different techniques of stone tool manufacturing. The Early Stone Age is characterised by flake-based technologies over blade bearing industries. In contrast, the Late Stone Age is largely characterized by chipped stone industries, particularly primary flake production, microliths and the Arabian Bifacial Tradition recovered from many sites. Different groups of chipped stone artefacts can be distinguished during this time such as the Wadi Wutayya–Facies/Qatar B blade–arrowhead group; Saruq–Facies/ Arabian Bifacial Tradition; Ra's al-Hamra–Facies and Bir–Bira–Facies; and Bandar–Jissa–Facies (see above and Uerpmann 1992; Potts 1993d: 170–180). Moreover, the Late Stone Age is also characterised by the marine shell industry that largely consists of three types of objects: vessels, fish-hooks at different stages of manufacture and beads. In addition, there was the bone industry that

consists of two major types of objects: points and more fish-hooks (Biagi 1999: 63–66).

There is also the fact that, so far, more sites have been identified from the Late Stone Age than the Early Stone Age (see Chapter Six). This is due to (see above) the fact that the early stages of the Stone Age are not easy to detect, and few finds have been discovered from these early stages. The evidence above demonstrates that more data has been found during several excavations of stratified sites (e.g. Ras al-Hamra, Ras al-Jinz/Ras al-Hadd; al-Buhais, etc.) which has furthered our knowledge of the chronology, economy and geography of the Late Stone Age inhabitants. By contrast, no stratified site has so far been recovered for the period earlier than the Late Stone Age. The majority of sites dated to this time are in the form of lithic scatters, suggesting hunting and food gathering communities, but there is no evidence of tombs or pottery. In contrast, the Late Stone Age is represented by different types of evidence such as shell-middens, artefact scatters (e.g. pottery, stone, bones), simple structures, postholes, fireplaces and tombs. The evidence also included human skeletal, faunal and floral remains, as well as stone, shell and bone tools for fishing and hunting. The presence of imported Mesopotamian ('Ubaid) pottery indicates overseas trade contacts (see sites indicated above).

For these reasons, and the fact that there is almost complete agreement among scholars in defining and dating the Late Stone Age (ca. 7000/6000–3500–3400 BC), I intend in this thesis to group any evidence that does not belong to this timespan under the term Early Stone Age (earlier than 7000 BC).

## 3.2- HAFIT PERIOD:

The term 'Hafit Period' was adopted by a group of archaeologists working in the archaeology of the Oman Peninsula in their meeting held on 14$^{th}$ June 1981 at Tübingen. It refers to the period between the late 4$^{th}$ and early 3$^{rd}$ millennium BC (Potts 1990a: 73, note: 66; Parker et al. 2006: 473). The period is characterised by a large number of burial cairns that have been located all over the Peninsula, mainly in the mountainous areas (see also Chapter Seven 7.1.2). The first evidence for this period was brought to light by the excavations carried out by the Danish Expedition in some burial cairns at Jebel Hafit in the Buraimi area (Frifelt 1970: 355–383, 1975a–b).

Frifelt (1970) dated the tombs to the late 4th/early 3rd millennium BC based on the recovery of Mesopotamian pottery of Jamdet Nasr and Early Dynastic I-type (ED I) within these burials. These include small biconical, carinated, rounded and globular polychrome vessels with an everted rim and painted plum-red, orange or buff sand-tempered micaceous ware. They include shoulder panels of black or dark-brown vertical bands alternating with cross-hatching, vertical lines and diamond patterns on a cream background. There are also unpainted small vessels with a very fine greenish or cream body (Frifelt 1970, 1975a–b; 1979b: 51–57; 1980a). This date has generally been accepted by scholars (Cleuziou 2002: 196).

Later, more cairns were excavated by other teams and their dates as well as cultural evolution have been widely discussed (Table 8). During–Caspers (1970 & 1971) reviewed and published similar pottery recovered by two amateur archaeologists from the Buraimi area. She argued that it resembled a type of pottery found in southern Mesopotamia during the Jamdat Nasr period and ED I times (Protoliterate c–d). Later, M. Tosi (1976: 81–92) attempted to lower the date of the Jamdat Nasr tombs in the Oman Peninsula by proposing a dating between 2,800 and 2,600 BC based on biconical jars found in phases 8 and 7 at Shahr i-Sokhta in Seistan. This dating suggested by Tosi was rejected by the majority of scholars as they regard the limited amount of existing material and the non-stratified context in which it was found as being insufficient for arriving at an arguable dating (al-Tikriti 1981: 81–83; Cleuziou 1984: 372).

It is also accepted that the single-chambered Beehive tombs were used during the early 3rd millennium BC (Potts 1990a: 77). Their first discovery was at Bat by the Danish Expedition to Oman (Frifelt 1975a: 57–80; 1975b: 359–421; 1976c: 57–73) which provided evidence for the early 3rd millennium BC based on the typical Jamdat Nasr finds in Mesopotamia. These finds include one sherd, one fine black-on-buff jar with everted rim, and one biconical serpentine bead from two tombs (Frifelt 1975a: 69). This led Frifelt to propose that Beehive tombs are a possible link or transitional type between the 'Jamdat Nasr/Jebel Hafit' cairn burials and the Umm an-Nar collective tombs. In addition to the pottery discovered, opinions on the site's development were based on the tomb's architecture between 'Jebel Hafit' cairns and the Beehive tombs. Frifelt (*ibid*: 57–80) argued that the Beehive tombs involve an architectural transition in which their burial chamber is wider than that of the 'Jamdet Nasr' tombs.

Additionally, their burial chamber shows a similar characteristic to the burial chamber in the Umm an-Nar tombs in that it is divided into two rooms by an inner wall and a similar outer plinth around the tomb (*ibid*: 76). She also argued that pottery assemblages from the Beehive tombs might represent wares of both the 'Jamdet Nasr' and the Umm an-Nar periods (*ibid*: 69).

This transitional development has been accepted by several scholars. Al-Tikriti (1981: 81) and Cleuziou (1982: 17–18, 1984: 377) argue that it is possible that there was a local development from the Jamdat Nasr/Hafit to the Umm an-Nar burials. Their argument is based on their occurrence in the same locality around Hili. They indicate that similar tombs are located on the Jebel Huqlah in which the number and shapes suggest the presence of more than one period (al-Tikriti 1981: 81). They might also include the cemetery of Hili 8 settlement during the early 3rd millennium BC (Cleuziou 1984: 377). By contrast, Potts (1986: 132; 1990a: 78 & 1992: 67) argues that the few recovered finds from some of the excavated Beehive tombs seem to be questionable. Vogt maintains that the Hafit/Jamdat Nasr and the Umm an-Nar tombs are different types of a single architectural form built at the same period, and that there is no clear chronological or architectural difference between them (cf. Vogt 1985a: 58–105). He argues that the different appearance between both types (e.g. cairns and Beehive) is due to the local stones used to build the tombs. For example, the Beehive-like tomb is built of flat limestone slabs found in areas where it was easy to cut or break them. By contrast, cairns are built in locations where rounded gravel or stones are available. The same observation has recently been made by Schreiber (2007b: 123–124) at Izki.

It was argued (Cleuziou 1980: 26) that despite the attempts noted above it was impossible to not avoid the problem of the lack of proper stratigraphy in the Oman Peninsula itself. Cleuziou (1980: 26; 1982: 16) claims that the Hili 8 sequence provides this stratigraphy, which indicates that there is no gap between the 'Jamdet Nasr Horizon' of the Jebel Hafit (3,400–3,200 BC) and the construction of Building III at Hili 8. Excavations at the Hili 8 settlement provide a sequence that has been divided into three major periods subdivided into several phases (cf. Cleuziou 1980, 1982, 1984, 1989a–b, 2002). Dating these periods and their phases was based mainly on pottery assemblages as well as $C^{14}$ dates and other recovered materials. The earliest

occupational level of this site is called Period I (early 3rd millennium BC)[14]. Pottery from this period's layers is very rare, and mostly from Phase Ib (Cleuziou 1989b: 49). Only three small jars of light brown paste show definite Mesopotamian pottery-type characteristics, which have been compared with those vessels from southern Mesopotamian contexts dated to Jamdat Nasr or ED I–II (Cleuziou 1982: 3; 1989b: 75). Dating was also confirmed by the $C^{14}$ dates obtained from two charcoal samples (MC 2266 & MC 2267) from the hearths or fireplaces of Phase Ia (see Appendix D, Table D.6) both of which date to the very late 4th/early 3rd millennium BC (Cleuziou 1980: 20, Table 1: 32; 1982: 15–17; 1989a: 63–64; 2002: 195).

Based on this evidence, Cleuziou (1982: 18) suggested that Hili 8 shows continuity in the evolution of the Oman Peninsula during the whole 3rd millennium BC. This confirms the date for the Jebel Hafit material proposed in 1986 by Potts who placed it between the end of Jamdat Nasr and ED I in Mesopotamia (Cleuziou 1989b: 51). Therefore, Cleuziou (1982: 3, 1989b: 51) suggested that there is contemporaneity between Period I at Hili 8 and the Jebel Hafit horizon (Jamdat Nasr and ED I in Mesopotamia). This proposal confirms the suggestion made by Frifelt in 1970 that the Beehive tombs at Bat are a possible link between the 'Jamdat Nasr' and 'Umm an-Nar' tombs of Oman Peninsula (Cleuziou 1982: 17; 1989b: 75).

It appears from the above discussion that the 'Hafit Period' is largely distinguished by cairn burials and Beehive tombs, and that there are two suggestions regarding these tombs. The first considers the Beehive tombs as a transitional type between the earlier Hafit-type and the later Umm an-Nar-type. The second prefers the idea that both Hafit and Beehive tombs were established during the same era, but each one represents a different type. It is important, however, to state that there are some uncertainties regarding the dating of these two tombs.

To start with, I should admit that there is a problem regarding dating cairn burials distributed all over the peninsula in which certainly some cairns might be of later dates. Several of the cairns located during the Wadi Andam Survey (see Chapter Four, Section Three 4.3.5) yielded Early Iron Age material so it is difficult to say with certainty whether they are dated to Hafit or to the Iron Age, or if they are Hafit re-used

[14] This period is represented by a solid base of a square mudbrick tower with central well and hearths called Building III (Phase Ia) as well as other additions, including a smaller rectangular structure called Building VI (Phase Ib) and a single wall (Phase Ic), as well as a group of trenches or ditches.

during the Iron Age. The tradition of cairn tombs probably extends into the Iron Age, and possible later. This raises the question of to what extent have we the ability to date the big field cairns to the Hafit period. In fact, it is difficult to answer this question. Although there are still some considerable uncertainties about the dating, and for the purpose of this thesis, I am going to assume that the large concentrations of cairns across the wide fields are more likely to be dated to the Hafit period. This is due to the fact that they were found at the same locations, they show similar construction and they are located in those areas where there is no evidence at all of other occupation (see Chapters Four, Section Three 4.3.2 and Seven 7.1.2). This suggests that the cairns belong to the same period. To date, those which have been excavated at, for example Jebel Hafit and Buraimi Oasis (Frifelt 1975a; Cleuziou 1976/7); Bat at Ibri (Frifelt 1975a & 1975b), Ra's al-Hadd site HD–6 (Cleuziou 2003: 141) and site HD–10 (Salvatori 2001), site RJ–6 at Ra's al-Jinz (Cleuziou & Tosi 1990a–b), have provided evidence for late 4$^{th}$/early 3$^{rd}$ millennium BC. It should, however, be noted that there are other locations for cairns like those on the wadi terraces and on low flat gravel hills/areas such as those found along the Wadi Andam which might be of a later date. In other words, a cairn's location is a relevant factor in the data. At this point, an attempt was certainly made to look at the structure and location of the tombs, but until they are excavated it is impossible to say anything about their exact dating. From the surface they look like Hafit cairns, but when excavating them some appeared to be of the Iron Age or even Parthian–Samad period. Examples of these include, for instance, those excavated in Fashgha and dated to the Iron Age around (900–500 BC), while those excavated north of Fashgha on the lower terraces of Wadi Umm al-Ghaf did not yield any diagnostic finds (Phillips 1987, 1997: 205–207). In other areas like Manal the cairns are located on top of an Iron Age settlement (personal observation, see also Elmahi & Ibrahim 2003). To conclude, dating these cairns is one of the big problems in Omani Archaeology which needs to be solved in the future by, for example, carrying out a systematic survey in different zones looking for cairn locations, structure, distribution, densities, and then excavating some of them.

Not only do cairns imply dating problems. So do the Beehive tombs in which very few finds have been recovered that can be compared to those from the Jebel Hafit or which offer parallels with those from Mesopotamia. Thus, it is difficult to adopt any of these suggestions with certainty. However, for the purpose of this thesis, it is preferred to follow the first suggestion because, as indicated earlier, it has widely been accepted by

many scholars working on the archaeology of the Oman Peninsula. Thus, in describing the results of the Wadi Andam Survey and the chronology adopted in the other parts of the thesis, this period will be based on the tentative chronology set out by Potts in 1990, which spans the period from 3,500/3,400 to 2,500 BC (Potts 1990a: 62–91).

| Reference | Dating | Sites | Type of Evidence |
|---|---|---|---|
| Frifelt, 1970, 1975a–b; 1980a, 2002 | ED I (3,200–2,700 BC) | Bat, Hili, Jebel Hafit Umm an-Nar | 1– Ceramic parallels with Mesopotamia<br>2– Other finds comparison with foreign parallels: Beads with Mesopotamian contexts; Mesopotamian and Iranian finds such as a pin with a hammered–out flat part (Jamdat Nasr), a cylinder–seal impression from Umm an-Nar settlement (ED I, Period I at Shahr–I Sokhta; Yahya IV B, ED I).<br>3– C14 date from fireplace in Tower (1147e) at Bat (2,885–2,679 BC) |
| During–Caspers 1970, 1971 | 3,000–2,900 BC (Jamdat Nasr or Protoliterate c–d) | Two Hafit cairns in Buraimi | Painted carinated jars compared with Mesopotamian examples from Jamdat Nasr or Protoliterate c–d contexts in southern Mesopotamia and the Diyala region. |
| Tosi 1976 | 2,800–2,600 BC | — | Biconical jars in phase 8 & 7 at Shahr i–Sokhts in Seistan, and Tepe Yahya sequences |
| Cleuziou 1980, 1982, 1984, 1989a–b, 2002 | 3,400–3,000 BC<br>– Jamdat Nasr & ED I period<br>– Hili Period I (Phases a–c)<br>– Oman Stage 1 or Point 1 | Hili 8 & Ras al-Jinz | 1– C14 samples from fireplaces<br>2– Architectural features & ceramic assemblages compared with local sites<br>3– Ceramic comparisons with Mesopotamian pottery<br>4– Other finds: Mesopotamia long bead–spacer |
| **Potts 1990a** | **Late 4th & Early 3rd mille BC (3,500/3,400–2,500 BC)** | **Review materials of published local & foreign sites** | **Ceramic parallels from Mesopotamia and Iran** |
| Potts 1993b | Protohistoric A (3,400–2,900 BC) & B (2,900–2,300 BC) | Review materials of published local & foreign sites | Ceramic parallels with Mesopotamian and Iranian contexts |

**Table 8 Proposed chronology of the Hafit period and the related evidence**

## 3.3- UMM AN-NAR PERIOD:

This period is called the 'Umm an-Nar' (ca. 2,500–2,000 BC) after its first discovery by the Danish Expedition in the late 1950s on the Umm an-Nar Island in Abu-Dhabi. Later, other Umm an-Nar sites have been recovered in different parts of the peninsula (see Chapter Seven 7.1.3). Since its first discovery, the dating of this period has been argued by several scholars (Table 10), who have attempted to build up a chronology based on materials either from surface collections (e.g. the Harvard and British surveys) or excavated contexts (e.g. Umm an-Nar Island, Hili, Bat, Tell Abraq, Maysar 25). Dating these materials has been based on comparisons with similar foreign

materials, indicating trade contacts with neighbouring regions, as well as on architectural and material comparisons with local sites within the peninsula and thirdly by $C^{14}$ dates. Among the foreign materials are pottery vessels, indicating trade contact with Mesopotamia, the Indus Valley, Iran, Central Asia, Bactria (northern Afghanistan and southern Uzbekistan) and the Gulf (cf. Tosi 1976; Frifelt 1979a–b & 1995; Potts 1978, 1990c: 128, 1993a–d, 1994 & 2000, Cleuziou & Tosi 1989; Cleuziou 1989b & 2002). It is argued that the Oman Peninsula played an important role in its production of copper and its export to neighbouring regions such as Mesopotamia and the Indus Valley, which has been confirmed by Mesopotamian textual sources (cf. Bibby 1969: 229–255; Cleuziou 1984: 387; Potts 1978, 1990a: 133–134, 1992, 1993c–d, 2000; Frifelt 1995; Weeks 2004b).

At present, there are two well dated sites that have yielded evidence for the Umm an-Nar period: Hili 8 and Tell Abraq. They are dated by both relative (e.g. architectural and material comparisons) and absolute ($C^{14}$) dates. Architecturally, both sites have yielded mudbrick and/or stone tower buildings that have been compared with similar excavated buildings in the peninsula such as at Bat and Hili 1. The latter site also provided $C^{14}$ dates in which four (SM–1236 to SM–1239) are dated to the Umm an-Nar period (see Appendix D, Table D.7 & Potts 1997: 67, Table 2). At Bat, three $C^{14}$ dates were obtained for Tower 1145 (see Appendix D, Table D.8) that range from cal. 2,570 BC to cal. 2,400 BC (Frifelt 2002: 107). Several ceramic and other archaeological finds from Hili 8 and Tell Abraq indicate both local and non–Omani origin in which there are parallels with foreign and local excavated contexts. The foreign finds are imported from Mesopotamia, the Indus Valley, Iran and the Gulf. Both sites provided $C^{14}$ dates from charcoal, carbonised date stones and burnt reeds. Ten $C^{14}$ dates from Hili 8 were published by Cleuziou (1980: 32, Table 1) and Potts (1997: 67, Table 1) in which five of them (MC 2261 to MC 2265) are dated to the Umm an-Nar period (see Appendix D, Table D.6). They ranged in date between 2,570 and 2,143 BC. Ten $C^{14}$ dates from Tell Abraq were published by Potts (1993b: 126, Table 1) seven of which (K–5574 to K–5578 & K–5581–K–5582) are dated to the Umm an-Nar period (Potts 1994: 616–618) (see Appendix D, Table D.10). More $C^{14}$ dates from Tell Abraq (see Appendix D, Table D.11) were published by Potts (1997: 68, Table 3) in which five (OZA–923U, OZA–924U, OZA–929U, OZA–930U & OZA–936U) are dated to Umm an-Nar. Thus, it is argued that the 'Umm an-Nar period' can be placed between 2,500 and 2,000 BC (Potts 1993a–d, 1994; Cleuziou

1989b & 2002). Moreover, Potts (1993d) has proposed a chronological division for the Bronze Age in the Oman Peninsula which he divided into two periods: Protohistoric A and B (3,400–2,900 and 2,900–2,300 BC) and Early Historic A (2,300–2,000 BC). This division does not clearly indicate the length of the Umm an-Nar period. The timespan of the Umm an-Nar can be noted within two of Potts' periods: Protohistoric B and the Early Historic A. Protohistoric B includes part of the Hafit period (c.2900–2500 BC [see above]), and only the early part of the Umm an-Nar period (ca. 2,500–2,300 BC). Therefore, it is difficult to adopt this chronology. Additionally, based on Cleuziou's work at Hili and Ras al-Jinz, he (2002) has subdivided the 3rd millennium BC into five sub-periods (Stages 1–5) in which Umm an-Nar can be placed in Stages 2–5 (Table 9).

These two sites provide us with a more convincing chronology that the Umm an-Nar period is ca. 2,500–2,000 BC. This chronology will be adopted within this thesis. The reasons behind this can be clearly noted from the evidence presented above. Both sites have yielded well-stratified contexts that include continuous evidence for the period from 2,500 to 2,000 BC. They also provide both relative and absolute chronologies. The latter is based on $C^{14}$ dates obtained from charcoal, carbonized date stones and burnt reeds. The relative chronology is based on architectural comparisons with local sites, ceramics and other archaeological finds which show parallels with local and neighbouring regions as indicated earlier and which are supported by textual evidence.

| Oman<br>Cleuziou & Tosi 1989 | Hili 8<br>Cleuziou 1989a, 1989b | Oman<br>Cleuziou 2002 | Period |
|---|---|---|---|
| Point 1 (2900–2450 BC) | Phases Ia–c | Stage 1 | Hafit |
| | Phases IIa–c1 | Stage 2 | Umm an-Nar |
| Point 2 (2450–2100 BC) | Phase IIc2 | Stage 3 | Umm an-Nar |
| | Phases IId–e | Stage 4 | Umm an-Nar |
| Point 3 (2100–1900 BC) | Phase IIf | Stage 5 | Umm an-Nar |

**Table 9 Chronological terms used by Cleuziou for the Bronze Age based on his work at Hili and Ras al-Jinz (after Cleuziou 2002: 203, Table 1)**

| Reference | Dating | Sites | Type of Evidence |
|---|---|---|---|
| Frifelt 1968, 1979a–b | 2nd part of the 3rd mill BC Stages 4–5 | Hili 1 | 1– C14 dates<br>2– Shape of the plano–convex mud–bricks has parallels from ED II in Mesopotamia<br>3– Ceramics comparisons with Mesopotamia and Iran |
| Frifelt 1968, 1975a–b, 1995 | 2,700–2,200 BC (Phases 0–II) | Umm an-Nar | 1– Ceramic parallels with Bahrain, East Arabia , Syria, south–eastern Iran, eastern Baluchistan, Mesopotamia (ED I–IIIA) & the Indus Valley<br>2– Architecture & ceramics comparisons with local sites, particularly Hili 8, Tell Abraq & Ras al-Jinz sequences.<br>3– Few C14 dates<br>4– Other foreign finds: a seal impression of Syrian origin; beads from Afghanistan, carnelian from India |
| Frifelt 1975a–b, 1976c, 1979a–b, 1985, 2002 | Mid of 3rd mill BC (2,570–1,610 BC) Stage 3 | Bat | 1– Ceramics comparisons with local sites (e.g. Phases IIc2–d at Hili 8; Umm an-Nar Island; Tell Abraq)<br>2– Ceramics foreign parallels from the Indus Valley, Mesopotamia, Tepe Yahya (phases B, IVC to IVA)<br>3– C14 dates from fireplaces |
| During–Caspers, 1970 | Late EDIII to ca.2,000 BC | Review materials of other local sites | Ceramic parallels with EDIII contexts in Mesopotamia, Bampur IV–VI, Seistan, Mundigak, Shahi Tump and Kulli |
| Tosi 1976 | 2,200–1,800 BC | Review materials from local sites | Ceramics parallels/imports from Bampur V–VI, Yahya IVB, Mundigak IV, and Shahr–I Sokhta IV, Sistan |
| Cleuziou 1976/7, 1980, 1984, 1989a–b, 2002, Cleuziou & Tosi 1989, 2000 | 2,500–2,000 BC<br>– Hili 8= Periods II (Phases a–f) & III<br>– Ras al-Jinz Periods II–IV – Stages 2–5 | Hili 8 & Ras al-Jinz with review materials of other local sites | 1– Tower building & tombs architecture comparisons with local sites<br>2– Local pottery and other materials parallels from local sites<br>3– Imported pottery from Mesopotamia, Bulushstan, south–eastern Iran & the Indus<br>4– C14 from Phases IIe & IIf at Hili 8 (charcoal); Phases III & IV at Ras al-Jinz<br>5– Other archaeological finds foreign parallels: plano–convex mudbricks from ED II in Mesopotamia; Harappan pottery |
| Potts, 1978, 1990a, 1992, 1993a–d, 1994, 2000, Weeks 1997 & 2004b | 2,500–2,000:<br>– Protohistoric B & Early Historic A<br>– Tell Abraq Phases I, II & III:<br>Phase I: 2,300–2,100 BC<br>Phase II (tomb): 2,100–2,000 BC<br>Phase III: 2,000–1,900 BC (transition) | Tell Abraq with review materials of other local sites | 1– Tower buildings & Tombs architecture comparisons with local sites<br>2– C14 dates from samples of charcoal, carbonized date stones, burnt reeds<br>3– Ceramics parallels with sites in Mesopotamia; eastern, south–eastern & south–western Iran; Bahrain; the Indus Valley, Susa, Pakistan, Afghanistan, Bactria (northern Afghanistan & southern Uzbekistan), Baluchistan<br>4– Local ceramic, stone and metals industries<br>5– Other foreign finds: Harappan weights & storage jar fragments; seals from Maysar 1 with parallels from the Indus civilization, Crete, Syria, Egypt and Central Asia; tin from Afghanistan; ivory & beads from Bactria & the Indus Valley<br>6– Textual evidence from Mesopotamia |

**Table 10 Proposed chronology of the Umm an-Nar period and the related evidence**

## 3.4– AL-HAJAR OASIS TOWNS:

For the sake of completeness in this chapter and Chapter Five (5.4.4), it should be mentioned that Jeffery and Jocelyn Orchard have been working on the interior part of the Oman Peninsula, namely the Hajar Mountains region (mainly the Wadi Bahla and the Wadi Malah), under the name of the 'al-Hajar Project'. This project started in

1980/1981 as 'The University of Birmingham Archaeological Expedition to the Sultanate of Oman' and later became the 'al-Hajar Project'. The main aim of this project has been attempting to identify and examine the ancient settlement remains in Oman and the United Arab Emirates, how they survived, by interpreting the archaeological landscape, and understanding how the various archaeological remains relate to the landscape and to one another. This research has been directed by the idea that the al-Hajar region is an area in which ancient settlements do not survive in the form of tells, but each settlement site might show a large diversity of remains of different periods distributed over a large area (Orchard & Orchard 2002: 227).

Contrary to other scholars, the Orchards suggest that the 3rd millennium BC settlement remains located in the al-Hajar region do not belong to the so-called Umm an-Nar period. Instead, they propose two different types of site the earlier of which are al-Hajar 'agriculture-based settlements' or the so-called 'aI-Hajar Oasis Towns', which represent a *culture* named '*aI-Hajar culture*' that is different from the Umm an-Nar *culture*[15]. It is important to indicate here that it is not my intention to use the term 'culture' as I am fully aware that it is a seriously contested concept these days. Here, I am only referring to it in order to present the argument structured by the 'al-Hajar Project' when distinguishing between two different periods during the 3rd millennium BC.

According to the Orchards, the 'al-Hajar culture' is dated to the period from the end of the 4th to the end of the 3rd millennium BC, while the 'Umm an-Nar culture' is dated to the last few centuries of the 3rd millennium BC, perhaps extended to the 2nd millennium BC. Different arguments[16] have been put forward by this project such as the claim that the earliest agricultural settlements in the Oman Peninsula (late 4th/early 3rd millennium BC) were established during a period of transition from arid to a wetter climate; a late 4th to early 3rd millennium BC method of irrigation similar to the *falaj* sub-surface to surface channel system; and the Yemeni origin of the AI-Hajar Oasis Town builders (cf. Orchard & Stanger 1994: 87–88 & 1999: 96).

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[15] See Jocelyn Orchard 1994: 63, for the different considerations suggested to distinguish between the two suggested *cultures*.

[16] For full details on these arguments, see for example Orchard & Stanger 1994 & 1999; Orchard 1995; Orchard 2000; Orchard & Orchard 1997, 2002 & 2006

For the moment most scholars do not accept these arguments (cf. Potts 1997; Magee 1999: 47–48; Cleuziou 2002: 197–198), and thus, it appears that it is difficult to accept many of the suggested ideas emanating from the al-Hajar Project. It is impossible in presenting the chronology of the Oman Peninsula in this thesis to neglect such hypotheses related to the so-called 'al-Hajar culture' of late 4th to early 3rd millennium BC. However, it was also difficult to integrate or present this 'culture' in any of the well-known periods in the history of the Oman Peninsula as its remains have been attributed to different periods: the Hafit and Umm an-Nar. Therefore, it has been decided to briefly highlight such an argument in a separate place between the Umm an-Nar and Wadi Suq periods in order to clarify any ambiguity that might result from this suggested 'culture'. However, it is not the intention of this thesis neither to follow this argument nor to use the term 'culture'. It will only be referred to whenever necessary.

## 3.5- WADI SUQ PERIOD:

The first archaeological evidence of the 2nd millennium BC in the Oman Peninsula came in 1972 when several tombs were excavated in the Wadi Suq in Sohar and in the Wadi Sunaysil at Ibri (Frifelt 1975b). These tombs yielded ceramics and steatite vessels such as the painted-pottery corpus a type that was unknown within the peninsula, but already known in early 2nd millennium BC contexts on Bahrain (Potts 1990a: 232–233). This was the beginning of establishing a tentative chronology for the Wadi Suq period taking its name from the Wadi Suq where the first archaeological remains were discovered (*ibid*: 233). Several sites and remains of this period have since been recovered in various parts of the peninsula. Excavations at Hili 8 recovered painted pottery similar to that found by Frifelt and dated to Period III of the Hili 8 sequence (Cleuziou 1980, 1981, 1984, 1989a–b). Based on this discovery, Cleuziou (1981) concluded that this material belongs to the early 2nd millennium BC, indicating that there was continuity in occupation from the end of the 3rd to the beginning of the 2nd millennium BC. This suggestion was confirmed by the site stratigraphy and its $C^{14}$ dates (MC–2259–MC–2260) (see Appendix D, Table D.6 & Cleuziou 1980: 26–28). Thus, Cleuziou (1984: 389) concluded that the Umm an-Nar period is the "last known sedentary culture before the transition of eastern Arabia to full nomadism".

Since this conclusion by Cleuziou, new excavations (Shimal, Tell Abraq, Hili, RJ–1, Nud Ziba and Kalba 4) have challenged this idea (Table 11) and revealed that some

settled life continued (Potts 1990a: 234). In 1986, excavations at the settlement of Shimal revealed evidence for the second part of the 2nd millennium BC (Vogt & Franke-Vogt 1987; Franke-Vogt 1991; Velde 1991, 1992). Shortly afterwards, Potts (1990a–b, 1991, 2000) excavated a settlement at Tell Abraq, followed by the excavation carried out at the coastal site of Kalba 4 by Phillips (Carter 1997a–b). These two later sites yielded substantial evidence of both monumental architecture[17] and a ceramic sequence covering the entire 2nd millennium BC, as well as indicating evidence for continuation of the Umm an-Nar tradition into the Wadi Suq period (Carter 1997b: 87).

The assemblage recovered from the Shimal Settlement, Tell Abraq and Kalba has led to the establishment of a complete chronology for the 2nd millennium BC. For Shimal, a chronological periodization was proposed based on ceramic parallels with local and foreign types (e.g. Bahrain, Failaka, the Indus Valley and Iran), other material comparisons and $C^{14}$ dates from samples of shells and charcoal (RAK 1, RAK2 & RAK 3) obtained from layers 2 and 9 of the site (see Appendix D, Table D.12 & Vogt & Franke-Vogt 1987; Franke-Vogt 1991, Velde 1991 & 1992). This periodization covers the early and middle 2nd millennium BC (ca. 2,000–1,400 BC) that includes Phases 1, 2, and 3a–c (Velde 1992: 79–80) according to the site's stratigraphy and finds (Table 11).

Potts (1993b & 1994) and Velde (1992: 90–96) set out a chronological periodization for Tell Abraq, which spans the period from 2,000 to 1,300/1,200 BC. Potts (1990a: 234) divided the Wadi Suq period into two sub-periods: the early Wadi Suq (2,000–1,600 BC) and the late Wadi Suq (1,600–1,300 BC). Recently, he created another chronological periodizaition for the whole of eastern Arabia and divided the Wadi Suq period into three sub-periods: Early Historic B (ca. 2,000–1,700 BC), Early Historic C (ca. 1,700–1,500 BC) and Early Historic D (ca. 1,500–1,200 BC) (Potts 1993d). This sub-division was based on the evidence from Tell Abraq (local and foreign objects, $C^{14}$ dates, structural comparisons and Mesopotamian textual sources) and on reviewing material from other sites. Potts (1993b & 1994) provides a periodization of the Wadi Suq based on the evidence from Tell Abraq in which four Phases can be distinguished: Wadi Suq I Phase (2,000–1,900 BC), Wadi Suq II Phase (1,900–1,600 BC), Wadi Suq

[17] Carter 1997a–b has divided the Wadi Suq occupational sites into 'Major Sites' that include large monumental remains and deep deposits, and 'Minor Sites' that represent short–lived remains.

III Phase (1,600–1,400 BC) and Wadi Suq IV Phase (1,400–1,300 BC) (cf. Weeks 1997). Six $C^{14}$ dates are available for this dating (see Appendix D, Tables D.10 & D.11) ranging in date from 1,936 to 1,520 BC (Potts 1993b: 126, Table 1 & 1997: 68: Table 3).

For the evidence from Kalba 4, Carter (1997a: 131–137) classified the Wadi Suq period into two sub-periods based on ceramics recovered from the site: 'Classic Wadi Suq', covering both Early and Middle Wadi Suq (Phase 2a–b: 2,000–1,450 BC), and 'Late Wadi Suq' (Phase 3: 1,450–1,300 BC). This dating was also supported by other evidence such as $C^{14}$ dates, pottery and parallels from other sites (Central Shimal Settlement, Tell Abraq & Hili 8) as well as foreign parallels (*ibid*: 232–239).

Recently, Velde (2003: 104) has argued that there are "two completely different assemblages in the 2nd millennium BC, without a transitional phase between them", suggesting that their assemblages are completely different from each other (*ibid*: 104). Thus, he distinguishes two periods between 2,000 and 1,250 BC: the Wadi Suq Period (2,000–1,600 BC) and the Late Bronze Age (1,600–1,250 BC)[18].

Although there does seem to be a valid chronological division, it is not possible to make it from the published literature, where the distinction is rarely made. Additionally, this division can not be made based on the material recovered from the Wadi Andam Survey because there is too little and the local variants of these cultural periods are not yet known. It was also difficult during this survey to attribute the few pottery sherds to any specific phase of the 2nd millennium BC or to any of the different created terms or sub-periods (e.g. Early and Late Wadi Suq [Potts 1990a: 234]; Early Historic B–D [Potts 1993d]; and Wadi Suq and Late Bronze Age [Velde 2003]). This is also due to the fact that very few sherds of this period, a mere 81, were found during the survey. They were identified by Velde as possible Wadi Suq and/or Late Bronze Age. Moreover, the majority of these sherds are badly eroded, making their exact identification with any of the periods within the 2nd millennium BC difficult. Because of these limitations, it is preferred in this thesis to use the term Wadi Suq Period to cover the period from 2,000 to 1,300 BC.

[18] However, he suggested that this dating can be argued ± 50 years (*ibid*: 102).

| Reference | Dating | Sites | Type of Evidence |
|---|---|---|---|
| Frifelt 1975b | Early 2nd mill. BC | Wadi Suq & Wadi Sunaysil | 1– Ceramics comparisons with foreign parallels from Bahrain |
| Cleuziou 1981, 1984, 1989a–b | Period III, early 2nd mill BC (2,000–1,700 BC) | Hili 8 & review materials from other sites | 1– Ceramics & other finds comparisons with local types<br>2– Ceramics comparisons with foreign parallels in the Indus Valley<br>3– Omani softstone at foreign sites: Iran and Bahrain<br>4– Mesopotamian textual sources<br>5– $C^{14}$ dates from Hili 8 |
| Vogt & Franke-Vogt 1987; Franke-Vogt 1991, Velde 1992; de Cardi 1986, 1988 | 2,000–1,400 BC<br>Phases 1–3a–c (Early–Mid 2nd mill BC) | Shimal (Tombs & Settlement) | 1– Ceramics & other finds comparisons with local types<br>2– Ceramics comparisons with foreign parallels in Bahrain, Failaka Indus Valley & Iran<br>3– Other finds with foreign parallels in Bahrain (Socketed spear–head at Sar), and the Indus Valley (a Harappan cubical chert–stone weight)<br>4– $C^{14}$ dates from samples of shell, charcoal & carbonized dates |
| Tosi 1982; Biagi et al. 1989; Monchablon et al. 2003 | Early 2nd mill BC (2,000 & 1,700 BC) | Ra'a al-Jinz RJ–1; RJ–2 & RJ–21 | 1– Ceramics & other finds comparisons with local types<br>2– Seals from RJ–2 with parallels from Bahrain<br>2– Ceramics comparisons with foreign parallels from the Indus Valley<br>4– $C^{14}$ dates: from samples of charcoals and shells |
| Potts 1990a–b, 1991, 1992, 1993b, d, 1994, 2000; Weeks 1997 | Early & Late 2nd mill (2,000–1,300/1,200 BC):<br>Potts 1993b, 1994, Weeks 1997: Tell Abraq Phases I–IV<br>Potts 1993d:<br>– Early Historic B – Early Historic C<br>– Early Historic D | Tell Abraq & review other materials from Omani sites | 1– Ceramics comparisons with local types<br>2– Ceramics comparisons with foreign parallels from Bahrain, Failaka, Eastern part of Saudi Arabia, Mesopotamia, Elam, South–western Iran & the Indus Valley<br>3– Omani ceramics and softstone at foreign sites: Elam & Bahrain<br>4– Other finds (e.g. seals, mudbrick size and shape) comparisons with Mesopotamia, South–western & Eastern Iran, Central Asia, Bahrain & the Indus Valley<br>5– Mesopotamian textual sources<br>6– $C^{14}$ dates from Tell Abraq |
| Méry 1991, 2000; Méry & Schneider 1996 | 2,000–1,300 BC | Shimal Settlement, Tell Abraq & Hili | Pottery and other materials petrographic and chemical analyses indicate Mesopotamian and Indus Valley origin |
| Carter 1997a–b | 2,000–1,300 BC:<br>– Classic Wadi Suq (2,000–1,450 BC)<br>– Late Wadi Suq (1,450–1,300 BC)<br>Or Kalba Phases 2a–b & 3 | Kalba & other Omani sites | 1– Ceramics & other finds comparisons with local types (e.g. Hili 8, Tell Abraq & Shimal)<br>2– Ceramics comparisons with foreign parallels from Bahrain, Mesopotamia, Elam and the Indus Valley<br>3– $C^{14}$ dates from: from Nud Ziba, Hili 8 Period III and Shimal settlement (Appendix D, Table D.9). |
| Velde 1991, 1992, 2003 | 2,000–1,250 BC:<br>Wadi Suq (2000–1,600 BC) & Late Bronze Age (1,600–1,250 BC) | Shimal Settlement, Tell Abraq & materials from other sites | 1– Review already dated ceramics & softstone materials with parallels from local & foreign contexts<br>2– Distinction between changes and differences in the material culture |

**Table 11 Proposed chronology of the Wadi Suq period and the related evidence**

## 3.6– IRON AGE–HELLENISTIC–PARTHIAN PERIODS:

Due to some terminological problems regarding the period from 1,300 BC until 200 AD, this section will first present three different terminologies for this period. It will set out the chronology for each terminology and outline the debate among archaeologists working on this problem. This will be followed by a summary of this debate and the adopted chronology/terminology for the current thesis.

### 3.6.1- IRON AGE:

Fieldwork has provided a large number of Iron Age sites that are distributed all over the Oman Peninsula[19], and led to the establishment of various periodizations (Table 13). In central Oman, fieldwork by the German Mining Museum resulted in the discovery of what has been called the 'Lizq Period'. This takes its name from the Lizq Fortress in al-Sharqyiah region where a new type of pottery was recovered, covering almost the whole of the 1st millennium BC (Weisgerber 1980, 1981 & 1982; Yule & Weisgerber 1988). This fortress yielded a $C^{14}$ date (KN–3499, 5568 half-life) of 2,770 ± 160 BP that was calibrated to 1,210–800 BC (1 sigma) (see Appendix D, Tables D.15–D.16 & Yule & Weisgerber 1988: 32; Yule 2001a: 148, Table 6.4). Moreover, several settlements and tombs provided evidence for the Iron Age in the area of Samad and Maysar[20] (see below).

In the Buraimi Oasis, several important Iron Age sites have been found (e.g. Hili 3, Hili 5, Hili 8, Hili H, Hili 14, Rumeilah) (Potts 1990a: 365). Among these is Hili 2 that is argued to provide, after Rumeilah, the most complete inventory of architecture, pottery, stone vessels and small finds in an Iron Age settlement context[21] (*ibid*: 365). However, the first Iron Age periodization in the peninsula was based on the evidence from the settlement of Rumeilah (Boucharlat & Lombard 1985). Around five $C^{14}$ dates were obtained from charcoal samples (see Appendix D, Table D.14) and gave calibrated date ranges between 1,695 and 600 BC at 1 sigma (ca. 1,750 and 400 BC at

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[19] Among the many sites are Dibba, Rumeilah, Shimal, Ghalilah, Qarn Bint Sa'ud, al–Qusais, Hili 2, Wadi Samad, Wadi al–Qawr, Bosher, Qidfa, Fashgha, Rafaq, ed-Dur, Bithnah, al–Thuqaibah, Tell Abraq (Potts 1990a: 355–8), and most recently, Muweilah and Husn Awhala (Magee 2003 & 2004).

[20] Among these are the settlement of Maysar 42 and the tombs at Maysar 27, Maysar 8 and Samad 10 (Weisgerber 1980 & 1981).

[21] This site was excavated by the Al–Ain Department of Tourism and Antiquity during the period from 1976 to 1979

2 sigma). These dates and local and foreign ceramic parallels permitted the excavators to build up a tentative chronology for the site in which two major periods were suggested: Rumeilah Period I (ca. 1,000/900–800/700 BC) and Rumeilah Period II (ca. 800/700–500/400 BC) (*ibid*: 50). This dating was revised by the excavators using further $C^{14}$ determinations (Boucharlat & Lombard 1991: 308–311) in which both periods were put higher than previously suggested and divided into the following sub-periods:

| Period | Phase | Date |
|---|---|---|
| Rumeilah I | IA | 1,350/1,300–1,150/1,100 BC |
| | IB | 1,150/1,100–1,000/950 BC |
| Rumeilah II | IIA | 1,000/950–750/700 BC |
| | IIB | 750/700–500/450 BC |
| | IIC | 500/450–350/300 BC |

Several sites excavated later (e.g. Shimal, Tell Abraq, Kalba 4, Husn Awhala, Muweilah and al-Thuqaibah) have allowed new periodizations (Table 13) (Velde 1991 & 1992; Carter 1997a–b; Magee 1996, 1998a, 1999, 2003 & 2004). These sites have provided evidence for an earlier phase which precedes the Rumeilah I and which was labelled Iron Age I (Magee 1996, Magee & Carter 1999). The evidence from Shimal (see Appendix D, Tables D.12 & D.17) allowed periodization into one major phase with four sub-phases: Phases 4a, 4b, 4c and 4d, ranging between 1,200 and 800 BC (Velde 1992: 79–80). Kalba 4 suggested a periodization of four main Phases (Carter 1997a: 137–144): Phases 4 (a–b) and 5 (1,300–1,100 BC) and Phases 6–7 (1,100–600 BC). Based on the excavated material and $C^{14}$ dates from Tell Abraq as well as a re-analysis of $C^{14}$ data from other sites such as Rumeilah and Shimal (see Appendix D, Tables D.10–D.11 & D.17–D.20), Magee (1996) built up the following tentative chronology:

| Period | Date |
|---|---|
| Iron I | 1,300–1,100 BC |
| Iron II | 1,100–600 BC |
| Iron III | 600–300 BC |

| Rumeilah | Shimal | Tell Abraq | Kalba 4 |
|---|---|---|---|
| – | Phases 4a–4b | Phase 1 | Phases 4a–b & 5 |
| Period I | Phases 4c–4d | Phase 2 | Phases 6 |
| Period II | – | Phase 3 | – |

**Table 12 Relative periodization of Tell Abraq, Rumeilah, Shimal (Magee 1996: 244) and Kalba 4 (Carter 1997a: 137–144)**

| Reference | Dating | Sites | Type of Evidence |
|---|---|---|---|
| Boucharlat & Lombard 1985, 1991 | 1985:<br>Period I (1,000/900–800/700 BC) & Period II (800/700–500–400 BC)<br>1991:<br>– Rumeilah I ca. 1,350/1,300–1,000/950 BC:<br>IA= 1,350/1,300–1,150/1,100 BC<br>IB = 1,150/1,000–1,000/950 BC<br>– Rumeilah II ca. 1,000/950– 350/300 BC:<br>IIA = 1,000/950–750/700 BC<br>IIB = 750/700–500/450 BC<br>IIC = 500/450–350/300 BC | Rumeilah | 1– Ceramics & other finds parallels from local sites<br>2– Ceramics parallels with foreign sites in Baluchistan, Eastern Arabia, Mesopotamia & South–eastern Iran<br>3– Other finds: incised arrowheads from western Iran; dirks & swords from western Asia, Mesopotamia & Iran; seals from Bahrain<br>4– $C^{14}$ absolute chronology from charcoal samples |
| Weisgerber 1980, 1981, 1982; Yule & Weisgerber 1988; Yule & Kazenwadel 1993 | Lizq Period (Early Iron Age)<br>Yule & Weisgerber 1988:<br>Lizq (1,000–500 BC)<br>Yule & Kazenwadel 1993:<br>(1,200–200 BCE) | Lizq fortress | 1– Ceramic comparisons from local sites: Dibba, Rumeilah & Hili<br>2– Ceramic foreign comparison from sites in Bahrain; Iranian influence of Bridge–spouted jars<br>3– Lizq Period free–standing (pillbox graves)<br>4– Other finds from local sites: Bronze arrowheads from Hili 2, Maysar, Qusais, Qarn Bint Saud & Samad; Iranian influence daggers with a mushroom–shaped grip terminal<br>5– $C^{14}$ date |
| Vogt & Franke-Vogt 1987; Franke-Vogt 1991; Velde 1991, 1992 | Phases 4a–4b (Tell Abraq Phase 1)<br>Phases 4c–4d (Tell Abraq Phase 2) | Shimal | 1– Ceramics comparisons with local sites<br>2– C14 dates<br>3– Other finds: incised arrowheads from western Iran |
| Magee 1996; 1998a–b, Weeks 1997 | – Phase 1 or Iron I: 1,300–1,100 BC<br>– Phase 2 or Iron II: 1,100–600 BC<br>– Phase 3 or Iron III: 600–300 BC | Tell Abraq | 1– Ceramics & other finds parallels from local sites<br>2– Ceramics parallels with foreign sites in Bahrain, Iran, Mesopotamia<br>3– Other finds comparisons: bronze shaft hole axe (Oman & Iran), faience cylindrical seal (Iran, Mesopotamia)<br>4– Re–analysis of $C^{14}$ data from Tell Abraq, Rumeilah & Shimal |
| Magee 1998a–b, 1999, 2002, 2003, 2004; Magee & Thompson 2001 | – Iron I: 1,300–1,000 BC<br>– Iron II: 1,000–600 BC<br>– Iron III: 600–300 BC | Tell Abraq, Rumeilah, Husn Awhala, Muweilah, Raki 2, Al–Thuqaibah, Hili 17 | 1– Ceramics & other finds parallels from local sites<br>2– Ceramics functional analysis using a program of compositional analysis (PIXE–PIGME) on the ceramics from Tell Abraq, Rumeilah, Husn Awhala, Muweilah & several other sites southeastern Iran<br>3– Ceramics parallels with foreign sites in Iran, Mesopotamia & Bahrain<br>4– Review C14 dates from Tell Abraq, Muweilah, Husn Awhala, Raki 2, Al–Thuqaibah, Hili 17 |
| Carter 1997a–b | Phases 4a–b & 5= (Magee Iron I: 1,300–1,100 BC)<br>Phase 6= (Magee Iron II, 1,100–600 BC) | Kalba 4 | 1– Ceramics & other finds parallels with local sites<br>2– Ceramics parallels with foreign sites in Bahrain, Iran & Central Asia<br>3– C14 from published sites |

**Table 13 Proposed chronology of the Iron Age and the related evidence**

Shortly afterwards, Magee (2003 & 2004) lowered the dating of Iron II to 1,000–600 BC. This was based upon re-analyzing $C^{14}$ data from Tell Abraq, Muweilah, Husn Awhala, Raki 2, al-Thuqaibah and Hili 17, using the 4.3 probability method (Table 12

& see Appendix D, Tables D.21D–26; Magee 1998a: 114, Table 1; 1999: 45–46, Tables 1–3; 2003: 2–6, figs. 1–2, 5 & 6; 2004: 37–38, Tables 1–3). Many scholars have accepted this periodization for the Iron Age, although there is some doubt about the material definition of the Iron Age I period (Magee 1996, 1998a–b & 2003; Magee & Carter 1999). It is argued that this period is represented by only a few settlements such as Tell Abraq, Shimal, Bithnah, Kalba 4 (Magee & Carter 1999). By contrast, the Iron Age II period is better defined than Iron Age I (Magee 2002, 2003, 2004), while the Iron Age III period is still relatively unknown (Magee 1998b: 51).

### 3.6.2- HELLENISTIC–PARTHIAN:

It is argued that during the period from the Late Iron Age to the Hellenistic–Parthian period (3rd century BC–1st/2nd century AD) there was settlement continuity, which can be confirmed by the archaeological evidence from the Hellenistic settlements (e.g. ed-Dur, Mleiha and Samad) (Boucharlat 1991: 297). These sites and other archaeological contexts provided evidence indicating that by the beginning of this period, the Oman Peninsula witnessed the large-scale use of iron (Potts 1990b: 272; Boucharlat 1991: 297). Two of these sites, ed-Dur and Mleiha, are important and provided large numbers of Hellenistic–Parthian materials (Table 14), many of which were imported, sometimes imitated, from different neighbouring regions (cf. Boucharlat et al. 1984, 1985, 1986, & 1989; Bernard et al. 1988; Besancon et al. 1989; Boucharlat 1991; Boucharlat & Mouton 1991 & 1994; Haerinck 1996 & 2003a; Benoist, Mouton & Schiettecatte 2003; Daems 2004a–b). These materials include pottery or parallels from Bahrain, Yemen, southern, eastern and north–eastern Arabia, Mesopotamia, southern and south–western Iran, India, Pakistan, the Near East and the eastern Mediterranean countries. Among this pottery are Roman skyphoi, Greek amphorae from Rhodes, Roman Eastern terra sigillata, Indian red polished ware, Mesopotamian eggshell ware, glazed BI–ware, green–glazed Parthian vessels from southern Iraq or Khuzistan, and fine black–on–orange ware from Tepe Yahya. There are also other imported materials such as glass objects from Mesopotamia, the Middle East (Egypt, Syria & Palestine), Europe and the eastern Mediterranean countries. Among these are Roman blown and pillar-moulded glass vessels. Metal objects have also proved to have parallels from Failaka, Bahrain, Jebel Kenzan, north–east of Hofuf and Greece. Thus, based on these imported objects, it is possible to propose a tentative dating for the ed-Dur and Mleiha settlements (Table 14) between the 3rd century BC and the 4th century AD (Boucharlat

1991: 289; Mouton 1999). This dating is also supported by other evidence such as coins of local manufacture and/or foreign imitations, and possibly imported coins, as well as fragments of South Arabian or Hasaitic Aramaic inscriptions.

| Reference | Dating | Sites | Type of Evidence |
|---|---|---|---|
| Boucharlat et al. 1984, 1985, 1986; Bernard et al. 1988; Besancon et al. 1989; Barbier et al. 1990/2; Boucharlat & Mouton 1991, 1994 & 1998; Boucharlat 1991; Mouton et al. 1993/4; Mouton 1999; Benoist ,Mouton & Schiettecatte 2003 | – Phase I: c. Iron Age or later<br>– Phase II: 3rd cent–1st half of the 2nd cent. BC<br>– Phase IIIA: 2nd half of the 2nd cent–1st cent. BC<br>– Phase IIIB: 1st cent–2nd cent. AD<br>–Phase IV: 3rd cent–4th cent. AD | Mleiha | 1– Ceramic & other finds comparisons with local materials<br>2– Ceramic foreign comparisons: Glazed pottery from Mesopotamia, South & South–western Iran & the East Mediterranean countries; Roman skyphos glazed pottery; Greek amphorae from Rhodes; other pottery from Pakistan, India, Bahrain, Yemen, the Near East, Southern Iran, South, East & North–East Arabia, Egypt, eastern Saudi Arabia<br>3– Glass vessels from the Middle East (Egypt, Syria & Palestine), Europe & the East Mediterranean countries<br>– South Arabian or Hasaitic aramaic inscriptions<br>4– East–African lamps<br>5– Metal objects: Iron arrowheads= Graves from Wadi Samad and Failaka, & a fragment of a hollow bronze horse from Jebel Kenzan, north–east of Hofuf, Sumail, ed-Dur, and a grave in the Wadi Samad<br>6– Stone vessels: alabaster lids for small unguent jars and stone pots from Yemen or Qaryat al–Fau and Thaj in Central Arabia<br>7– Coins: Athena, South Arabian & North–East Arabia |
| al–Qaisy 1975; Haerinck, Metdepenninghen & Stevens 1991; Haerinck 1996 & 2003a; Whitehouse 2000; Zutterman 2003; Weeks 2004b; Daems 2004a–b | 1st –4th centuries AD | ed-Dur | 1– Ceramic & other finds comparisons with local materials<br>2– Ceramics foreign comparisons: Roman Eastern terra sigillata, Indian Red Polished Ware, Mesopotamian eggshell ware, glazed BI–ware, green–glazed Parthian vessels from southern Iraq or Khuzistan; a fine black–on–orange ware from Tepe Yahya, pottery from Iran and Central Asia<br>3– Glass objects: Roman blown & pillar–moulded glass vessels; vessels from Mesopotamia & the Mediterranean<br>4– Epigraphic finds: fragments of Aramaic inscription, an inscribed stone incense–burner with nine lines of Aramaic; a Greek alpha, and the letters (LNV), in Latin, incised on sherds<br>5– Metal objects: a bronze Roman lamp; lead weights with parallels from Bahrain; a lead knob with a Roman male head<br>– Stone objects: limestone bird status; an inscribed stone incense–burner; two sculpted limestone eagles with parallels from Hatra<br>6– Coins: Greek Characene (southern Iraq & Khuzistan); few silver teradrachm of Seleucus III or IV; a gold *aureus* of Tiberius of the Pontiff Maxim type, a square Indian base–metal coin; north & south–eastern Arabian coins; two copper/bronze coins of the Nabatean king Aretas IV; an Indian coin; a denarius of the Roman emperor Tiberius |
| Kennet 2005 | Period 1 (3rd century BC to 1st/2nd century AD) | Kush, Mleiha, ed-Dur | Review materials from sites like Mleiha, ed-Dur |

**Table 14 Proposed chronology of the Hellenistic–Parthian period and the related evidence**

The above evidence allowed the excavators to propose periodizations for the chronology of these sites. Excavations at the settlement and tombs in Mleiha allowed proposing a first periodization and construction of a continuous stratigraphy of the site dating from the end of the 1st millennium BC to the 3rd/4th centuries AD (Mouton 1999: 15). Four occupation phases have been established (Table 14 & cf. Boucharlat & Mouton 1991: 23–24; Barbier et al. 1990/2: 25; Mouton 1999: 15–19):

| Phase | Dating |
|---|---|
| Phase II | 3rd century – first half of the 2nd century BC |
| Phase IIIA | Second half of the 2nd century – 1st century BC |
| Phase IIIB | 1st century – 2nd century AD |
| Phase IV | 3rd century – 4th century AD |

The dates of the four occupational phases at Mleiha and that from ed-Dur allowed the suggestion of an overall chronology for the whole Oman Peninsula from the 3rd century BC to the 4th century AD. Thus, four periods have been established, namely '*Prē–Islamique Rēcent*' (Late Pre-Islamic) A, B, C and D (corresponding to phases II, IIIA, IIIB and IV of Mleiha) (Boucharlat & Mouton 1998: 18–22; Mouton 1999: 15–19; Benoist, Mouton & Schiettecatte 2003: 59–60).

### 3.6.3- SAMAD PERIOD:

In late 1970s, the German Archaeological Expedition to Oman discovered a number of handmade pots, iron objects and other finds from pre-Islamic cemeteries in the area of Samad–Maysar. These finds were dated to the so-called 'Samad Period' after the first discovery of these tombs and their finds within the Samad area (Yule & Kazenwadel 1993: 251). Since that time, the main aim of this project has been to focus on the distribution and chronology of this period, as well as to provide evidence that fills the gap between the Early and Late Iron Age (Yule 2001a: 494). Therefore, several excavations have been carried out in the al-Sharqyiah region and central Oman (cf. Weisgerber 1980, 1981; Yule & Weisgerber 1988, 1998 & 2001; Weisgerber & Yule 1999 & 2003; Yule 1993, 1995, 1996, 2001a & 2005).

Based on these works, P. Yule has argued in several publications that the Samad period is unique and spans an extensive length of time (Yule & Kazenwadel 1993; Yule 1999, 2001a, 2005). Since its first discovery, this period has been assigned to different periodizations some narrowing and some expanding its timespan. It was first dated around 500 BC–600 AD (Yule & Weisgerber 1988: 7) which was later narrowed

to around 100 BC–893 AD (Yule 1993: 148–149). Still later, this dating was expanded to cover the period from 300 BC to 900 AD (Weisgerber & Yule 1999: 97) and from 300 BC to 1,000 AD (Yule 2001a & Yule 2005). Dating was based on ceramic and other finds which were compared with materials from local sites (e.g. Asimah, Wa'ab and also Samad, ed-Dur & Mleiha) and foreign sites (e.g. the Gulf, Arabia, Bahrain, Mesopotamia, Iran and the Mediterranean) (Table 15). However, dating was mainly based on a large number of $C^{14}$ determinations (see Appendix D, Tables D.27–D37 & cf. Yule & Kazenwadel 1993: 256, Table 3; Yule & Weisgerber 2001: 37, Table 7; Yule 2001a: 150–151, Tables 6.5–6.6 & 2005: 309, Table 7).

Many researchers have expressed their doubt and reservations regarding the Samad $C^{14}$ dates (cf. Haerinck 2003b; Potts 2002 & 2004; Kennet 2007). Recently, Kennet (2007) has reviewed the evidence provided for this period, mainly the $C^{14}$ dates and material parallels. He concluded that all the suggested Sasanian and later dates for this period are either incorrect or very problematic. It was also suggested that the vast majority of the Samad material should be dated to the $1^{st}/2^{nd}$ century AD and earlier, and that there are only a few possible tombs which might include material of the $3^{rd}$ century AD (*ibid*: 16–17). Kennet (*ibid*: 14–15) argues that several of these $C^{14}$ dates are unreliable and incorrect (e.g. the six so-called 'outlier' dates from the Samad tombs, three from Amlah/al-Fueda and the $10^{th}$–$12^{th}$ century AD honeycomb cemetery in Bawshar). Among 23 published $C^{14}$ dates, there are 10 (over 31%) which have proved to be incorrect, representing a high percentage that has led Kennet to suspect all the provided $C^{14}$ dates. There is also an obvious contradiction between the suggested $C^{14}$ dates and those dates proposed by the archaeological parallels (*ibid*: 15).

Based on this evidence, it has been preferred, for the purpose of this thesis, to deal with the Samad period separately as there are several doubts and reservations regarding its $C^{14}$ dates and other provided parallels for the excavated materials. The evidence presented by Kennet indicates that it is possible to consider the Samad period as 'pre-Sasanian' (*ibid*: 17). In other words, the evidence indicates that this period appears to be dated to the Late Iron Age–Hellenistic–Parthian periods (ca. 300 BC–100/200 AD) and it can be seen as a local variant of the Hellenistic/Parthian material from further north that is described above.

| Reference | Dating | Sites | Type of Evidence |
|---|---|---|---|
| Yule & Weisgerber 1988, 1991; Yule & Kazenwadel 1993; Weisgerber & Yule 1999; Yule 1993, 2001a, 2005 | Samad Period Late Iron Age<br>Yule & Weisgerber 1988:<br>(500 BC–600 AD)<br>Yule 1993:<br>(100 BCE–893 CE)<br>Weisgerber & Yule 1999:<br>(300 BC–900 AD)<br>Yule 2001a:<br>(end of 1st mill BCE–late 10th century CE)<br>Yule 2005:<br>(300 BC to AD 1000) | Samad/Maysar Cemeteries & other sites | 1– Tombs architecture comparisons & their contents<br>2– The appearance of large number of iron weapons & other metal implements, indicating a mastery of iron technology<br>3– Ceramic & other finds comparisons with materials from local sites (e.g. Asimah, Wa'ab and also Samad, ed-Dur & Mleiha)<br>4– Ceramic foreign comparisons from sites in Arabia, Bahrain, Mesopotamia, Iran and the Mediterranean<br>5– Metal foreign comparisons: bronze 'Phoenician' bowls in the Mediterranean region; Achaemenid bronze bowl, swords from South Asia & Iran, iron leaf–shaped arrowheads from the Seleucid fortress on Failaka; daggers in Iranian style;<br>6– Other finds foreign comparisons: stone vessels from south–west Arabian; Hellenistic glass bottles; Proto–Arabic (Old South Arabian letters) script signs of the pottery; imported beads<br>7– $C^{14}$ determinations |

**Table 15 Proposed chronology of the Samad period and the related evidence**

### 3.6.4- SUMMARY:

To sum up the evidence presented in the above three terminologies, excavations at Tell Abraq (Potts 1990c, 1991; Magee 1996), Kalba 4 (Carter 1997a–b) and recently at Muweilah (Magee & Thompson 2001; Magee 2002, 2003 & 2004), together with those at Rumeilah, have provided us with a better understanding of the Iron Age, and allowed the establishment of three broad chronological periodizations within the Iron Age, indicated earlier by Magee (1996 & 2003). It is now widely accepted that the beginning of the Iron Age in the Oman Peninsula can be put around 1,300 BC, while its end can be put around 300 BC (Boucharlat & Lombard 1991; Potts 1990a: 354–400 & 1990c; Magee 1996, 2003 & 2004). Despite this, there is a disagreement over 'terminology' among archaeologists working in the U.A.E and the Sultanate of Oman related to the so-called 'Samad Period'. The most recent periodization/terminology for the Iron Age in the UAE has been set out by Magee who divided it into three periods: Iron I, II and III (Table 16). By contrast, on the Omani side, Yule (2001a) and recently Schreiber (2007b) divided the Iron Age into two periods: Early (Lizq Period) and Late Iron Age (Samad Period) (Table 16). This situation complicates the adoption of any of these terminologies, given the overlapping dating.

For the purpose of this thesis, the terminology used in describing the Wadi Andam Survey material is based on the identification of the survey pottery made by J.

Schreiber[22]. His identification divided the Iron Age into two periods: Early Iron Age and Late Iron Age/Samad. The same dating was also given to the material recovered from his surveys in Central Oman, such as at Ibra, Izki and Nizwa (Schreiber 2007b). His dating for the Late Iron Age was based on the chronology suggested for the Samad period (Yule 2001a) material and the $C^{14}$ dates, despite that fact that none of the recovered material of this period from Schreiber's surveys yielded evidence later than 300 AD by comparisons with the material from Mleiha and ed-Dur (Schreiber 2007 Pers. Comm.).

There is also the fact that in 'Central Oman', no material from Iron I has so far been recovered with the exception of $C^{14}$ dates of charcoal samples from the excavations at Salut[23] that range between 1,300 and 800 BC (Iron I & II) (Avanzini, Sedov & Condoluci 2005: 351 & Table 1: 374). However, the pottery recovered from the excavations is Iron Age II (Magee 2007 Pers. Comm.). Therefore, it is possible that the Iron I is a 'regional–coastal' variant rather than a distinct period (Schreiber 2007 Pers. Comm.).

Bearing this in mind, in describing the evidence from the Wadi Andam Survey it is preferred to refer to the period from 1,300 to 300 BC as Early Iron Age and the period from 300 BC to 200 AD as Late Iron Age/Samad (Tables 6 & 16). This includes the so-called 'Hellenistic–Parthian' periods[24]. This periodization/terminology is workable only for the Wadi Andam Survey material, and has been made in order to tackle any problem and misunderstanding about the periodizations/terminologies used in referring to the Iron Age, particularly the Samad period. It has not been made with the intention of providing a standardisation for Iron Age chronology in the Oman Peninsula. Therefore, given the facts indicated earlier, it is sensible and convenient to adopt this chronology, even if, with more time, it may be possible to subdivide the Wadi Andam material into a finer chronological scheme. It should, however, be indicated that the periodization/terminology used in describing the published archaeological evidence in

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[22] Based on his knowledge of the 'Omani' pottery, Schreiber assisted the current researcher in identifying the pottery from the Wadi Andam Survey.

[23] This site was first discovered in 1973 by the Harvard Archaeological Expedition to Oman, and was called site Bahla BB–15 (Humphries 1974: 49–77).

[24] All the Iron Age pottery sherds were shown to Prof. Peter Magee and he thinks that there is little use in altering the major chronological divisions that have been made for describing the Wadi Andam Survey results (Magee, Personal communication, August 2007). However, there is an intention to review and re–examine the material from the Wadi Andam before any publication will made in the near future. On this matter, a discussion with Magee at the Seminar for Arabian Studies held in London 19th–21st of July 2007 at which agreement was reached to re–examine and identify this material.

Chapters Five and Six is, by necessity, based on the dating provided in the publications (Table 7).

| Date | Magee (1996/2003) | Yule (2001a) & Schreiber (2007b) | Wadi Andam Survey (2008) |
|---|---|---|---|
| 1,300–1,000 BC | Iron I | Early Iron Age | Early Iron Age |
| 1,000–600 BC | Iron II | | |
| 600–300 BC | Iron III | | |
| 300 BC–200 AD | Hellenistic–Parthian | Late Iron Age/Samad | Late Iron Age/Samad |
| 200–1,000 AD | ? | | Sasanian/Early Islamic |

**Table 16 Comparative chronology for the Iron Age/Hellenistic–Parthian Periods**

## 3.7- SASANIAN–EARLY ISLAMIC:

Based on historical evidence, several scholars have argued that the Oman Peninsula from the 3rd century AD to the onset of Islam was under the control of the Sasanian regime (Wilkinson 1973, 1977, 1979; Williamson 1973; Potts 1990a: 328–340). However, archaeological evidence indicates very few sites dating to the Sasanian–Early Islamic period (Potts 1990b: 296; Kennet 2007: 89). This may be related to the fact that its pottery was still not well-understood by the people who dealt with it (de Cardi, Kennet & Stocks 1994: 54).

Although several sites have been identified as Sasanian–Early Islamic sites, it is argued that that the majority of them were mistakenly dated to this time (Kennet 2007). Kennet (*ibid*: 90–91, Tables 1–2) has provided a list of all the reliable and unreliable Sasanian–Early Islamic sites in Eastern Arabia, including the Oman Peninsula (see Appendix D, Tables D.38–D.39). He has also provided an evaluation of the Sasanian and early Islamic archaeology in the Oman Peninsula, and concluded that little of its published evidence is reliable and that the majority of it is either "erroneous or highly doubtful" (see section 3.6.3 above and Kennet 2007: 86). Thus, several of these sites cannot securely be dated to the Sasanian period.

Three important sites, however, have provided reliable evidence for large Sasanian period settlements: ed-Dur, Mleiha and Kush. Ed-Dur is a large coastal settlement associated with a fort and tombs. It has provided evidence indicating that it was occupied between the 1st–early 2nd and 4th centuries AD. The dating of ed-Dur was based on the Roman glass, as well as Mesopotamian and South Asian ceramics (cf. Boucharlat et al. 1989; Haerinck, Metdepenninghen & Stevens 1991; Haerinck 1996 &

2003a). The inland site of Mleiha is also a large settlement with a fort, and has provided evidence of occupation from the 3rd century BC to about the 4th century AD (cf. Boucharlat et al. 1984, 1985, 1986; Boucharlat & Mouton 1991, 1994; Boucharlat 1991; Mouton 1999; Benoist, Mouton & Schiettecatte 2003). The excavated Mleiha fort has yielded evidence indicating that its first occupation was during the late 2nd/early 3rd century AD (Phase IIIB or Period C), while its second phase is dated to the 3rd/4th century AD (Phase IV) (Benoist, Mouton & Schiettecatte 2003: 60). The evidence includes fragments of coin moulds as well as imported pottery and other finds from Iran, Mesopotamia, Egypt, southern Asia, southern Arabia and possibly Africa (*ibid*: 66–71).

Excavations at the coastal site of Kush yielded an occupational sequence dating from the 5th to the 13th centuries AD (Kennet 1997, 2001). The earliest excavated period is Period I dated to the 5th–6th centuries AD and includes two phases of mud-brick structures, while Period II consists of a rectangular mud-brick tower (cf. Kennet 2001: 43–45, Table 7; 2004: 14, Table 2; 2005: 109), a $C^{14}$ date of 670 ± 40 AD was obtained from one of the Period II hearths, which permitted dating the construction and use of the tower in the very late Sasanian or very early Islamic period (BM–3169 1340 ± 35 BP=AD 645–710 at 1 sigma) (Kennet 2001: 44; 2004: 14; 2005: 111). This period was also dated from the presence of a Sasanian coin of Kavad I (issued 507–519 AD) from Phase W–04 (Kennet 2004: 14, Table 2) and from other recovered finds such as glass, beads, shell, bone and ceramics like those imported from Mesopotamia, Iran and southern Asia (Kennet 2005: 111). Apart from Period II, all the Kush sequence phases were dated based on the presence of pottery and other materials (Kennet 2001: 43–44). Kush also provided evidence for settlement continuity from the Sasanian to the Late Islamic periods in which two periods represent the Early Islamic period: Period III is dated to the late 8th–early 9th centuries AD and Period IV from the 9th to the 11th century AD (cf. Kennet 2001: 43, Table 7; 2004: 14, Table 2).

This discussion provides a brief outline of the available archaeological evidence for the Sasanian–Early Islamic periods, the adopted chronology within the thesis will be between the 3rd century and the 9th century AD.

## 3.8- THE ABBASID PERIOD (9th – 10th–early 11th century AD):

The Sasanian–Early Islamic period appears to end by the early 9th century AD. After this time a new pottery assemblage is introduced, the so-called 'Samarra horizon'. This assemblage indicates a time where there was a development of Islamic ceramic production with the introduction of opacified lead and possibly tin glazes with polychrome decoration (Kennet 2004: 31). Its dating has largely been discussed and coined by several scholars (e.g. Adams 1970; Kervran 1977, 1996; Whitehouse 1979; Tampoe 1989; Northedge & Kennet 1995; Kennet 2004). However, Kennet (2004: 83) has examined and evaluated the evidence for this period. Based on his excavations at Kush and his survey at Ras al-Khaimah he suggests that the 'Samarra horizon' dates from the early 9th century onwards. According to his 'Ceramic Periods', this horizon dates between the 9th and 10th–early 11th century AD (Periods IIa [Samarran Abbasid] and IIb [Post-Samarran Abbasid]). The wares of this period are very distinctive (e.g. cobalt decorated white glaze, plain opaque white glaze, splashed ware, monochrome lustre and early sgraffiato) (*ibid*: 32, Table 19). Nonetheless, these wares are very poorly represented in the Wadi Andam area, and cannot easily be distinguished. It is possible that there are sherds of some of these wares within the pottery from Wadi Andam attributed to the following classes: Green Glazed Early Islamic (GGEI) or Sgraffiato Middle Islamic (SGRF) (Appendix C). The difficulty of finding or distinguishing the assemblage belonging to this horizon has led us to include this period within the above mentioned Sasanian–Early Islamic period.

## 3.9- THE ISLAMIC PERIODS (MIDDLE ISLAMIC TO RECENT TIMES):

Surveys have provided a large number of Islamic sites over the whole of the Oman Peninsula (see Appendix D, Tables D.40–D.44). They can be found in the northern Emirates (e.g. de Cardi & Doe 1971; Doe & de Cardi 1983; de Cardi 1985; Stocks 1996; de Cardi, Kennet & Stocks 1994; Brass & Britton 2004), northern Oman (e.g. de Cardi 1975 & 1977; de Cardi, Doe & Roskams 1977), and Sohar (e.g. Williamson 1974; Wilkinson 1975, 1976 & 1977; Costa & Wilkinson 1987). The most recent surveys are those carried out by the ADIAS at Abu-Dhabi (e.g. King et al. 1995; King & Hellyer 1997; King 1998; King & Tonghini 1998; King 2001; Hellyer 2002a) and the Omani–German Project at Wadi Bani Awaf, al-Hamra, Ibra, Izki and Nizwa (Häser 2000 & 2003; Schreiber & Häser 2004; Schreiber 2004, 2005 & 2007a–b). Dating all

these Islamic sites is based on surface finds, mainly pottery. Only a few excavated sites can be dated to the later Islamic periods. This might be related to the fact that the main interest of the surveys carried out in the region was focussing on recording and excavating the pre-Islamic sites (see Chapter Five 5.5.1).

There are only two major excavated settlements of this time which have allowed setting a reliable periodization for their sequence: Julfar (al-Mataf) and Kush in Ras al-Khaimah. The coastal site of Kush yielded an occupational sequence dating to the 5th–13th centuries AD (cf. Kennet 1997, 2001, 2004, 2005). Kennet (2001: 43–45, Table 7 & 2004: 14, Table 2) proposed dating for the sequence of Kush in which Middle and Late Islamic periods fall within four defined periods (see Appendix D, Tables D.45–D.46): Periods V–VII for the Middle and Period VIII for the Late Islamic. They are all dated on the presence of pottery and other materials (Kennet 2001: 43–44). The second site (Julfar) is one of the best excavated sties in the peninsula dating to the 14th–16th centuries AD. Since the early 1970s, this site has been subject to several surveys and excavations from different archaeological expeditions such as the Iraqi, French, British, German, and Japanese. The published archaeological evidence (cf. Taha 1975; Hansman 1980; King 1990, 1991, 1992; Vogt 1991; Sasaki & Sasaki 1992 & 1998; Sasaki 1995; Kennet 2003) offers a comprehensive picture of the site's development from a small fishing community in the mid–14th century to a fully urbanised settlement by the mid–15th century which continued until its final decline and abandonment by the late 16th century (Kennet 2003: 103). Kennet reviewed and synthesised all the evidence available from these publications with other unpublished data gathered by him, and was able to outline the site's development (*ibid*: 114–120, Table 3) into four chronological periods (see Appendix D., Tables D.45–D.47):

| Period | Level of Development | Date |
|---|---|---|
| Period 1 | Growth | Early 14th – late 14th/15th centuries AD |
| Period 2 | Peak | Early 15th – Early 16th centuries AD |
| Period 3 | End of growth & beginning of slow decline | Early 16th – mid/late 16th centuries AD |
| Period 4 | Post–urban | Mid/Late 16th century AD |
| Period 5 | Abandonment | Late 16th – 20th centuries AD |

Based on the above evidence, it appears clear that there are two periods which can be set out for the purpose of this thesis: the Middle Islamic period datable to 11th–14th centuries AD (Kush Periods V, VI and VII) and the Late Islamic–Recent period datable to the 14th century AD onwards (al-Mataf Phases M–Pre, M–I to M–VI & M–Rec; Kush Period VIII). This adoption has been defined on the ceramic comparisons

between the material found during the Wadi Andam Survey and those described by Kennet (2004). These include, for example, sgraffiato wares with incised linear designs through a white slip before glazing; unglazed, coarse hand-made Julfar ware; Chinese blue and white porcelain; glazed Bahla or Kunj ware; celadon stone [well-defined through the literature as 'Longquan Celadon']; enamelled Chinese porcelain; European porcelain with painted and glazed geometric and floral motifs; and modern porcelain which is the most recent Far Eastern porcelain type. As well as these, there are other coarse unglazed wares.

## 3.10- CONCLUSION:

This chapter has attempted to show the different periodizations/terminologies set out for the 'Omani' chronology suggested by scholars working, particularly, on the archaeology of the Oman Peninsula. It has briefly reviewed the available archaeological evidence used to set out these periodizations, and highlighted the main problems with each of them.

The key diagnostic forms or wares of each of these periods have been compared with those identified by the Wadi Andam Survey (presented in Appendix C). This appendix includes a description of the pottery classification methodology as well as the different types of pottery classes defined from all the pottery collected during the survey and which dates from the Bronze Age until the present day. References to parallels from different excavated sites have been provided for each defined class of pottery.

# CHAPTER FOUR:

# THE WADI ANDAM SURVEY

# CHAPTER FOUR: THE WADI ANDAM SURVEY

This chapter will present the results of the Wadi Andam Survey. It will be divided into three sections: the first will introduce the sample area and its selected sub-units and the reasons behind selecting them. It will also present the survey methodology and the different strategies used to define the surveyed areas and record sites. Section two will offer a quantified analysis based on pottery collected during the survey, while the third section is intended to provide a description of the evidence by period and with some discussion of its interpretation.

## SECTION ONE: THE RESEARCH METHODOLOGY:

### 4.1.1- SAMPLE UNITS SELECTION:

After the decision was made to carry out the survey in the Wadi Andam (see Chapter One 1.4.3), another few days investigation (see Level 4, 4.1.2.1.4 below) was carried out of the whole wadi at a general level for the purpose of understanding its characteristics and landscape, and to decide which areas would be chosen for more detailed study. This investigation allowed the limits and size of the survey coverage to be decided. Consequently, a transect of around 40 km by 100 km was set out (see Maps 2 & 9). This took into consideration the four geographical zones defined and described in Chapter One (1.4.3). These are 1) the watershed and upper wadis in the north; 2) the lower wadis; 3) gravel hills and broad wadis; and 4) the gravel flat interfluves zone in the south.

The size of the sample units within this area was dictated by the amount of time allocated for the survey, and the fact that the work was mainly carried out only by a single researcher. Therefore, one or two examples of wadi villages from each geographical zone were selected. These were supported by other investigations in other areas (e.g. the Upper Wadi Andam and Hafit Surveys; see below).

### 4.1.2- THE SURVEY:

The survey was carried out during two seasons of fieldwork[25] (15th December 2004 to 30th March 2005 and from 18th November 2005 to 24th January 2006)[26]. The work was carried out using a 4 WD Land-Rover. For the first season, a house in al-'Alya village (Map 2 & Plate 7) at al-Mudhaybi was rented as the central base for the work[27]. For the first part of

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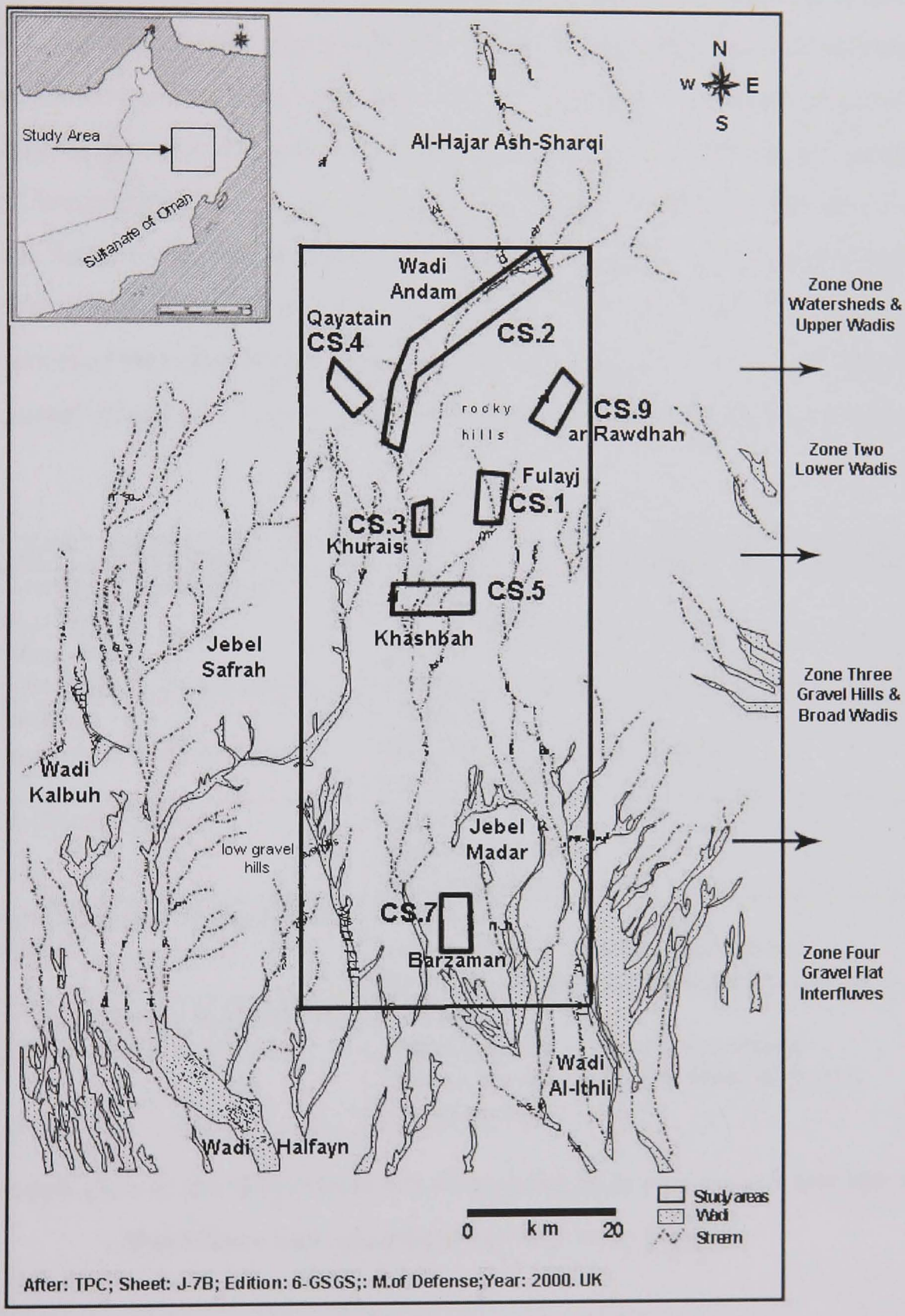
[25] The total days worked were 173 days. They included 105 days in the first season and 68 days in the second season.

[26] During the survey, the researcher received help from various people: in the first two weeks (from 15th to 28th December 2004), Dr. Derek Kennet from the Department of Archaeology at Durham University joined the researcher as a supervisor in order to familiarize himself with the area that was intended to be surveyed as well as the survey methodology to be used for such an area. During the period between 26th February and 11th March 2005, Mr. John Martin provided the researcher with some help in the field.

[27] It is around 120 km from Muscat, which allowed easy access to Muscat to obtain important supplies such as maps, aerial photos, references and other needs that not available in the area where the field camp was located. Moreover, it facilitated contact with places and institutions that were useful and important for the

the second season, a flat in Muscat was rented to deal with the pottery identification and classification, while for the second part, the researcher stayed for two weeks at Ibra, just 10 km from the Wadi Andam[28].




**Map 9 The survey transect and the location of surveyed areas**

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fieldwork such as the Ministry of Heritage and Culture and Sultan Qaboos University as well as al-Seeb International Airport.

[28] The researcher would like to thanks Prof. Ali Elmahi and Dr. Mohammed Al-Belushi for allowing him to join them in their field accommodation at Ibra.

### 4.1.2.1- METHODOLOGY AND SURVEY LEVELS:

When studying the archaeology of settlement it is possible to operate at many levels. If we take a regional approach (e.g. northern Oman Peninsula) then it is possible to gain an impression of general trends and patterns, but the details of individual sites are lacking. By contrast, if we concentrate on individual sites, then we will gain high levels of detail, but will not be able to perceive the general trends. Considering this problem and given the stated aim of investigating settlement history of the northern Oman Peninsula, it was decided in this thesis to define six levels of investigation and survey from the broadest regional level to the most detailed and site-specific level (Map 10 & Table 17). In this way, information retrieved from the lowest and most detailed levels of survey can be fitted into a broader regional framework (Level 1 below) providing both context and comparative material.

| Level | Definition | Type of Evidence |
|---|---|---|
| 1 | Regional (e.g. northern Oman Peninsula) | Literature<br>Database of sites from literature |
| 2 | Sub-Regional<br>(e.g. Batinah, Hajar Mountains) | Literature<br>Database of sites from literature |
| 3 | Local Area<br>(areas around Wadi Andam) | Literature<br>Database of sites from literature<br>Surveys Review |
| 4 | Wadi (Wadi Andam) | Fieldwork<br>Hafit cairn survey<br>Some literature |
| 5 | Sample areas (e.g. PCAs, OVAs, UWA) | Fieldwork<br>Surface finds (e.g. pottery and others)<br>Structural remains (e.g. settlements, tombs) |
| 6 | Individual site (e.g. al-Khashbah, al-Qaryatain) | Fieldwork<br>Surface finds (e.g. pottery and others)<br>Structural remains (e.g. settlements, tombs)<br>Some literature |

**Table 17 Rough plan of the different levels of investigation and survey and the type of evidence and approach that has been used**



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**Map 10 Levels of survey: regional and sub-regional [red rectangular]; local area [green rectangular]; Wadi Andam [blue rectangular]; and individual site [white oval]**

Throughout this thesis, where possible and where relevant, I will attempt to indicate which level of survey and investigation I am discussing and will relate this to Table 17. In order to be clear, I will always refer to these levels in parenthesis (e.g. Level 1) and where relevant, will indicate the type of evidence that has been used (e.g. Level 1- literature, Level 2 - database).

These levels involved different stages of investigation which need to be highlighted before going into details of the data analysis. Some hypothetical examples and images will be presented in order to clarify each type of level.

#### 4.1.2.1.1- LITERATURE: PREVIOUS ARCHAEOLOGICAL CONCLUSIONS AND REGIONAL LONG-TERM TRENDS (LEVEL 1):

The current research involved reading the published reports of surveys done in the northern Oman Peninsula since the late 1950s. This level of survey (Level 1) was important in order to provide a period by period discussion of the chronology set out by different scholars for the peninsula (see Chapter Three). This discussion allowed the current researcher to understand the different periodizations and terminologies set out for sequences of different sites, and then decide which chronology can be used within this thesis and why this specific chronology had been chosen. Moreover, this level was important in order to understand the different ideas and conclusions suggested by different scholars for the levels of activity and settlement patterns in the peninsula. This was done in order to offer a comparative summary of the most important issues regarding the settlement patterns over time based on the previously published and known ideas or conclusions and the conclusions from the Wadi Andam Survey. This will show whether the previously suggested conclusions correspond or contradict with the conclusions from the Wadi Andam Survey (see Chapter Seven).

This level of survey also included collecting data from the literature for a quantified level. To achieve this, a sites' database was created. This was important in order to collect information on sites and settlement patterns over time at the broader geographical level (e.g. northern Oman Peninsula). Such information was necessary as it provided a quantified analysis of the long-term trends from the whole northern Oman Peninsula which could be compared in a boarder academic context with the trends from the Wadi Andam Survey. At this point, and to the best of the researcher knowledge, it is important to stress the fact that no such quantified analysis had been done before. Therefore, a quantified analysis of the long-term trends and patterns on a 'regional level' will be made in Chapter Six.

The aim of this level was also to understand the different problems that might restrict the analytical possibilities of the evidence from the published literature, and the extent to which the available data could be used and interpreted.

#### 4.1.2.1.2- LITERATURE: SUB-REGIONAL LONG-TERM TRENDS (LEVEL 2):

This level (Level 2) of investigation was made based on collecting data from the literature for a quantified analysis of the long-term trends on a 'sub-regional level'. For this purpose, the northern Oman Peninsula was divided into different sub-regions (see Chapter Six, Map 28 and Table 44). The quantified analysis was based on the above-mentioned sites' database. This level was carried out in order to have a more detailed picture of the long-term trends and patterns from each of the defined sub-regions (e.g. Hajar Mountains, Batinah Coast, Abu-Dhabi Coast, Eastern Coast, Central Oman and Musandam–Northern Emirates) within the whole region (e.g. northern Oman Peninsula). This will allow us to gain an impression of general trends from the broadest regional level to the most detailed sub-regional level. By doing so, it was hoped that this would provide a wide understanding of the different levels of activity within each sub-region, which could be compared with the trends that might emerge from the Wadi Andam Survey.

#### 4.1.2.1.3- LITERATURE: LOCAL AREA LONG-TERM TRENDS AND SURVEY PROJECTS REVIEW (LEVEL 3):

This level (Level 3) included collecting data from the literature on sites and settlement patterns over time at the smaller geographical level (e.g. 'local area') (see Chapter Five). This can provide a quantified analysis of the long-term trends from this specific defied area. The quantified analysis will be based on the sites' database. Moreover, this level included a review of the methodologies and results of some of the previously carried out surveys within the 'local area'. Such a review can highlight the different problems that might restrict the analytical possibilities of the evidence from the published literature, and how the available data could be used and interpreted.

#### 4.1.2.1.4- WADI SURVEY (LEVEL 4):

Level four (Level 4) of survey investigates the wider area of study at a general level for the purpose of understanding its characteristics and landscape, and then decides which areas will be chosen for more detailed study, as well as how and which survey methodology will be applied. To achieve this, at the beginning of the project, a few days

general reconnaissance was made during which different areas within the northern Oman Peninsula were investigated, such as the Batinah, al-Hajar Mountains and the gravel fans. This allowed the researcher to chose the most appropriate area for investigation, namely the Wadi Andam (see Chapter One 1.4.3 for the reasons behind selecting this area). Here, the study area was divided into four geographical zones (Maps 2 & 9) starting from the watershed and upper wadis in the north throughout the lower wadis, gravel hills and broad wadis as well as the gravel flat interfluves zone in the south. Moreover, at the beginning of the project, the current researcher looked at survey methodologies carried out by the Hinterland of Sohar Project (Costa & Wilkinson TJ 1987: 79–88) and the Ras al-Khaimah Survey (Kennet 2002) where the need to develop a new methodology in areas that has not been explored was realised. A survey of Wadi Andam offered the ideal opportunity to test it.

Another survey involved in this level was (see Chapter One 1.2.3) working out a rough distribution of Hafit and Beehive tombs between the northern watershed to the southern gravel flat interfluves along the Wadi Andam. Fourteen arbitrary areas were surveyed. The methodology used was based on driving along the main roads, driving on top of small flat gravel hills and stopping to check the rough rocky hills. This also involved using a hand-held GPS for coordinates, checking for finds and taking photographs of each cairn, and sometimes drawing a sketch plan. Moreover, the total number of tombs and their density according to each surveyed area were plotted on maps (see Section Three of this chapter 4.3.2; Tables 28–29 & Maps 11–15).

### 4.1.2.1.5- THE SAMPLING TECHNIQUE AND INVESTIGATED AREAS (LEVEL 5):

Level five of the survey (Level 5) included applying the methodology developed for the Wadi Andam landscape. The survey included different areas of investigation which will be presented in this section. However, it is important before presenting them to highlight the state of the archaeological evidence. This will be followed by discussing the field methodology that was developed for the quantification of settlement in the particular circumstances of Arabia. It will then present the different areas and units of investigation and the strategies used to define them, and how sites were defined and recorded.

### 4.1.2.1.5.1- THE STATE OF THE ARCHAEOLOGICAL EVIDENCE:

Before developing a quantified method that is capable of taking into consideration the nature and peculiarities of the Wadi Andam landscape, it is important to understand the most significant post-depositional processes that have affected the archaeological evidence. As has already been noted in Chapter One (1.1.2.1), the relatively limited number of locations where agricultural settlement is possible appears to have been a major constraining factor in the settlement pattern. It has meant that many locations have been repeatedly occupied through many archaeological periods. This, in turn, has meant that the remains of older settlements will have been destroyed and disturbed by later occupation as well as the normal processes of natural alluviation and erosion. More importantly, as will be shown below, the high degree of land disturbance caused by traditional practices used in date-palm agriculture destroys, obscures and disturbs archaeological material creating a confused surface scatter of pottery sherds in which all periods of occupation will be represented, although in a very mixed state.

To understand this process, the various stages of what can be called the 'cycle of wadi agriculture' have been mapped out (Figure 7). This figure uses the fictional example of a settlement consisting of a number of mudbrick buildings that was established during the Umm an-Nar period on the lower hill slopes above the wadi bed (Figure 7:1). Once the settlement was abandoned its structures and the pottery-containing deposits associated with them eroded and spread down the slopes and out onto the wadi channel where they became partly buried by alluvium (Figure 7: 2 & 3). At a later time date palm groves associated with more recent settlement were established, involving excavation into the alluvium to facilitate irrigation and digging wells, and the piling up of the excavated earth into bunds and clearance mounds (Figure 7: 4). The bunds and clearance mounds will include traces of buried archaeological materials resulting from the earlier Umm an-Nar settlement, in particular pottery. Further abandonment of the settlement will result in the date palm groves and bunds being eroded and buried by alluvium (Figure 7: 5). In due course the cycle repeats itself with subsequent abandonment and re-occupations (Figure 7: 5 & 6) using the same locality due to the fact that people are constrained by the environment.

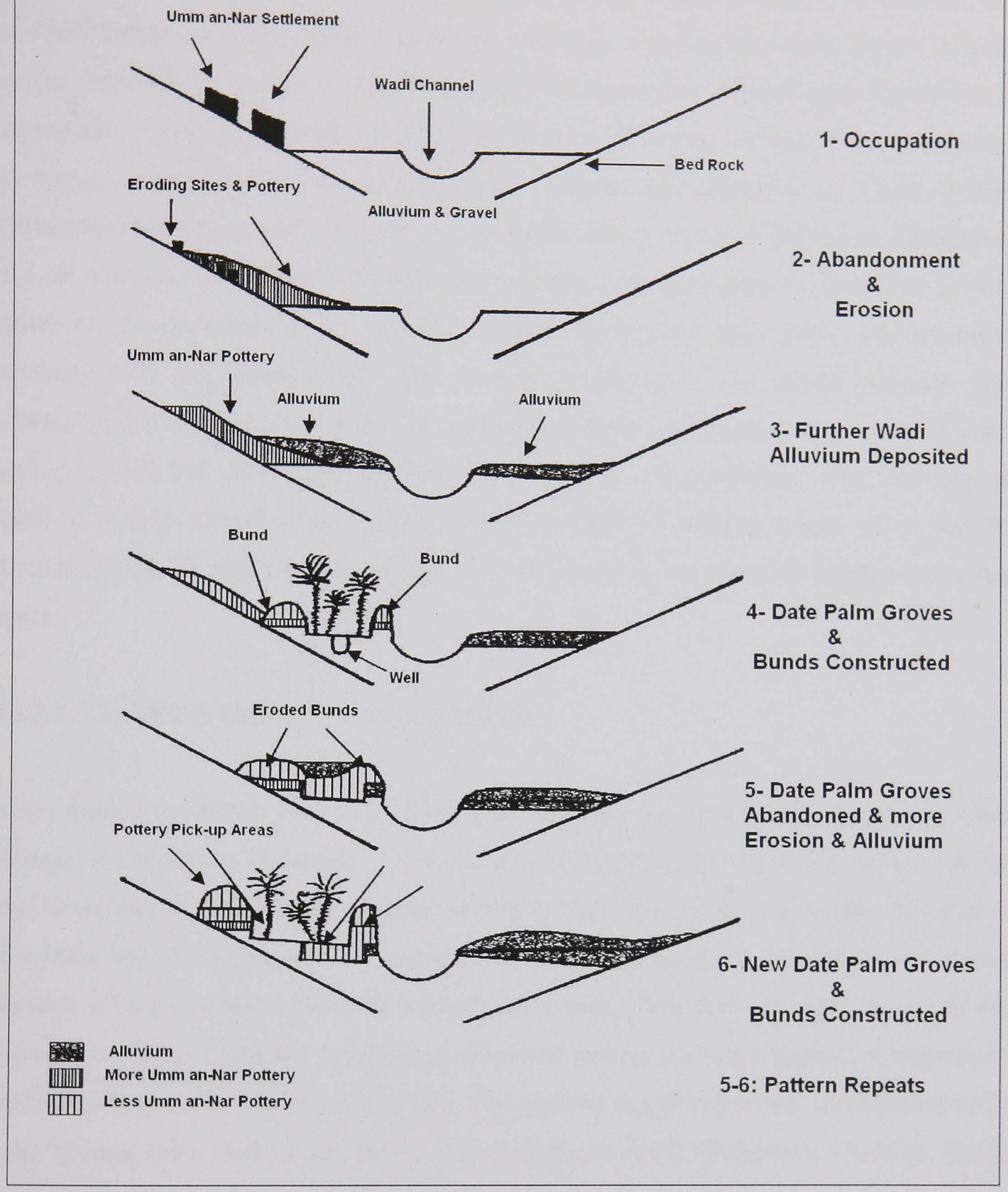


**Figure 7 The "cycle" of wadi agriculture.**

This cycle destroys and obscures archaeological remains leaving only very limited evidence. Retrievable evidence of earlier occupations might be found as tombs in the surrounding areas and in the sections of wells dug into the alluvium. It is, nevertheless, worth mentioning that counting tombs is not a reliable method for the quantification of ancient settlements. This is due to the fact that some periods, like the Hafit and Umm an-

Nar, are characterised by distinctive types of tombs that could, in theory, be counted. By contrast, tombs from the Wadi Suq to the Sasanian, and possibly some earlier Islamic tombs, are difficult to date as they bear similar characteristic making their identification impossible. There is also the problem of tomb preservation in which tombs can be destroyed, which makes their quantification difficult. For example, an Umm an-Nar settlement might have had only one or two tombs due to the high degree of disturbance and destruction. Therefore, it is difficult to carry any quantification based on tombs. However, the process of the "cycle" of wadi agriculture does have one important advantage for the archaeologist: the constant churning of the mixed alluvium and archaeological deposits caused by the agricultural cycle will bring to the surface buried archaeological material resulting from earlier periods of occupation. This will present itself as a very mixed surface scatter, which is likely to contain traces of all periods through which the site has been occupied, even if only in very limited quantities in some cases.

#### 4.1.2.1.5.2- THE SAMPLING TECHNIQUE:

It was argued in Chapter One (1.1.2.2) that few attempts have been made to quantify wadi villages in the Oman Peninsula. Thus, the aim of carrying out the Wadi Andam survey was to employ a rigorous, probabilistic sampling technique in order to collect data that is free from period bias, testable and suitable for quantified analysis, and that in turn allows analysis of activity and settlement intensity over time. Therefore, in order to exploit the presence of these potentially representative surface pottery scatters a method of large-scale surface pottery collection was developed. This method is a development of techniques that have already been used in this region, for example, at Siraf (Wilkinson TJ 1974), Suhar (Costa & Wilkinson TJ 1987) and in Ras al-Khaimah (de Cardi, Kennet & Stocks 1994; Kennet 2002). It was tested during the preparation of this PhD and its results will be presented here. The Wadi Andam survey involved surveying six selected wadi village locations (al-Fulayj, al-Khurais, al-Qaryatain, al-Khashbah, Barzaman and ar Rawdhah) along the banks of the wadi and its tributaries, each of the wadi's geographical zones being represented by these villages (see Map 9 and 4.1.2.1.5.3 below).

On arrival at a settlement location, which in most cases is also the site of a modern wadi village with on-going occupation and agriculture, the first step was to make a rough sketch plan of the entire location, using a hand-held GPS (using grid Oman WGS84) for increased accuracy. This sketch plan could be combined with a geo-corrected satellite photograph if available but this was not done during this survey. The locality was then divided on the sketch plan into a number of arbitrary pottery collection areas (PCAs, see 4.1.2.1.5.3.1 below), each up to about four hectares in size and each of which was numbered (Figure 8). The PCAs are normally irregularly shaped because features such as tracks and field boundaries were used to delimit them. In theory pottery from the entire location could be collected and mixed together but the PCAs offer the opportunity to locate collections with a slightly higher degree of precision, and also allow a limited degree of spatial comparison across the wadi village.

A large collection of surface sherds was then made from each of the PCAs. Normally pottery was collected by one individual for between 20 and 30 minutes, picking up pretty much all pottery that was seen during that time. This resulted in large sherd collections of up to about 600 sherds from a single PCA in some cases. After being collected from the field, pottery processing included different stages in which full details can be found in Appendix C which is specified for describing the pottery and its classes. Briefly speaking, the pottery after being collected was taken to the project's camp, and carefully washed and cleaned from any deposited materials. Then it was dried, sorted into different classes, counted, backed and stored (Plates 8–9). It was then identified by showing it to different specialists who are working in the archaeology of the Oman Peninsula as well as the Arabian Gulf. This allowed classifying it into types of different archaeological periods based mainly on fabrics and surface treatment where each class was numbered and described in detail and parallels were given (see Appendix C). Photographs and drawings of sherds were made for almost 80% of the classified sherds and 95% of the diagnostic ones. Ultimately, all pottery information was entered into an electronic database to facilitate interrogation and analysis of the data. The database was analysed using the Microsoft Access program and the results are presented in this chapter (see Section Two). This was done in order to gain a quantifiable impression of the amount of activity or settlement, where comparisons could then be made of the total number of sherds of each

archaeological period that are present in the assemblages either from individual PCAs, from individual wadi villages or from all or a number of wadi villages.

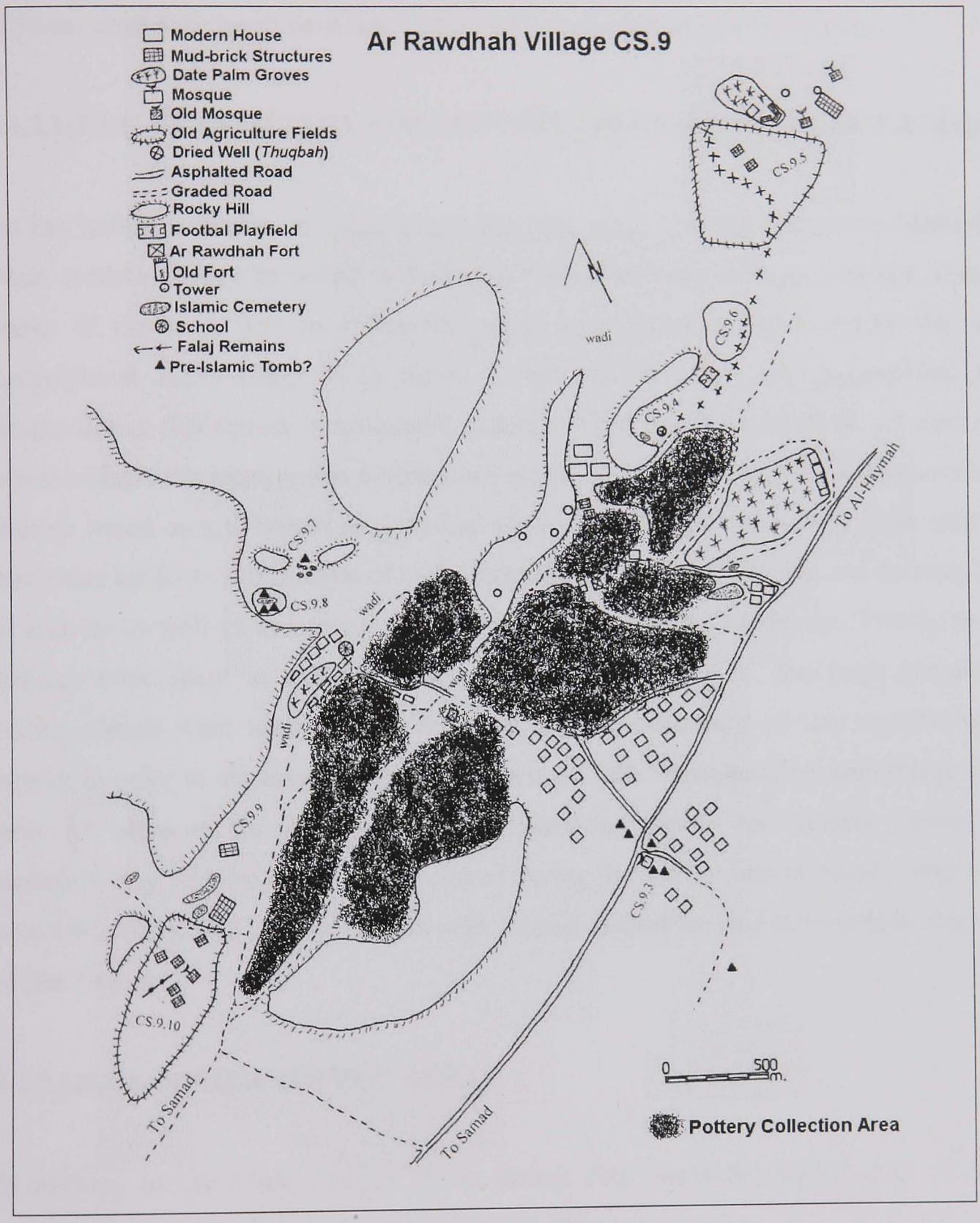


**Figure 8 Pottery Collection Areas (PCAs) in the wadi village of ar-Rawdah.**

#### 4.1.2.1.5.3- AREAS AND UNITS OF SURVEY:

The methodology used to carry out the Wadi Andam Survey involved investigating different areas which can be divided into three survey areas as the following:

#### 4.1.2.1.5.3.1- THE POTTERY COLLECTION AREAS (PCAs) (Figure 9 & Map 9):

As has indicated above, in order to test the large-scale "Pottery Collection Method" the Wadi Andam survey involved surveying six selected wadi village locations along the banks of the wadi and its tributaries, each representing at least one of the wadi's geographical zones (Map 9) in order to see whether there are 'geographical zones' similarities or differences in settlement patterns. After making a rough sketch map of the whole village, the locality was divided into pottery collection areas (PCAs) in an arbitrary fashion based on site layout as described above. A collection of pottery from each PCA was made on foot with the aim of collecting surface pottery for dating and defining traces of activity as well as investigating distributions and patterns of change. Twenty to thirty minutes were spent in collecting the pottery from each PCA, and large quantities of pottery sherds were randomly collected without concentrating on any specific type of pottery in order to increase the chance of having a fully representative assemblage of each area. All areas of the village, including date-palm groves and modern houses, were included. Any archaeological feature found during the survey was recorded using a hand-held GPS, plotted on the sketch plan with a brief description and photographs were taken of that feature.

#### 4.1.2.1.5.3.2- OTHER SURVEY AREAS:

In addition to the 'wadi villages' PCAs survey there were two other types of surveys carried out around and away from these PCAs. These are:

1- OVAs= Other Villages Areas
2- UWA= Upper Wadi Andam

#### 4.1.2.1.5.3.2.1- OTHER VILLAGES AREAS (OVAs) (Figures 9–10 & Map 9):

A survey was also carried out in an Area of Potential Interest around and beyond the six villages (Figures 9–10). Due to the fact that the current researcher was working alone, and for time and funding limitations, two areas were chosen for investigation within this larger Area of Potential Interest which were called 'Other Village Areas' (OVAs):

a- Village surrounding survey: a preliminary, surrounding survey was carried out on foot around each wadi village to a distance of between 1 and 2 $km^2$ in order to check for archaeological features and collect pottery that might indicate the extent and development of the village. This included checking all agricultural and land-moving activities.

b- Random survey: a survey of around 5 $km^2$ was carried out by car and on foot in randomly-selected locations away from the wadi villages (ca. 1–2 km away from each village). This, as it can be seen from Figure (9), was only carried out in one direction of the village as the area of interest was large and the fact that the current researcher was working alone with limited time. This survey was carried out in order to check for evidence of other types of occupation and activity unrelated to the wadi village PCAs. This included driving and stopping to check on foot all possible areas of archaeological evidence for pottery, flint or any other finds.

Within the Area of Potential Interest pottery was collected from the OVAs. These were defined where (and only where), pottery scatters, tombs, and/or 'other structures'[29] were encountered (Figure 10). Therefore, some OVAs include tombs whilst others do not, some include pottery scatters and others do not and, likewise, some include 'other structures' and some do not. Obviously some OVAs will include any combination of these three elements. This will be important when we come to discuss the association between certain types of pottery and OVAs that include tombs in Chapter Four (Section Two).

[29] By 'other structures' I mean , for example, the remains of houses, fortifications, industrial places, field walls and earthworks (see Chapter One, Table 1 and Appendix B for more details).

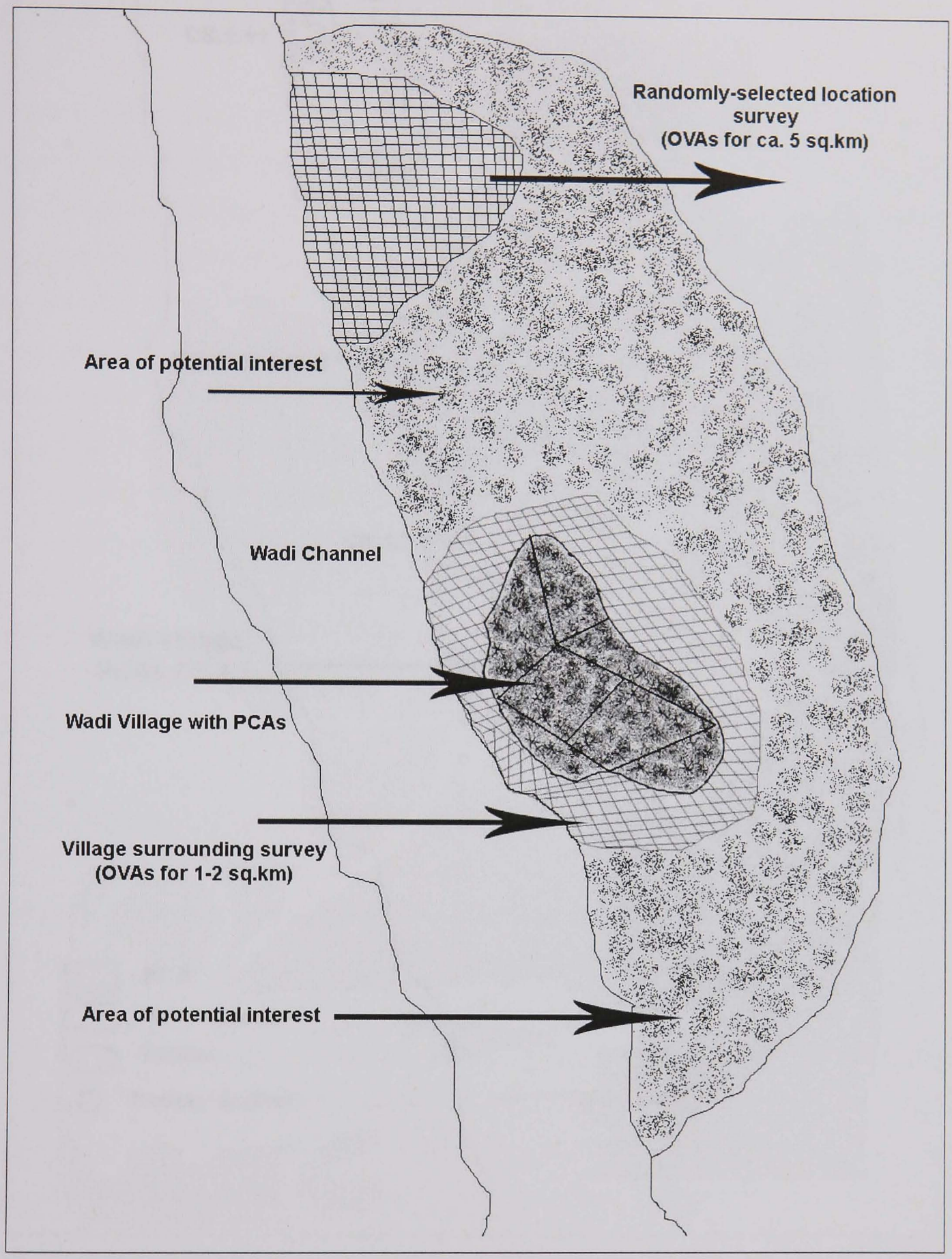


**Figure 9 Hypothetical example indicating the relationship between PCAs and the two types of OVAs (those around village PCAs and those randomly located in other parts away from the PCAs)**

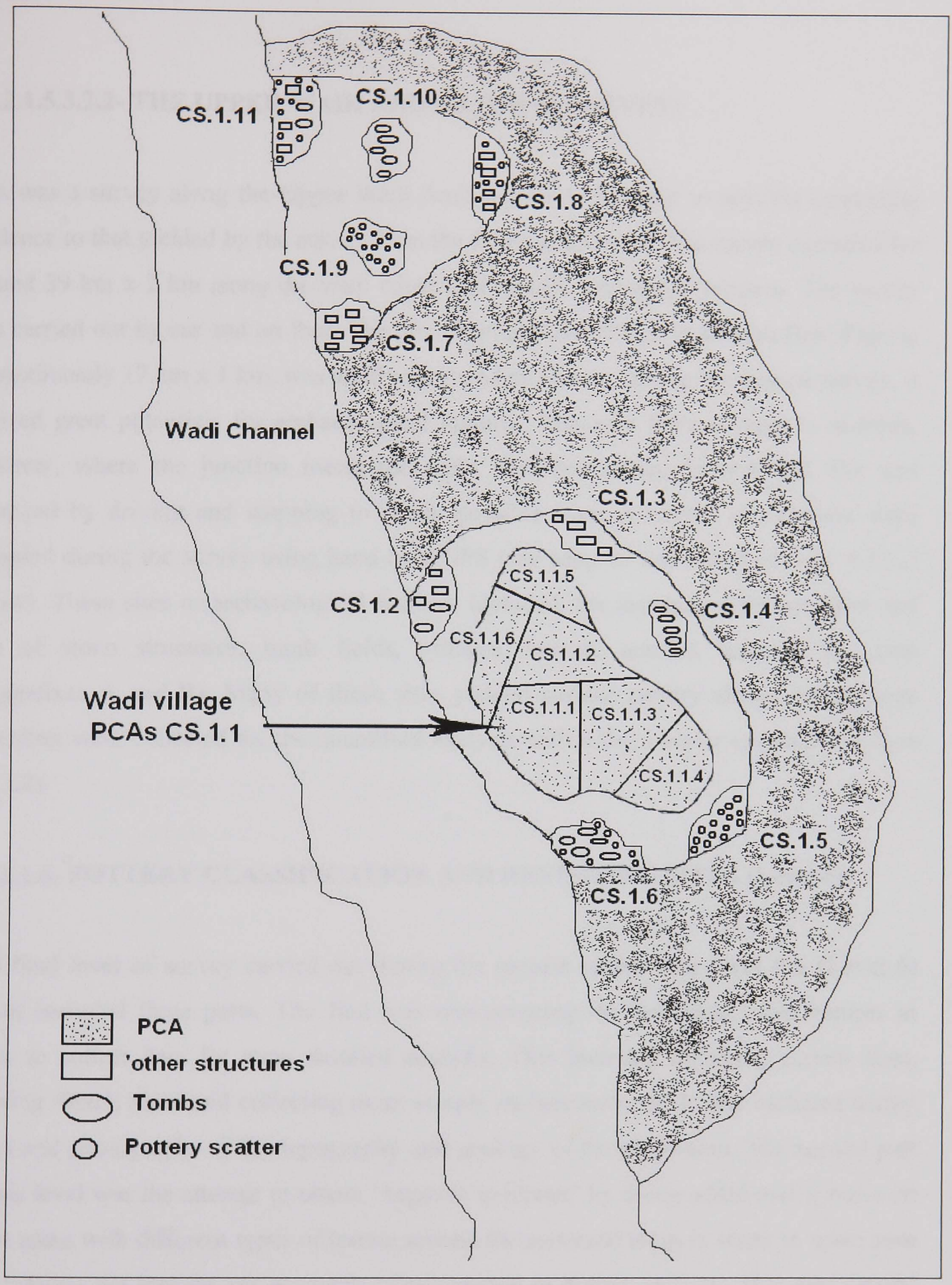


**Figure 10 Hypothetical example indicating how areas were defined and numbered according to PCAs and the two types of OVAs shown in Figure 9**

#### 4.1.2.1.5.3.2.2- THE UPPER WADI ANDAM (UWA) SURVEY:

This was a survey along the Upper Wadi Andam (UWA) in order to provide supporting evidence to that yielded by the survey from the PCAs and OVAs. The survey extended for around 39 km x 2 km along the wadi edges and its hills and gravel terraces. The survey was carried out by car and on foot. The area from al-Alya village to Khadra Bani Dafa'a, approximately 17 km x 1 km, was totally surveyed on foot as, during the general survey, it showed great potentials for archaeological features. The area from al-Alya to al-Jarda, however, where the junction meets the main road connecting Muscat and Sur was surveyed by driving and stopping to check possible sites. All types of evidence were recorded during the survey using hand-held GPS (see Map 45 and Site Typology 4.1.2.3 below). These sites or archaeological features included, for instance, different types and size of stone structures, tomb fields, villages, towers, artefact scatters, etc. (see Appendixes A and B). Many of these sites yielded surface pottery sherds where large quantities were collected for the quantified analysis within this chapter (see Section Two 4.2.3.2).

### 4.1.2.1.6- POTTERY CLASSIFICATION AND REVISITING SITES (Level 6):

The final level of survey carried out during the second season was level Six (Level 6) which included three parts. The first was concentrating on individual sites/features in order to collect data for more detailed analysis. This included revisiting certain sites, drawing sketch plans and collecting more sample surface material. It also included taking notes and photographs of the topography and geology of the study area. The second part of this level was the attempt to obtain 'negative evidence' by doing additional surveys on some areas with different types of terrain around the surveyed areas in order to make sure that they do not include any evidence of occupation or human activity. This was carried out by selecting random locations in some areas that were not investigated such as the wadi beds, broad flat interfluves and high mountainous areas. Then an area of around 5 $km^2$ was defined using a hand-held GPS. The methodology used in this survey was driving in zigzag lines and stopping to check on foot all possible areas of archaeological evidence for pottery, flint or any other finds. The third dealt specifically with pottery and its identification (for full details on identification and classification see Appendix C).

### 4.1.2.2- RECORDING ARCHAEOLOGICAL SITES/FEATURES:

Recording sites and features was done using twelve recording forms or sheets (Appendix E). Each site/feature was descried in detail, photographed, numbered and sketch plans and maps were done using hand-held GPS and 1:100,000 topographical maps. Additionally, the maps created for the different discussions within this thesis were made, using different computerized programs, after the following map sheets:

1- TPC, Sheet J–7B, Edition 6–GSGS, Ministry of Defence, UK, Year 2000
2- Sheets map 1:100:000 NF40–7B, 7C, 7F, NSAO
3- Sheet map 1:300:000 5.NSAO, Series OMAN MISC

All the surveyed areas were given an organised numbering system which starts with the symbol 'CS' which indicates the Wadi Andam Survey. Any recorded site was given the name of the nearest village or area to the site followed by the area number (e.g. Barzaman CS.7). This was followed by the site number (e.g. CS.7.1), and each site or feature within that site was also given a separate number (e.g. CS.7.1.3). This numbering system was used in order make the sites more recognisable for the reader and for any future studies (see also Appendix A). All the archaeological finds from the site surfaces were collected, and their description can be found at Appendix C (for pottery) and Appendix H (for other finds).

### 4.1.2.3- SITES TYPOLOGY:

A typology of sites (see Appendix B) was made for all the different archaeological remains found during the survey with the aim of showing what types of site were found, their function and their nature. During the survey, a large number of sites were defined, including different types of tomb, settlement, structure, earthwork and artefact. It is important to mention here that in several cases, the definition of sites was more or less based on the researcher's judgment and evaluation. For example, a site such as CS.2.52 near al-Ghoryeen modern village is considered to be an Umm an-Nar large settlement. This definition was based on the evidence found on the surface of the site, which included a large number of Umm an-Nar pottery sherds associated with a round tower, a group of

houses or structures, and a large number of tombs. The site's boundaries can easily be defined (see Section Three of this Chapter 4.3.3.2 & Figure 56). Other sites were defined based on what was found on the surface regardless of their original function. Any type of structure or archaeological feature (e.g. stone foundation, platform, earthwork, artefact, etc.) was recorded as a site (see Appendix B). For instance, finding a group of piled or scattered stones as well as artefacts on the surface were assumed to be an indication of human activity and, therefore, recording such types of evidence was important for the archaeological record.

There is a debate amongst landscape archaeologists about the nature and definition of site(s) (on-and off-sites) (cf. R. Foley 1981; Wilkinson TJ 1974, 1982, 1989, 2003; Gallant 1986; Costa & Wilkinson TJ 1987: 80–83; Bintliff & Snodgrass 1988; Wilkinson TJ & Tucker 1995; Bintliff & Sbonias 1999; Francovich, Patterson & Barker 2000). Different approaches and definitions of sites have been adopted as well as different field techniques in order to define them (cf. Sbonias 1999: 2; Mattingly 2000: 6). Field archaeologists have realised that there are essential data about human activity which can be provided, not only by clearly defined archaeological sites, but also by a large variety of "off-site" features such as scatters of artefacts (Wilkinson TJ & Tucker 1995: 19). Moreover, they have become aware that there are some scatters with weak and very low densities of artefacts that make their identification as sites very difficult. It is argued, nonetheless, that these scatters should not be neglected and must be located and recorded as they may represent important data relating to human activity. In addition, in order to define their distribution and function, relevant methodologies should be adopted. These should involve techniques of off-site artefact sampling that assist in discriminating between such occupation scatters and the universal 'background noise' (*ibid*: 16). Such a technique was developed for the Wadi Andam Survey (see 4.1.2.1.5.2 above).

Recording such types of scatters, whether they are on- or off-site is important. Several surveys have ignored some of the off-site material or 'background noise' that show weak and very low density of artefacts unless they represent an important site or archaeological feature. By contrast, those surveys that tended to record and collect every possible piece of evidence on the surface attempt to apply intensive methods of collecting and quantification (Mattingly 2000: 6). The latter tend to quantify and record off-site artefacts

by dividing the area into transects or units for artefact collection covered by fieldwalking. The collected artefacts are then combined and analysed (*ibid*: 7). On finding pottery or other artefact scatters without other associated remains (e.g. structures, tombs), I have aimed to record this type of archaeological feature regardless of its density. So, each scatter was considered a unique site (artefact scatter) and was numbered, and the whole area concerned was carefully surveyed on foot. Such scatters might be, for example, the result of nomadic camp site(s), or they might be the result of random pot fragments dropped by a traveller. Whatever the interpretation, their occurrence must be taken into consideration.

## SECTION TWO: QUANTIFYING LEVELS OF ACTIVITY IN THE WADI ANDAM:

### 4.2.1- INTRODUCTION:

In Chapter One, (1.1.2) the problem of quantifying settlement in Arabia was discussed. It was argued that other surveys in the region have not developed a research methodology using quantification techniques. Almost all of these surveys have specific agendas, or they worked in very localised areas. This lack of work carried out in quantification makes clear the need for a general survey using a systematic methodology in order to provide a good understanding of artefact density and to allow the quantification of settlement changes and levels of activity over time within the Oman Peninsula. There is a need for a sampling technique that is different to those used in Europe, the Mediterranean and other parts of the Near East; a technique that is capable of taking into considerations the peculiarities of the Arabian environment (see Chapter One 1.1.2.1). Such a technique was developed and applied by the current researcher at Wadi Andam and its results will be presented here as well as in Section Three of this chapter.

This section will start by presenting the questions to be answered from the quantified analysis in this chapter, which will be followed by discussing the results from the analysis of the data collected during the survey. This will begin with a presentation of the general evidence from the whole survey, which will then be broken down based on the type of survey as defined above (Section One 4.1.2.1.5.3). At the end, a summary of the results will be given.

### 4.2.2- AIMS AND QUESTIONS:

As has been indicated earlier in this chapter (Section One 4.1.2.1), part of the aim of this research is to survey a number of selected 'wadi villages', and their surrounding areas, as well as some other areas near and around the wadi system. It is hoped that the result of this work will throw light on the quantification of settlement and other activity. This is not a final and definitive picture as only six, out of an estimated 71, wadi villages in the study area were investigated (8.45%). Nevertheless, they were also supported by other

investigations in the surrounding areas of these villages (OVAs) and along the Upper Wadi Andam banks (UWA).

There are two key questions that need to be answered in the first instance: (1) is it possible to detect evidence for pre-modern occupation in the pottery collected from wadi village PCAs and (2) is there evidence of occupation in other areas along the wadi systems? The first question relates to whether or not each period is represented both in each wadi village and the areas within and around it, as well as how does this evidence match with tombs and 'other structures' from each wadi village. The second question is aimed at showing what type of evidence exists in areas other than those in the wadi villages, and what types of site and/or activity do they represent. It is hoped that this will allow an understanding of the level of activity (periods of growth and decline) over time in these areas and show whether or not there was continuity or discontinuity, and/or changes in settlement patterns.

### 4.2.3- QUANTIFIED LEVELS OF ACTIVITY:

During the survey a large number of pottery sherds of different periods were collected, washed, dried, sorted and classified into different classes (see Appendix C). Some types of pottery were difficult to assign with certainty to any specific period as they bear possible characteristics of two possible periods. Such sherds were assigned to a broad timespan that, in some cases, includes two subsequent periods (e.g. Late Bronze Age, Islamic, Middle Islamic to Late Islamic and Late Islamic to recent). Moreover, there are some sherds which bear some, but not all, characteristics of a particular period but it was impossible to be certain whether or not they belong to that specific period. Therefore, they were assigned to the period but followed by a question mark in order to show that there is some doubt about their attribution. The information from the pottery collected during the survey was entered in a worksheet using Microsoft Excel 2003 program, which allowed data to be entered and updated more easily than any other program. The data then was transferred into an electronic database and analysed using Microsoft Access 2003 program. This database includes all the information about the collected sherds, including sherd number, site number where the sherd was collected from, type of site, date/period of the sherd, type of class, form and surface treatment, whether or not it was photographed and/or drawn and

other notes. A number of queries and tables were created in order to analyse the pottery data. This analysis produced a set of tables and graphs that will be discussed in this section.

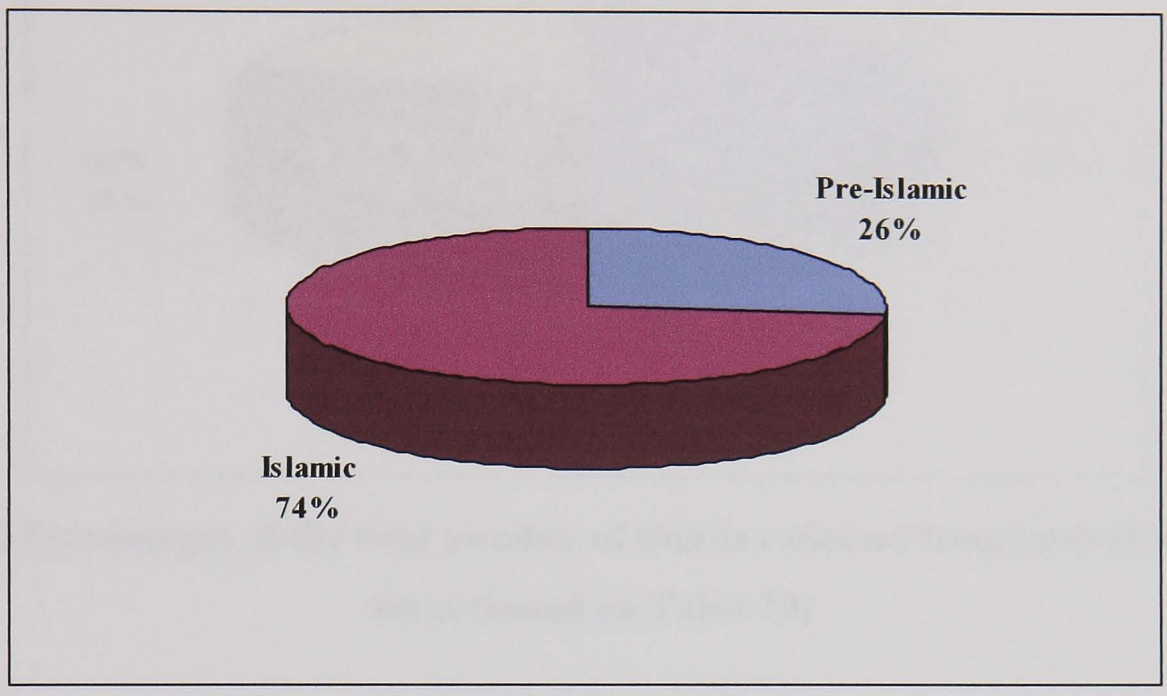


**Figure 11 Percentages of the total number of pre-Islamic and Islamic sherds collected from the whole survey (based on Table 18)**

| Period | Total sherds |
|---|---|
| Pre-Islamic | 5,032 |
| Islamic | 14,208 |
| **Total** | **19,240** |

**Table 18 Total number of pre-Islamic and Islamic sherds collected from the whole survey**

In total, 19,240 sherds were collected from the whole survey. Figure 11 show that 26% of these sherds are pre-Islamic and the remaining 74% are Islamic of which the majority are Late Islamic (see Figure 13). These figures show that the pre-Islamic sherds are less common than the Islamic ones. This could be related to the fact that the majority of the sherds from the PCAs in the six villages are Islamic as these villages continue to be occupied. This is shown by Figure 12 where 51% of the collected sherds from all the survey come from PCAs.

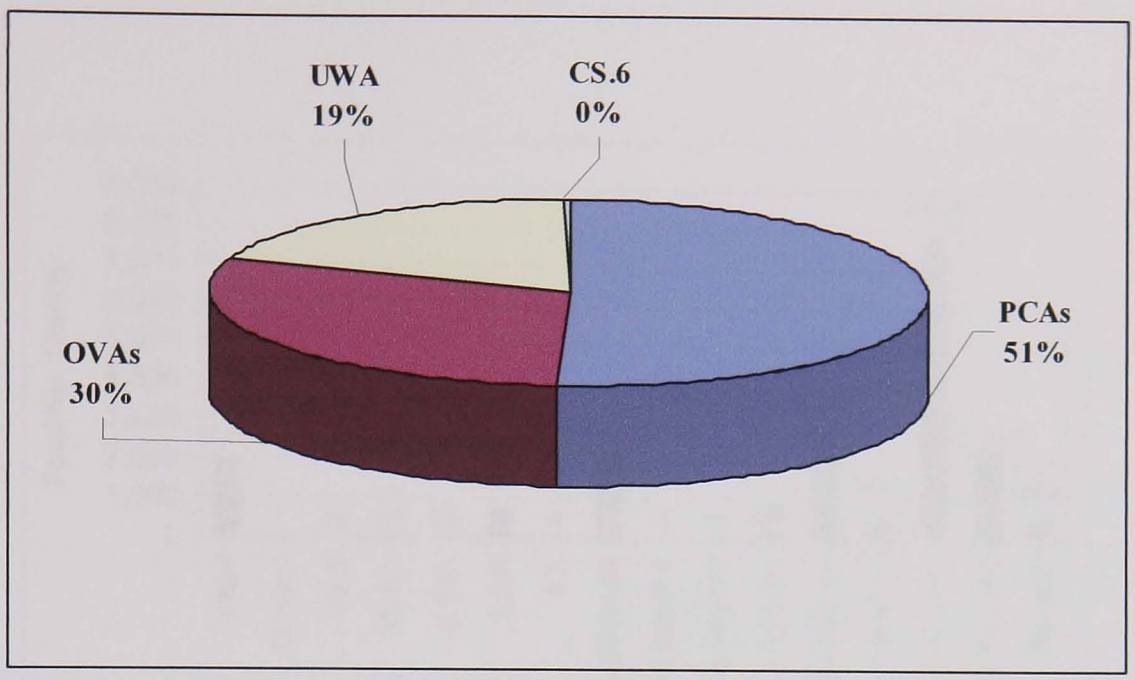


**Figure 12 Percentages of the total number of sherds collected from each of the survey areas (based on Table 19)**

| Area | Total sherds |
|---|---|
| PCAs | 9,702 |
| OVAs | 5,785 |
| UWA | 3,698 |
| CS.6 | 55 |
| **Total** | **19,240** |

**Table 19 Total number of sherds collected from each of the survey areas (CS.6 is a Hafit survey area, see section Three of this chapter 4.3.2.1, Table 28)**

Figure 13 shows the total number of sherds by period from the whole survey. It demonstrates that the majority of the sherds are Islamic, mainly Late Islamic, followed by Middle Islamic[29]. By contrast, the majority of pre-Islamic sherds are Late Iron Age/Samad followed by Umm an-Nar and Early Iron Age. Figure 13 also shows that there are very few sherds from the Wadi Suq and Sasanian–Early Islamic periods. This is the picture from all areas covered by the survey. The following discussion will break down the evidence from each of the survey areas, starting with those from wadi villages (PCAS and OVAs [this includes the area of potential interest of both village surrounding survey and random survey]) followed by other areas along the Upper Wadi Andam (UWA).

[29] See Appendix I for an attempt to test some of the quantitative differences from the data analysis within this chapter using the simple "Chi-square" test in order to show that the differences in sherd numbers between different periods are indeed statistically significant and not simply chance occurrences.

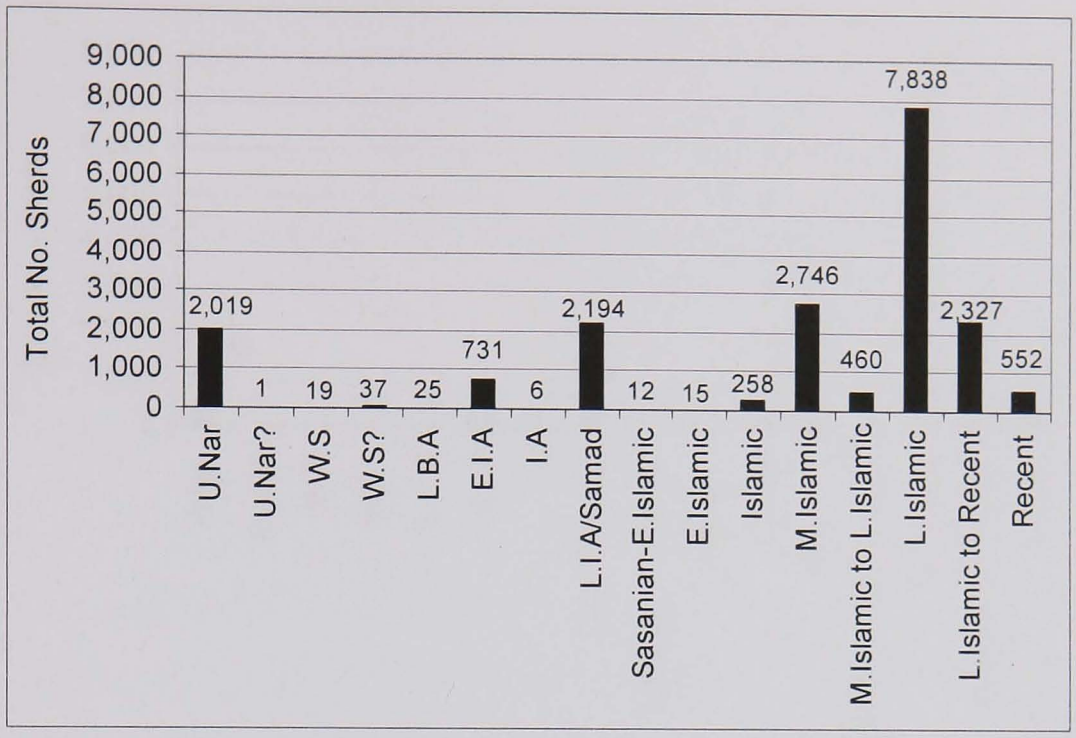


**Figure 13 Total number of sherds by period from all surveyed area**

### 4.2.3.1- LONG-TERM TRENDS FROM AND AROUND WADI VILLAGES:

The analysis of pottery started with the question of pre-modern occupation in the PCAs in the six villages (al-Fulayj CS.1; al-Khurais CS.3; al-Qaryatain CS.4; al-Khashbah CS.5; Barzaman CS.7 and ar Rawdhah CS.9). Second was the question of whether or not this pattern is similar to that from the other areas within and around these villages. Before discussing the results of the data analysis of the village areas, namely PCAs and OVAs, it is worth giving a general picture of the evidence from all of the villages. Figure 14 shows all the sherd counts by period from all the six surveyed villages, including both PCAs and OVAs. It appears that the most common sherds are those dated to the Islamic, mainly Late Islamic, followed by the Middle Islamic. More precisely, among the pre-Islamic sherds (Figure 15), Umm an-Nar is the most commonly represented followed by Late Iron/Samad and Early Iron Age. Furthermore, the data shows that there are very few sherds from the Wadi Suq and Early Islamic periods.

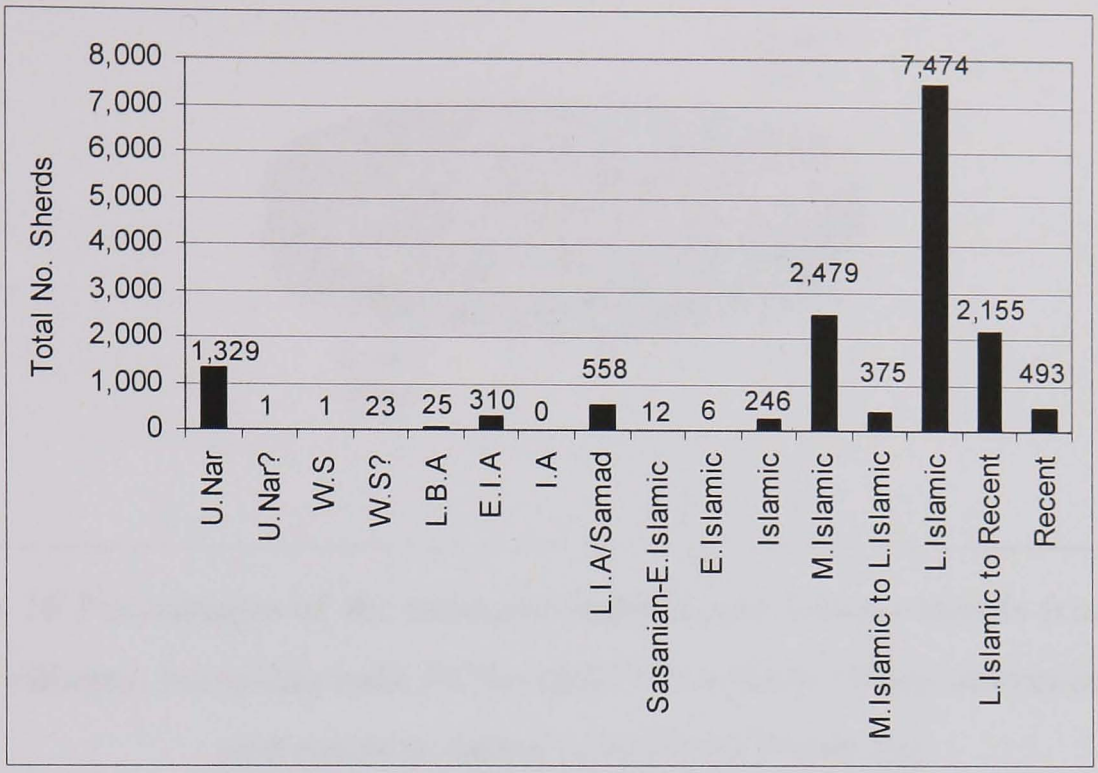


**Figure 14 Sherd counts by period from all six surveyed villages, including both PCAs and OVAs [both village surrounding survey and random survey]**

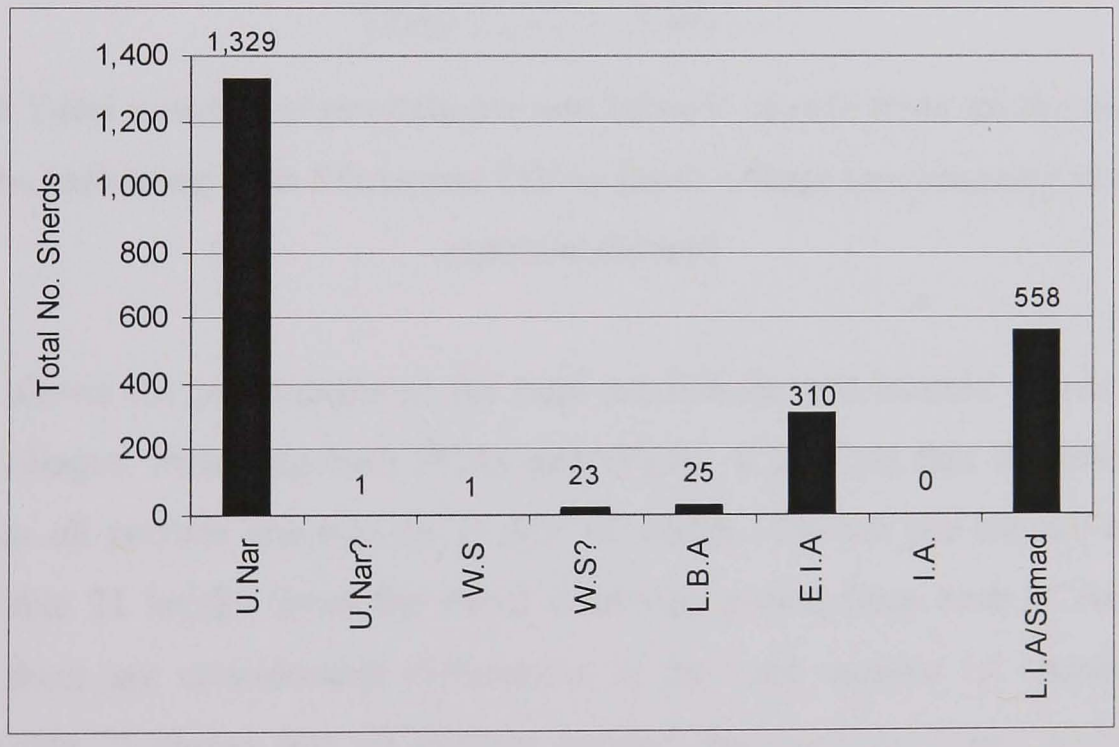


**Figure 15 Pre-Islamic sherd counts from all six surveyed villages, including both PCAs and OVAs [both village surrounding survey and random survey]**

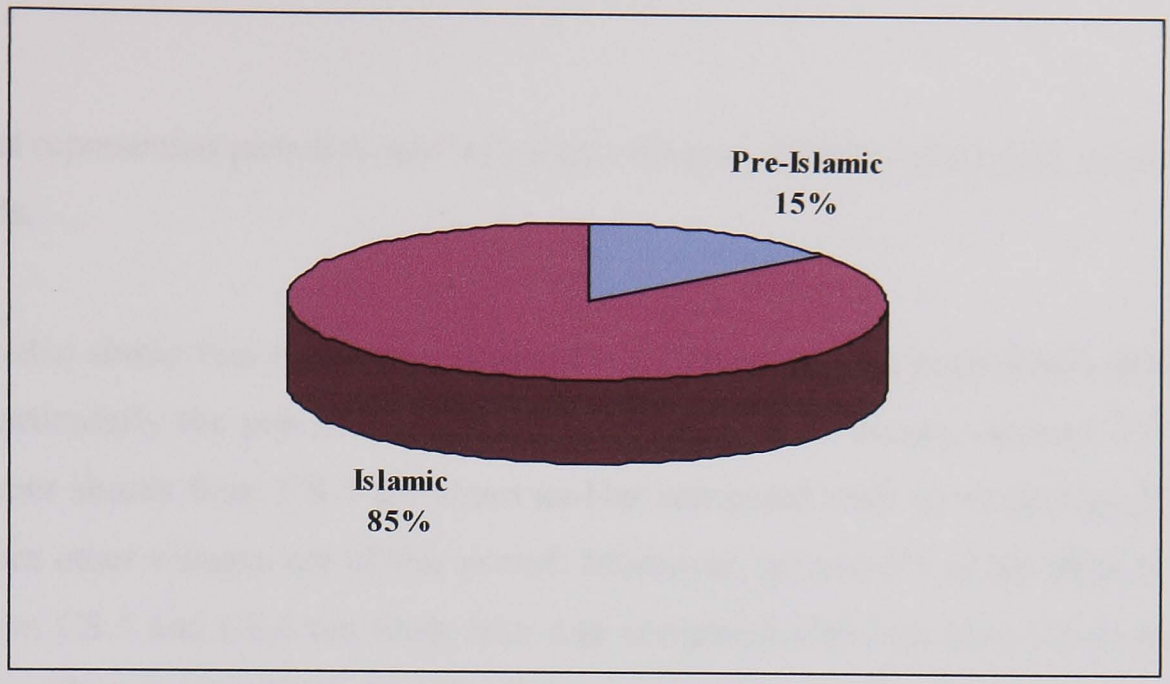


**Figure 16 Percentages of the total pre-Islamic and Islamic sherds from all six surveyed villages, including both PCAs and OVAs [both village surrounding survey and random survey] (based on Table 20)**

| Period | Total Sherds |
|---|---|
| Pre-Islamic | 2,247 |
| Islamic | 13,240 |
| **Total** | **15,487** |

**Table 20 Total number of pre-Islamic and Islamic sherds from all the six surveyed villages, inclduing both PCAs and OVAs [both village surrounding survey and random survey]**

Figure 16 shows the percentages of the total pre-Islamic and Islamic sherds from all six surveyed villages, including both PCAs and OVAs. It appears that the total number of sherds from all periods amounts to 15,487 of which 15% are pre-Islamic and 85% are Islamic. Table 21 breaks down the sherd counts by period from both PCAs and OVAs. Although there are considerable differences in the total number of sherds among the villages, Table 21 shows that all villages yielded sherds of the Umm an-Nar period in which CS.5 yielded the largest number. The reason behind this large number of Umm an-Nar sherds might be related to the fact that this village, as will be seen in Section Three (4.3.3) of this chapter, yielded several types of evidence from this period (e.g. towers, tombs, pottery scatters, etc.). Moreover, all villages yielded Late Iron Age/Samad sherds. This period is the second most represented pre-Islamic period after the Umm an-Nar. Further, the Early Iron Age is well represented at five villages. By contrast, the Wadi Suq

is the least represented period where only four villages yielded a total of 24 possible Wadi Suq sherds.

The table also shows that there are considerable differences in the proportions of sherds by period, particularly the pre-Islamic periods, among the six villages. Around 43% of the total number sherds from CS.5 are Umm an-Nar compared with no more than 2% of the sherds from other villages are of this period. Moreover, around 5% of the total number of sherds from CS.5 and CS.4 are Early Iron Age compared with less than 1% of the sherds from other villages are of this time. Lastly, around 5% of the total sherds from CS.9 and 4% from CS.1 are Late Iron Age/Samad compared with 1.6% of the sherds from CS.7.

| Period | CS.1 | CS.3 | CS.4 | CS.5 | CS.7 | CS.9 | Total/Period |
|---|---|---|---|---|---|---|---|
| U.Nar | 30 (2.6%) | 27 (1.0%) | 2 (0.1%) | 1,155 (43.1%) | 12 (1.1%) | 103 (2.1%) | 1,329 |
| U.Nar? | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 |
| W.S | 1 (0.1%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 |
| W.S? | 2 (0.2%) | 0 (0.0%) | 0 (0.0%) | 1 (0.0%) | 7 (0.6%) | 13 (0.3%) | 23 |
| L.B.A | 25 (2.2%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 25 |
| E.I.A | 10 (0.9%) | 6 (0.2%) | 131 (4.7%) | 143 (5.3%) | 0 (0.0%) | 20 (0.4%) | 310 |
| I.A | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 |
| L.I.A | 50 (4.3%) | 74 (2.6%) | 89 (3.2%) | 65 (2.4%) | 17 (1.6%) | 263 (5.3%) | 558 |
| Sasanian–E.Islamic | 12 (1.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 12 |
| E.Islamic | 1 (0.1%) | 0 (0.0%) | 1 (0.0%) | 0 (0.0%) | 1 (0.1%) | 3 (0.1%) | 6 |
| Islamic | 5 (0.4%) | 85 (3.0%) | 28 (1.0%) | 23 (0.9%) | 5 (0.5%) | 100 (2.0%) | 246 |
| M.Islamic | 264 (22.8%) | 729 (26.0%) | 581 (20.7%) | 112 (4.2%) | 37 (3.4%) | 756 (15.3%) | 2,479 |
| M.Islamic to L.Islamic | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 46 (4.2%) | 329 (6.7%) | 375 |
| L.Islamic | 479 (41.3%) | 1,546 (55.1%) | 979 (34.8%) | 880 (32.9%) | 716 (65.9%) | 2,874 (58.1%) | 7,474 |
| L.Islamic to Recent | 220 (19.0%) | 293 (10.4%) | 818 (29.1%) | 215 (8.0%) | 172 (15.8%) | 437 (8.8%) | 2,155 |
| Recent | 61 (5.3%) | 46 (1.6%) | 183 (6.5%) | 82 (3.1%) | 74 (6.8%) | 47 (1.0%) | 493 |
| **Total/village** | **1,160 (100%)** | **2,806 (100%)** | **2,812 (100%)** | **2,677 (100%)** | **1,087 (100%)** | **4,945 (100%)** | **15,487** |

**Table 21 Sherd counts by period from all six surveyed villages, including both PCAs and OVAs [both village surrounding survey and random survey] (% based on the total sherds by period)**

The above figures demonstrate that the evidence from all the villages (both PCAs and OVAs) indicates that they were largely occupied during the Umm an-Nar and Iron Age/Samad periods as well as the periods from the Middle Islamic to the Recent. They also suggest that there was a decline in occupation during the Wadi Suq and Early Islamic periods. A further question is whether the pattern is the same between PCAs and OVAs or it is represented by one type of area more than the other? To answer this question, it is necessary to present separately the evidence from the PCAs and OVAs.

#### 4.2.3.1.1- LONG-TERM TRENDS FROM POTTERY COLLECTION AREAS (PCAs):

As indicated earlier in Section One of this chapter (4.1.2.1.5.3.1) each village was divided in an arbitrary fashion based on site layout, into five to eight PCAs for pottery collection[30]. The total count is presented in Figure 17. A total of 9,702 sherds of all periods came from thirty-six PCAs in six wadi villages, representing around half of the total of 19,240 sherds collected during the whole survey. Large numbers of sherds were collected from these areas. It was thought that a sample this large would be necessary in order to increase the possibility of finding pottery from periods which are not generally well represented, such as the Wadi Suq period.

Figure 17 shows the sherd count by period from the PCAs within the six surveyed villages, and demonstrates that the most common pottery is, once again, Islamic, mainly Late Islamic. To give a clearer idea of the trends in the pre-Islamic periods, Figure 18 presents the sherd counts by period from all PCAs showing only the pre-and early Islamic periods. Figure 18 shows that sherds of the Umm an-Nar period are by far the most common, followed by the Late Iron Age/Samad, while the least common are sherds of the Wadi Suq, Early Iron Age and Early Islamic. This information therefore suggests that there was more activity at these PCAs in the Umm an-Nar and Late Iron Age/Samad periods than in the Wadi Suq, Early Iron Age and Early Islamic.

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[30] The main divided PCAs within each village include CS.1.5 in al-Fulayj, CS.3.1 in al-Khurais, CS.4.1 in al-Qaryatain, CS.5.1 in al-Khashbah, CS.7.1 in Barzaman and CS.9.1 in ar-Rawdhah. Each of these was divided into areas for pottery collection (e.g. al-Fulayj was divided into five PCAs: CS.1.5.1 to CS.1.5.5).

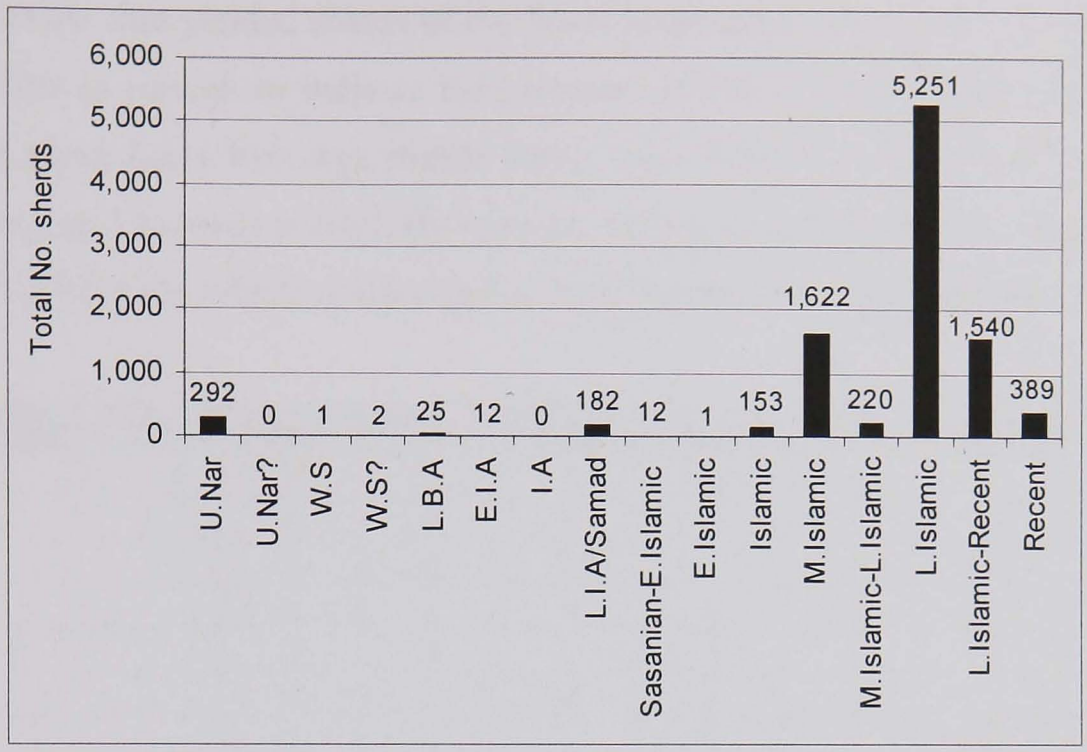



**Figure 17 Sherd counts by period only from the PCAs in all six surveyed villages**

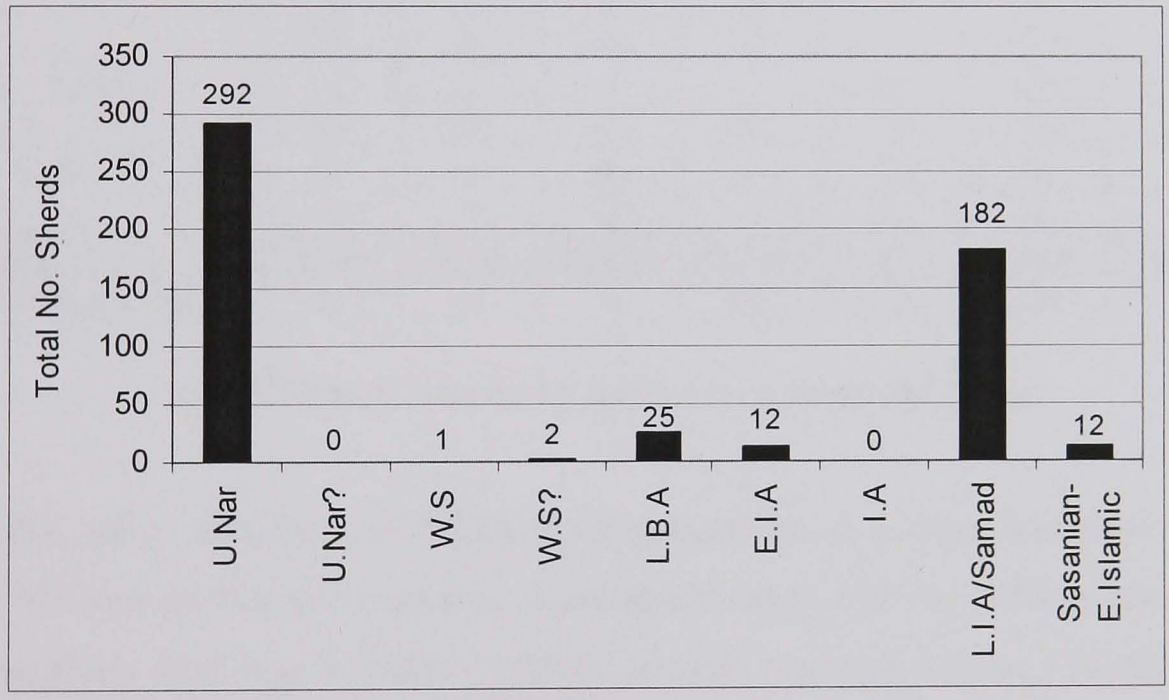



**Figure 18 Total number of sherds of the pre- and Early Islamic periods only from the PCAs**

The above figures raise the question whether or not this pattern is the same in the PCAs at each village. Table 22 breaks down the pottery by period from each of the main PCAs. It appears that al-Fulayj (CS.1) is the only PCAs that yielded sherds from all periods. Five of the six PCAs villages yielded Umm an-Nar sherds, amongst which al-Khashbah (CS.5) yielded the largest number, along with a further large number of other Umm an-Nar archaeological features (see Section Three of this Chapter 4.3.3.2). Furthermore, al-Fulayj

is the only PCAs that yielded sherds of the Wadi Suq period. There are only three of these sherds but that is enough to indicate the presence of activity during this time. The same can be said about Early Iron Age sherds which were found in only two PCAs (CS.1 and CS.3) making up 12 sherds in total. By contrast, the Late Iron Age/Samad is represented at five of the six PCAs in which ar-Rawdhah (CS.9) yielded the largest number of sherds.

| Period | CS.1 | CS.3 | CS.4 | CS.5 | CS.7 | CS.9 | Total/Period |
|---|---|---|---|---|---|---|---|
| U.Nar | 28 | 15 | 2 | 244 | 0 | 3 | **292** |
| U.Nar? | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| W.S | 1 | 0 | 0 | 0 | 0 | 0 | **1** |
| W.S? | 2 | 0 | 0 | 0 | 0 | 0 | **2** |
| L.B.A | 25 | 0 | 0 | 0 | 0 | 0 | **25** |
| E.I.A | 10 | 2 | 0 | 0 | 0 | 0 | **12** |
| I.A | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| L.I.A/Samad | 28 | 0 | 7 | 1 | 5 | 141 | **182** |
| E.Islamic Sasanian | 12 | 0 | 0 | 0 | 0 | 0 | **12** |
| E.Islamic | 1 | 0 | 0 | 0 | 0 | 0 | **1** |
| Islamic | 4 | 37 | 27 | 23 | 5 | 57 | **153** |
| M.Islamic | 240 | 445 | 473 | 100 | 37 | 327) | **1,622** |
| M.Islamic–L.Islamic | 0 | 0 | 0 | 0 | 46 | 174) | **220** |
| L.Islamic | 448 | 853 | 847 | 597 | 710 | 1,796 | **5,251** |
| L.Islamic–Recent | 150 | 151 | 696 | 174 | 112 | 257 | **1,540** |
| Recent | 57 | 13 | 177 | 71 | 53 | 18 | **389** |
| **Total/village** | **1,006** | **1,516** | **2,229** | **1,210** | **968** | **2,773** | **9,702** |
| **Total pre-Islamic/Village** | **94** | **17** | **9** | **245** | **5** | **144** | **514** |

**Table 22 Sherd counts by period only from the PCAs**

In the main, when data from all PCAs is taken together, it is clear that there are large numbers of Umm an-Nar and Late Iron Age/Samad sherds and very little evidence of the Wadi Suq, Early Iron Age and Early Islamic periods (see last column [Total/Period] in Table 22). Generally speaking, the figures suggest that there was more activity within these PCAs during the Umm an-Nar and Late Iron Age/Samad as well the later Islamic periods, than during the Wadi Suq, Early Iron and Early Islamic periods. Apart from CS1, none of the PCAs yielded evidence of Wadi Suq, only two sherds of Early Iron Age were found in CS.3 and no sherds of the Early Islamic period were found at all. This suggest that there was perhaps very little or no settlement during these periods.

This evidence poses the question of whether or not the same pattern will be found in the OVAs. That is to say, was this level of activity represented only within the PCAs or did it extend to the areas around these villages?

#### 4.2.3.1.2- LONG-TERM TRENDS FROM OTHER VILLAGES AREAS (OVAs):

During level three of the Wadi Andam Survey, besides the PCAs within the six surveyed villages, a survey was carried out in the area of potential interest for about 1-2 $km^2$ around each village, and for around 5 $km^2$ in the surrounding area away from each village along the wadi systems (see Section One of this Chapter 4.1.2.1.5.3.2.1). These areas were surveyed in order to check whether or not there was activity within and away from each village (OVAs). The OVAs tend to be located along the wadi banks and terraces, and in several cases, they are surrounded by rock and gravel hills, which sometimes show evidence of activity, mainly tombs. All evidence was recorded during the survey and all finds (mostly pot sherds) were collected. Their total count is presented in Figure 19. This figure gives a general picture of the pottery count by period only from the OVAs [both village surrounding survey and random survey], indicating that the pattern is similar to that from the PCAs in which the Islamic sherds are the most common, mainly Late Islamic; however the sherd proportions differ greatly from the PCAs (see Figures 17 & 19). Figure 20 shows a more detailed picture of the pottery from only the pre- and Early Islamic periods, indicating that, once again, the Umm an-Nar sherds are the most common followed by the Iron Age, both Early and Late. This is the same general picture yielded by the PCAs, but again the proportions in the OVAs differ greatly from those in the PCAs (Figure 21). The comparison shows that more pre-Islamic sherds were collected from the OVAs than the PCAs. The total number of Umm an-Nar sherds from OVAs is nearly three times higher than those from the PCAs. Moreover, the total number of Wadi Suq sherds from OVAs is almost ten times higher than from the PCAs, while the OVAs are 24 times higher for the Early Iron Age and double in the Late Iron Age/Samad. This might be related to the fact that OVAs yielded sherds not only from occupational areas ('other structures') but also from tombs from different periods, while no tombs exist within PCAs (see Table 25 below).

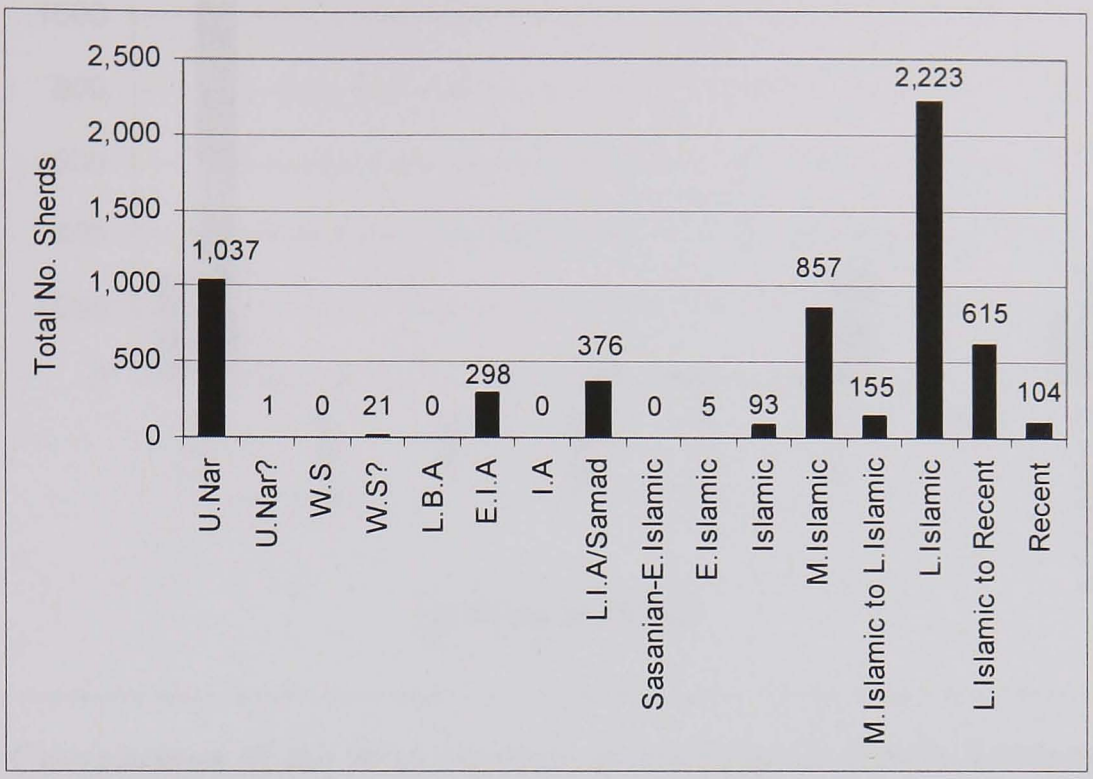



**Figure 19 Sherd count by period from only the OVAs [both village surrounding survey and random survey]**

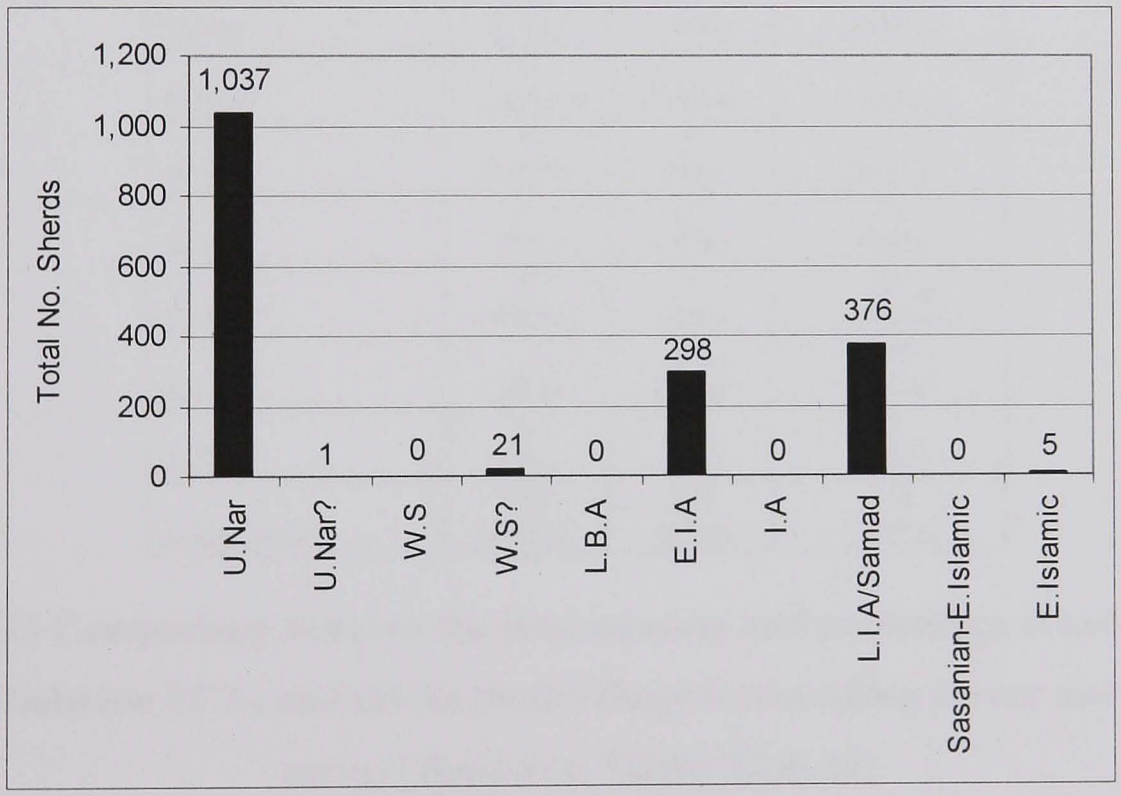



**Figure 20 Sherd count for the Pre- and Early Islamic periods only from OVAs [both village surrounding survey and random survey]**

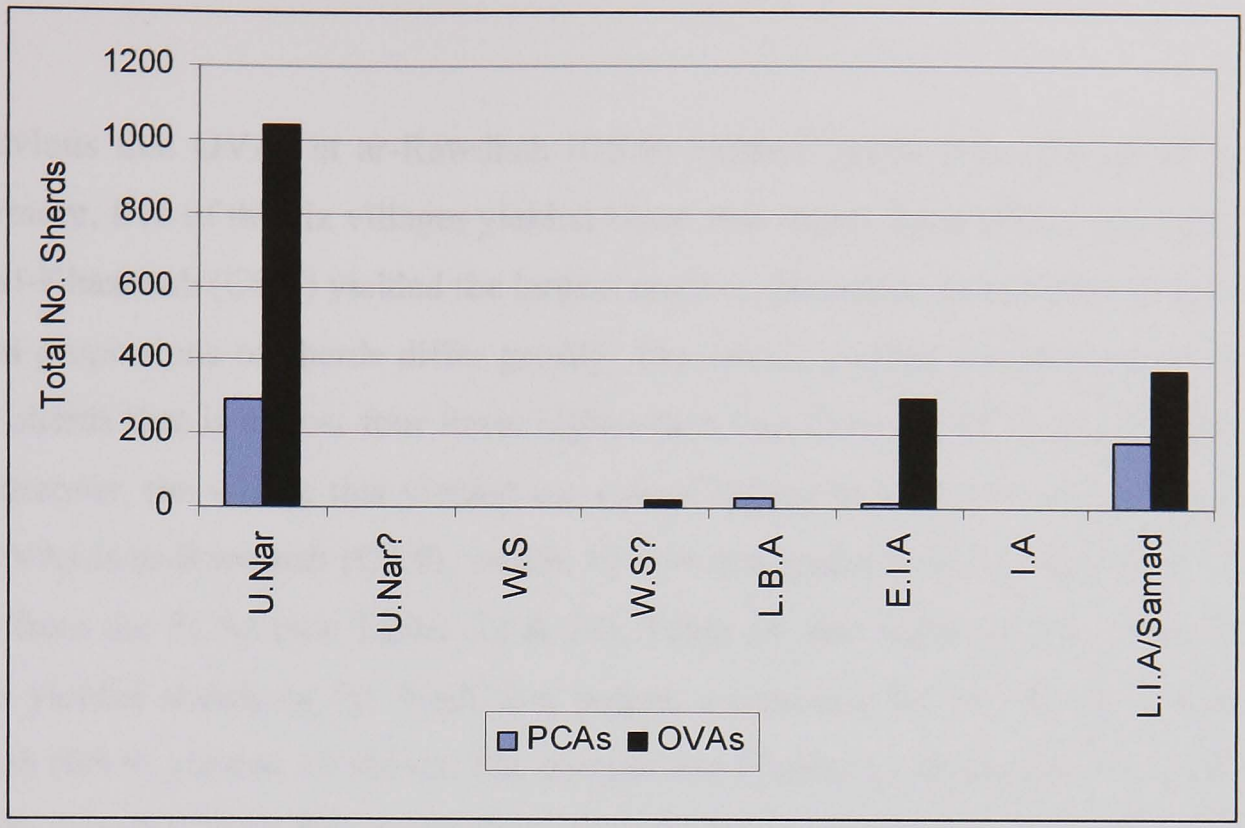



**Figure 21 Comparison of the total number of pre-Islamic sherds between PCAs and OVAs [both village surrounding survey and random survey] (based on Table 23)**

| Period | PCAs | OVAs | Total/Period |
|---|---|---|---|
| U.Nar | 292 (22%) | 1,037 (78%) | 1,329 (100%) |
| U.Nar? | 0 (0%) | 1 (100%) | 1 (100%) |
| W.S | 1 (100%) | 0 (0%) | 1 (100%) |
| W.S? | 2 (9%) | 21 (91%) | 23 (100%) |
| L.B.A | 25 (100%) | 0 (0%) | 25 (100%) |
| E.I.A | 12 (4%) | 298 (96%) | 310 (100%) |
| I.A | 0 (0%) | 0 (0%) | 0 (0%) |
| L.I.A/Samad | 182 (33%) | 376 (67%) | 558 (100%) |

**Table 23 Comparison between the total number and percentage of pre-Islamic sherds between PCAs and OVAs [both village surrounding survey and random survey] (based on Tables 22 & 24)**

To understand the sherds' distribution and density, Table 24 presents the pottery numbers by period from the OVAs in order to allow comparison between villages. Again, as was the case with the PCAs, Table 24 shows that there are considerable differences in the total number of sherds by period among the six OVAs' villages. Apart from the Early Iron Age,

it is obvious that OVAs at ar-Rawdhah (CS.9) yielded sherds from almost all periods. Furthermore, five of the six villages yielded Umm Nar sherds from OVAs amongst which, again, al-Khashbah (CS.5) yielded the largest number. However, as has been stated above, the total proportions of sherds differ greatly. The OVAs yielded a total number of Umm an-Nar sherds that is almost four times higher than that from the PCAs (see Tables 22 & 24). Moreover, the village that yielded the second largest number of Umm an-Nar sherds from OVAs is ar-Rawdhah (CS.9), which, by contrast, yielded only three sherds of Umm an-Nar from the PCAs (see Tables 22 & 24). Table 24 also indicates that OVAs at three villages yielded sherds of the Wadi Suq period, accounting for 21 sherds, of which ar-Rawdhah (CS.9) yielded 13 sherds. The comparison (Tables 22 & 24) shows that there are generally very few Wadi Suq sherds from both the PCAs and OVAs. Only al-Fulayj (CS.1) yielded three sherds of this period from the PCAs, but did not yield any from the OVAs. This is a slightly different picture to the data from the PCAs, but the numbers of Wadi Suq sherds are always lower than for the other pre-Islamic periods, namely Umm an-Nar and Iron Age/Samad. Thus, it is possible to argue that the trend outlined in Table 22 is generally confirmed by the OVAs (Table 24), but the OVAs data makes it clear that the situation is not as simple as the PCAs might suggest. The comparison also shows that whilst four of the villages yielded Early Iron Age sherds from the OVAs, only two yielded sherds of this period from the PCAs. All villages yielded Late Iron Age/Samad sherds from the PCAs and most from the OVAs. This evidence might indicate that there was considerably more activity at these villages in the Umm an-Nar and Iron Age than in the Wadi Suq and Early Islamic. In other words, the evidence indicates that the PCAs and OVAs were inhabited more intensively during the Umm an-Nar and Late Iron Age/Samad.

The comparison (see Tables 22 & 24) also shows that the PCAs are more dominated by Islamic period pottery, mainly Late Islamic, than the OVAs where higher proportions of pre-Islamic pottery were found. The reason behind this is unclear but it might be related to the fact that OVAs yielded large evidence from pre-Islamic tombs (see Table 25 below), while no such tombs were found within the PCAs.

Thus, the evidence from the OVAs indicates a high level of activity during the Umm an-Nar and Iron Age/Samad periods, and very little evidence during the Wadi Suq. This is the same general trend as the PCAs. It is important to see how much of the evidence from

OVAs comes from tombs and/or 'other structures' rather than occupation, which is probably where most of the PCAs evidence originated from. Clarification of this point will assist in interpreting the evidence.

| Period | CS.1 | CS.3 | CS.4 | CS.5 | CS.7 | CS.9 | Total/Period |
|---|---|---|---|---|---|---|---|
| U.Nar | 2 | 12 | 0 | 911 | 12 | 100 | **1,037** |
| U.Nar? | 0 | 0 | 0 | 1 | 0 | 0 | **1** |
| W.S | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| W.S? | 0 | 0 | 0 | 1 | 7 | 13 | **21** |
| L.B.A | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| E.I.A | 0 | 4 | 131 | 143 | 0 | 0 | **298** |
| I.A | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| L.I.A/Samad | 22 | 74 | 82 | 64 | 12 | 122 | **376** |
| Sasanian–E.Islamic | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| E.Islamic | 0 | 0 | 1 | 0 | 1 | 3 | **5** |
| Islamic | 1 | 48 | 1 | 0 | 0 | 43 | **93** |
| M.Islamic | 24 | 284 | 108 | 12 | 0 | 429 | **857** |
| M.Islamic–L.Islamic | 0 | 0 | 0 | 0 | 0 | 155 | **155** |
| L.Islamic | 31 | 693 | 132 | 283 | 6 | 1,078 | **2,223** |
| L.Islamic–Recent | 70 | 142 | 122 | 41 | 60 | 180 | **615** |
| Recent | 4 | 33 | 6 | 11 | 21 | 29 | **104** |
| **Total/Village** | **154** | **1,290** | **583** | **1,467** | **119** | **2,172** | **5,785** |
| **Total pre-Islamic** | **24** | **90** | **213** | **1,120** | **31** | **255** | **1,733** |

**Table 24 Sherd count by period from only OVAs [both village surrounding survey and random survey]**

**4.2.3.1.3- LONG-TERM TRENDS ACCORDING TO TYPE OF EVIDENCE FROM THE PCAs AND OVAs:**

As has already been stated in Section One of this chapter (4.1.2.1.5.1) tombs of the Umm an-Nar, Wadi Suq and Iron Age periods can be found in and around many of the wadi villages as well as on the surrounding areas. However, they can be difficult to date and many have been re-used much later than their original construction. Thus, the above pattern from the PCAs and OVAs is complicated by tombs, which appear to indicate a slightly different trend.

Table 25 adds an interesting dimension to the analysis and provides us with an insight into the sorts of activity that were going on at the recorded sites during the past. It shows the number and percentages of sherds by period from PCAs and OVAs that include both

tombs and 'other structures', and allows us to consider whether sherds of some periods may be preferentially associated with tombs or 'other structures' on the edges of the villages. It indicates that the evidence from the Umm an-Nar, Wadi Suq and Early Iron Age is more closely associated with tombs, while Late Iron Age/Samad evidence is more closely associated with 'other structures'. It should, however, be noted that the Umm an-Nar and Late Iron Age/Samad periods yielded a lot of evidence from almost all areas (PCAs and OVAs). By contrast, the majority of the Islamic sherds, mainly Middle Islamic to Recent, were found in PCAs.

| Period | PCAs | OVAs | | Total sherds |
|---|---|---|---|---|
| | | Tombs | 'Other Structures' | |
| U.Nar/U.Nar? | 292 (20.1%) | 630 (43.4%) | 531 (36.5%) | **1,453 (100%)** |
| W.S/W.S? | 3 (12.5%) | 18 (75%) | 3 (12.5%) | **24 (100%)** |
| L.B.A | 25 (100%) | 0 (0%) | 0 (0%) | **25 (100%)** |
| E.I.A | 12 (3.3%) | 271 (74%) | 83 (22.7%) | **366 (100%)** |
| I.A | 0 (0%) | 0 (0%) | 0 (0%) | **0 (0%)** |
| L.I.A/Samad | 182 (31.4%) | 180 (31%) | 218 (37.6%) | **580 (100%)** |
| Sasanian–E.Islamic | 12 (100%) | 0 (0%) | 0 (0%) | **12 (100%)** |
| E.Islamic | 1 (16.7%) | 1 (16.7%) | 4 (66.7%) | **6 (100%)** |
| Islamic | 153 (16%) | 6 (2.4%) | 92 (36.7%) | **251 (100%)** |
| M.Islamic | 1,622 (62.5%) | 129 (5%) | 844 (32.5%) | **2,595 (100%)** |
| M.Islamic–L.Islamic | 220 (58.7%) | 0 (0%) | 155 (41.3%) | **375 (100%)** |
| L.Islamic | 5,251 (67.8%) | 486 (6.3%) | 2,007 (25.9%) | **7,744 (100%)** |
| L.Islamic to Recent | 1,540 (69.2%) | 223 (10%) | 463 (20.8%) | **2,226 (100%)** |
| Recent | 389 (77%) | 37 (7.3%) | 79 (15.6%) | **505 (100%)** |
| **Total/Type** | **9,702** | **1,981** | **4,479** | **16,162** |

**Table 25 Percentages and number of sherds by period from PCAs and OVAs including tombs and 'other structures'**

To conclude, the pottery evidence from the PCAs and OVAs shows that the most common sherds are those dated to the Islamic, mainly Late Islamic period. Among the pre-Islamic sherds, Umm an-Nar sherds are the most common followed by the Late Iron Age/Samad.

In contrast, the evidence indicates that there are very few sherds from the Wadi Suq and Early Islamic, periods suggesting that there was considerably more activity at these villages in the Umm an-Nar and Iron Age than in the Wadi Suq and Early Islamic periods. The general picture indicates that there is an absence of evidence from settlement areas (villages) during the Wadi Suq and Early Iron Age. The evidence indicates that the PCAs and OVAs were inhabited more intensively during the Umm an-Nar and Late Iron Age/Samad as well as from the Middle to Late Islamic periods. Additionally, it can be seen that the majority of Wadi Suq and Early Iron Age evidence comes much more commonly from tombs on the fringes of the villages. This suggests that although there is an almost complete absence of evidence from occupational areas (PCAs and OVAs including 'other structures'), there is some evidence for the use of tombs during the Wadi Suq period that could be located around the modern wadi villages. By contrast, the evidence from Umm an-Nar and Late Iron Age/Samad periods comes from a wider variety of types of tombs and occupational areas (PCAs and 'other structures' from OVAs), indicating that the study area was extensively inhabited during these periods.

Although the evidence for Early Iron Age comes much more from tombs, there is a reasonable amount of evidence from occupational areas (e.g. 'other structures' within OVAs), suggesting more settlement activity in areas outside the PCAs. This might indicate a slight growth in the level of activity from that of the Wadi Suq period, but it is still low compared with that from the Umm an-Nar and Late Iron Age/Samad periods. It can also be suggested that the PCAs were not inhabited during the Early Iron Age or more accurately, were not used in the same way. This was evidenced by the recovery of very few pottery sherds of this period within these PCAs (e.g. CS.1 and CS.3, Table 22). Generally, speaking, the Early Iron Age evidence might suggest that at the beginning of the Iron Age there was an early stage of settlement increase after the possible abandonment during the Wadi Suq.

The above sections have presented the evidence from the PCAs and OVAs. As indicated earlier, this pottery evidence from villages was supported by pottery collected from other areas along the Upper Wadi Andam (UWA) banks and terraces as well as the rocky and gravel hills. Thus, it is useful to present this evidence in order to compare it with that from the villages (PCAs and OVAs).

### 4.2.3.2- LONG-TERM TRENDS FROM THE UPPER WADI ANDAM (UWA):

As indicated in Section One (4.1.2.1.5.3.2.1) of this chapter the survey within wadi villages was supported by a survey of selected areas along the Upper Wadi Andam (UWA), extending over an area of around 39 km long and 2 km wide along the wadi edges and the hills and gravel terraces[31] (Maps 2 & 9). It was given the code (CS.2) and all the recorded sites within this area were assigned to the nearest village or well-known site and followed by a unique number (see Appendix A). All types of evidence were recorded during the survey and 94 sites were found of which 69 are major sites (CS.2.1 to CS.2.69).

Before going into details of the results of the quantified evidence from the UWA, it is important to define the term "site" that will be used in this discussion, and how pottery was collected from each site. It has already been indicated in Section One of this chapter (4.1.2.3) that the definition of sites was more or less based on the current researcher's judgment and evaluation. During the UWA survey (see Section One 4.1.2.1.2.3.2.2), a large number of archaeological features were defined, including different types of tombs, settlements, and 'other structures' such as earthworks and artefact scatters, etc. (see Appendix B). Any type of these features was recorded and considered as a site regardless of its size, function or density of artefacts (see this Chapter, Section One (4.1.2.3), and all were given a unique number as described earlier in this chapter (Section One 4.1.2.2). The surface of many of these "sites" yielded artefacts, mainly pottery which was collected for the purpose of analysis, comparison and dating. It is, however, important to state here that the pottery collection methodology from these sites at the UWA was different than that from the PCAs. The pottery collection strategy at the UWA sites was more controlled by selecting the sites where the collection was made with the intention of collecting mostly from tombs and structures rather than collecting randomly. No PCAs villages were carried out in the UWA, however; the main aim was locating and recording sites of different types and times along the wadi banks and terraces as well as the rocky and gravel hills. In other words, at any site which yielded surface pottery, a small collection was made in order to

[31] It starts from the junction of Wadi Andam on the main road connecting Muscat with Sur, and ends at the junction near Khadra Bani Dafa'a on the main road connecting Izki with Sinaw.

date the site. This collection was also entered in the Wadi Andam Survey pottery database, and its trends are shown below. This will be done in order to compare the trends from the UWA to those from the PCAs and OVAs. This will allow us to understand the development and changes in settlement patterns along the whole Wadi Andam.

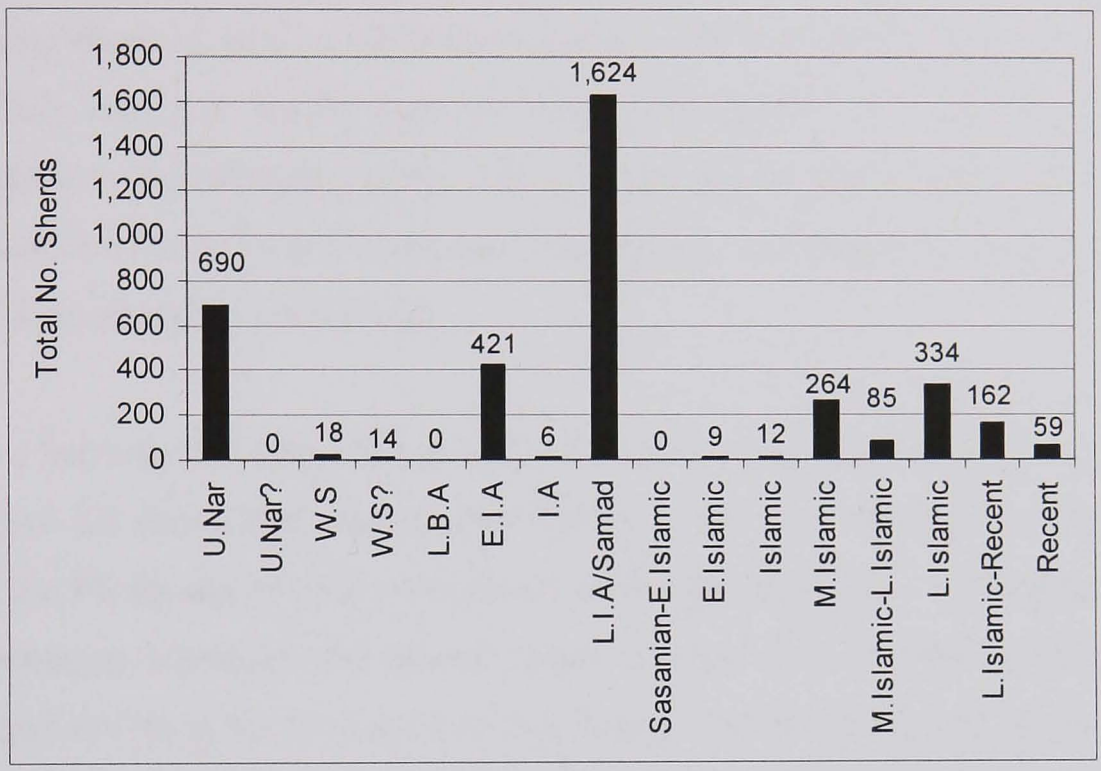



**Figure 22 Sherds count by period from all sites at the UWA**

Figure 22 shows the sherd count by period from all sites recorded in the UWA. It shows that the majority of sherds are dated to the Late Iron Age/Samad followed by the Umm an-Nar and Early Iron Age. It also shows that Islamic sherds are fewer than pre-Islamic ones. This is interesting because it is completely the opposite pattern to that recorded in the PCAs (Figure 17) and OVAs (Figure 19).

Table 26 shows all pottery by period from the main sites in the UWA, indicating that out of 33 sites which yielded sherds; 14 yielded Umm an-Nar sherds. However, the figures show that the proportion of sherds differs greatly among these 14 sites. For example, CS.2.52 alone yielded around 45% of the total Umm an-Nar sherds at the UWA. This site, as will be seen in Section Three of this chapter (4.3.3.2), is a possible Umm an-Nar village including a round tower, houses, tombs and large quantities of surface pottery. Sites CS.2.68 and CS.2.69 also yielded large amounts of Umm an-Nar sherds, which could be related to the fact that they yielded a group of tombs, structures and surface pottery (see

Section Three of this chapter 4.3.3.2). Furthermore, only six sites out of 33 yielded Wadi Suq sherds (32 sherds in total) of which CS.2.4 yielded the largest number, indicating a low level of activity in the UWA at this time. The same seems to be true for the Early Islamic period. By contrast, 13 sites yielded Early Iron Age sherds of which CS.2.67 yielded the largest number. However, the figures show that the proportion of sherds differs greatly among these 13 sites of which, for example, CS.2.67 alone yielded around 36% of the total Early Iron Age sherds from the UWA. The figures also indicate that 23 sites yielded Late Iron Age/Samad sherds, which is the largest number for any period, (see Table 26, last two rows [Total Sherds and Total Sites]), indicating an intensive occupation during this time along the wadi banks.

Comparison between the data from the PCAs (Figure 18) and OVAs (Figure 19) and the UWA (Figure 22) shows that Umm an-Nar sherds are the most common of the pre-Islamic periods in the PCAs and OVAs, while in the UWA the Late Iron Age/Samad sherds are the most common. However, the second largest number of pre-Islamic sherds yielded by the PCAs and OVAs is for the Late Iron Age/Samad, while the second largest number of pre-Islamic sherds yielded by the UWA is for the Umm an-Nar period, which indicates a large amount of settlement in both periods. By contrast, the evidence from the Wadi Suq is similarly lacking among PCAs, OVAs and the UWA. The same is generally true for Early Iron Age; however, this period yielded a slightly larger number of sherds than the Wadi Suq period.

The evidence from all sites on the UWA thus indicates a large amount of activity during the Umm an-Nar and Iron Age, and much less activity during the Wadi Suq. However, it is unclear how much of this evidence comes from tombs or 'other structures'. It is, therefore, useful to break the evidence down in this way in order to have a more detailed picture and to compare it with that from the wadi villages (PCAs and OVAs).

| Period | U.Nar | W.S | W.S? | E.I.A | L.I.A/ Samad | E.Islamic | M.Islamic | L.Islamic | Recent |
|---|---|---|---|---|---|---|---|---|---|
| CS.2.1 | 9 | 0 | 1 | 0 | 22 | 0 | 0 | 0 | 0 |
| CS.2.2 | 0 | 0 | 0 | 5 | | 0 | 0 | 0 | 0 |
| CS.2.3 | 0 | 0 | 0 | 0 | 21 | 0 | 1 | 38 | 6 |
| CS.2.4 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| CS.2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 |
| CS.2.11 | 0 | 5 | 0 | 25 | 70 | 0 | 0 | 0 | 0 |
| CS.2.20 | 30 | 0 | 0 | 0 | 408 | 0 | 0 | 0 | 0 |
| CS.2.23 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 |
| CS.2.24 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 29 | 19 |
| CS.2.29 | 0 | 0 | 0 | 0 | 224 | 0 | 0 | 0 | 0 |
| CS.2.41 | 30 | 0 | 0 | 0 | 37 | 0 | 13 | 26 | 0 |
| CS.2.42 | 0 | 0 | 0 | 11 | 17 | 0 | 0 | 0 | 0 |
| CS.2.43 | 2 | 0 | 0 | 3 | 63 | 1 | 27 | 28 | 1 |
| CS.2.45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CS.2.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| CS.2.50 | 9 | 8 | 0 | 46 | 127 | 0 | 46 | 27 | 0 |
| CS.2.51 | 1 | 0 | 0 | 37 | 213 | 4 | 0 | 14 | 0 |
| CS.2.52 | 309 | 0 | 1 | 38 | 73 | 0 | 2 | 39 | 1 |
| CS.2.53 | 1 | 0 | 0 | 0 | 23 | 0 | 52 | 0 | 0 |
| CS.2.54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 |
| CS.2.55 | 1 | 0 | 0 | 0 | 0 | 0 | 25 | 26 | 4 |
| CS.2.56 | 2 | 5 | 0 | 49 | 49 | 0 | 0 | 3 | 0 |
| CS.2.57 | 54 | 0 | 0 | 0 | 77 | 0 | 0 | 14 | 15 |
| CS.2.58 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 |
| CS.2.60 | 0 | 0 | 0 | 6 | 10 | 4 | 0 | 1 | 4 |
| CS.2.61 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| CS.2.62 | 0 | 0 | 0 | 0 | 4 | 0 | 39 | 42 | 7 |
| CS.2.63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| CS.2.64 | 0 | 0 | 0 | 5 | 15 | 0 | 0 | 3 | 2 |
| CS.2.65 | 0 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 0 |
| CS.2.67 | 0 | 0 | 0 | 150 | 6 | 0 | 0 | 9 | 0 |
| CS.2.68 | 137 | 0 | 0 | 18 | 41 | 0 | 20 | 0 | 0 |
| CS.2.69 | 102 | 0 | 0 | 28 | 5 | 0 | 3 | 3 | 0 |
| **Total/Sherds** | **690** | **18** | **14** | **421** | **1,624** | **9** | **264** | **334** | **59** |
| **Total sites** | **14** | **3** | **3** | **13** | **23** | **3** | **11** | **20** | **9** |

**Table 26 All pottery by period from the main sites in the UWA**

### 4.2.3.2.1: LONG-TERM TRENDS ACCORDING TO TYPE OF EVIDENCE FROM THE UWA:

The results presented above give some insights into the levels of activity in the UWA. However, as was the case with the wadi villages (PCAs and OVAs), the data from the tombs seems to show different picture. In order to understand the trend, Table 27 shows the number and percentage of sherds by period from all the UWA areas, both tombs and 'other structures', in order to see what percentage of sherds from each period came from what type of structure. It shows that the majority of the Wadi Suq and Early Iron Age sherds come from tombs, which is exactly the same pattern as that discovered in the wadi villages (see Table 25). Additionally, the Umm an-Nar and Late Iron Age/Samad sherds are more associated with 'other structures', which is again a similar picture to that from the villages.

To sum up, the evidence from all sites, both tombs and 'other structures', on the UWA indicates that the Late Iron Age/Samad is the most commonly represented, followed by the Umm an-Nar and Early Iron Age. It also shows that the Islamic sherds are fewer than the pre-Islamic ones, which is completely the opposite picture to that which emerged from the PCAs (see Figure 17) and OVAs (see Figure 19). Among the pre-Islamic sherds, the Wadi Suq and Early Islamic periods are the least represented periods, suggesting the same picture as the village PCAs (see Figure 17) and OVAs (see Figure 19). Additionally, the evidence from the PCAs and OVAs suggests that the Umm an-Nar period is more commonly represented than the Late Iron Age/Samad period, which is the opposite to the pattern from the UWA. The figures in Table 27 demonstrate a similar pattern to that from the PCAs and OVAs (see Tables). They show that the majority of the Wadi Suq and Early Iron Age sherds come much more commonly from tombs with very limited occupational evidence. Both areas show a large level of activity during the Umm an-Nar and Late Iron Age/Samad periods, mainly from occupational areas, although there are some differences between the two areas. In conclusion, the evidence shows that some periods seem to suggest a low usage of ceramics (e.g. Wadi Suq, Early Iron Age), except perhaps in burial contexts, and even then usage remains fairly limited. In other periods such as the Umm an-Nar, Late Iron Age/Samad, Middle and Late Islamic, settlement pottery is much more in evidence.

| Period | Tombs | 'Other Structures' | Total sherds |
|---|---|---|---|
| U.Nar/U.Nar? | 321 (38.8%) | 506 (61.2%) | **827 (100%)** |
| W.S/W.S? | 19 (59.4%) | 13 (40.6%) | **32 (100%)** |
| L.B.A | 0 (0%) | 0 (0%) | **0 (0%)** |
| E.I.A | 331 (74.5%) | 113 (25.5%) | **444 (100%)** |
| I.A | 1 (16.7%) | 5 (83.3%) | **6 (100%)** |
| L.I.A/Samad | 417 (24.2%) | 1,306 (75.8%) | **1,723 (100%)** |
| Sasanian–E.Islamic | 0 (0%) | 0 (0%) | **0 (0%)** |
| E.Islamic | 1 (11.1%) | 8 (88.9%) | **9 (100%)** |
| Islamic | 3 (25%) | 9 (75%) | **12 (100%)** |
| M.Islamic | 99 (30.8%) | 222 (69.2%) | **321 (100%)** |
| M.Islamic–L.Islamic | 6 (6.7%) | 84 (93.3%) | **90 (100%)** |
| L.Islamic | 142 (35.1%) | 263 (64.9%) | **405 (100%)** |
| L.Islamic–Recent | 52 (26.1%) | 147 (73.9%) | **199 (100%)** |
| Recent | 30 (34.9%) | 56 (65.1%) | **86 (100%)** |
| **Total/Type** | **1,422** | **2,732** | **4,154** |

**Table 27 Total number and percentage of sherds by period from all the UWA areas (% based on the total number by period)**

### 4.2.4- CONCLUSION:

It can be maintained that the methodology presented in this chapter, which is based on large-scale surface pottery collection, can be shown to be effective in providing quantifiable data on settlement activity. Such quantification has a greater degree of statistical validity than data collected in a traditional, non-probabilistic method.

The most significant trends from the survey have been presented above. The main aim of the analysis was to understand the relative changes in the levels of activity and settlement over time as indicated by the pottery. The basic pattern is complicated to some extent by tombs, which appear to indicate a slightly different trend to the settlements. There is some evidence that tombs were more significant during the Wadi Suq and Early Iron Age

periods during which times there was very little evidence of activity in the possible occupational areas.

The analysis also shows that all parts of the survey (PCAs, OVAs and UWA) yielded very little evidence of the Wadi Suq period compared to the Umm an-Nar and Iron Age. The evidence might indicate a slight growth in the level of activity in the Early Iron age from that of the Wadi Suq period, but it is still low compared with that from the Umm an-Nar and Late Iron Age/Samad periods. This might suggest that at the beginning of the Iron Age there was an early stage of settlement increase after the low levels during the Wadi Suq period.

The evidence shows large numbers of Umm an-Nar and Late Iron Age/Samad sherds from all parts of the survey and all types of sites both occupational and their associated tombs. This evidence might indicate that wadi villages and their margins were fully occupied during the Umm an-Nar and Late Iron Age/Samad periods. Moreover, although there is a strong suggestion of decline in activity during the Wadi Suq period, the evidence (tombs and pottery) suggests some degree of continuity at some of these locations but with very different levels of activity (see Chapter Seven 7.1.4.2).

## SECTION THREE: DESCRIPTION OF THE EVIDENCE:

### 4.3.1- INTRODUCTION:

The survey along the Wadi Andam yielded a large number of sites and types of archaeological features from different periods. All of these sites are listed and fully described in the Site Gazetteer in Appendix A and classified into types in Appendix B. This section gives a brief description of these sites and the main findings as well as their significance. It will describe the main sites and archaeological features of each period followed by a summary discussion of the evidence and what it tells us about activity during that period. A list of all sites from each period will be included and supported by a distribution map.

### 4.3.2- THE HAFIT PERIOD (ca. 3,500/3,400–2,500 BC):

The evidence from this period includes two types of tombs: Hafit cairns and Beehives. As indicated in Section One of this Chapter (Level 4, 4.1.2.1.4), the fieldwork at Wadi Andam included a survey in specific areas intended to produce a rough distribution of Hafit/Beehive tombs. The following is a description of this evidence, starting with the Hafit tombs.

#### 4.3.2.1- HAFIT CAIRNS:

##### *4.3.2.1.1- SURVEY AREAS:* (Maps 11 & 12)

Table 28 shows that a large number of Hafit cairns were recorded during the survey.

##### *4.3.2.1.2- DESCRIPTION OF EVIDENCE:*

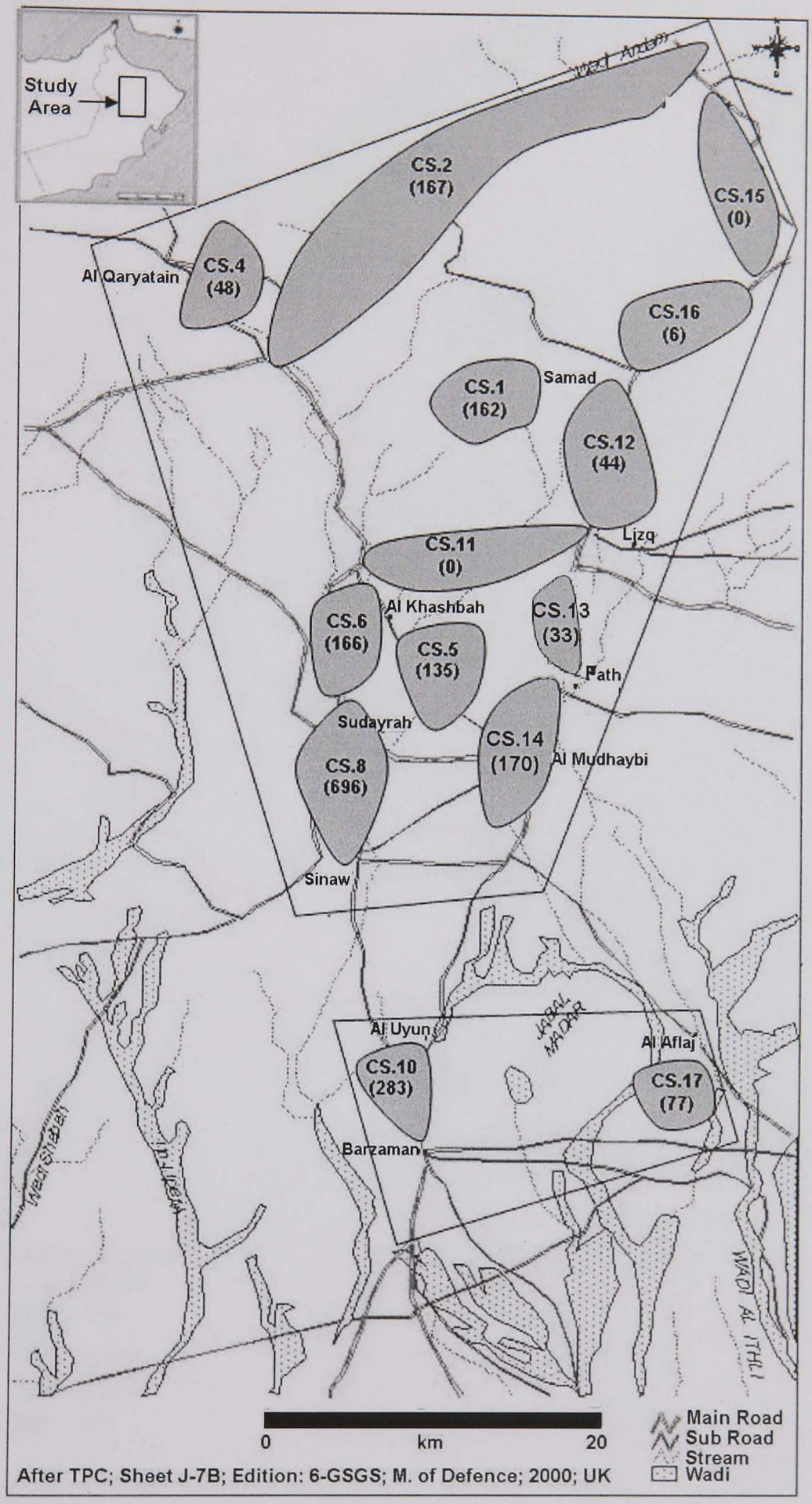
Our understanding of this period in the Wadi Andam, as in the whole Oman Peninsula (see Chapter Seven 7.1.2), is largely based on the enormous number of cairn tombs distributed over almost all of the study area. During (level 4) of the survey, an attempt was made to obtain a rough distribution of Hafit cairns from the northern watershed and upper wadis to the southern limit of the flat gravel interfluves along the wadi. To the best

knowledge of the researcher, no systematic survey has, so far, been made to plot and show the distribution of these tombs in the peninsula (see Chapter One 1.2.3).

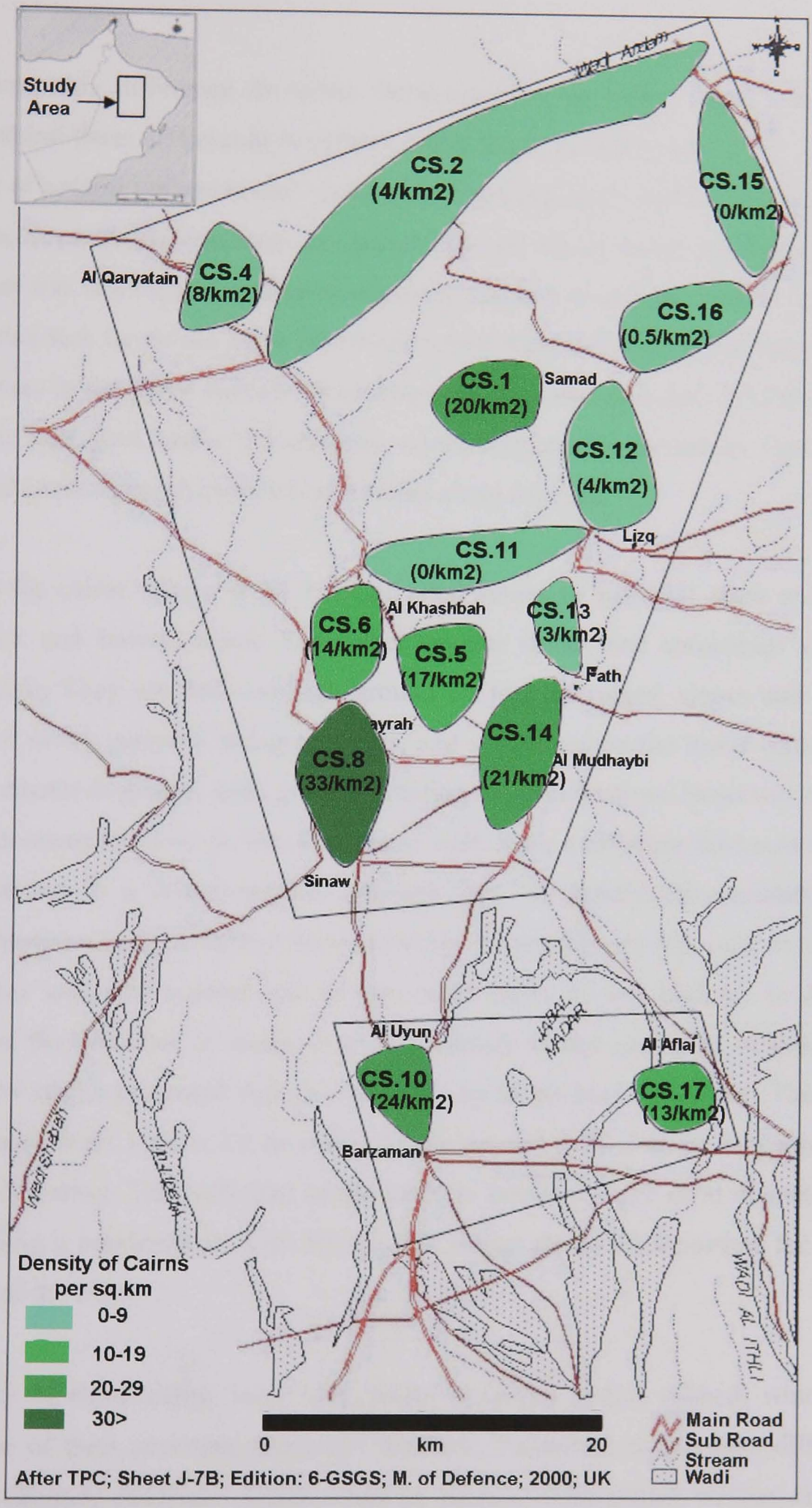
| Site No. | Area | Approx. Area/km$^2$ | Total cairns | Cairns density/km$^2$ |
|---|---|---|---|---|
| CS.1 | The area around al-Fulayj village | 8 km$^2$ | 162 | 20.25 |
| CS.2 | Upper Wadi Andam | 39 km$^2$ | 167 | 4.28 |
| CS.4 | The area around al-Qaryatain village | 6 km$^2$ | 48 | 8 |
| CS.5 | The area around al-Khashbah village | 8 km$^2$ | 135 | 16.87 |
| CS.6 | From al-Washahi junction to al-Wafi junction | 12 km$^2$ | 166 | 13.83 |
| CS.8 | From al-Wafi junction to Sinaw roundabout | 21 km$^2$ | 696 | 33.14 |
| CS.10 | From Barzaman to al-A'yoon villages and from al-A'yoon to al-Musala village's junction | 12 km$^2$ | 283 | 23.58 |
| CS.11 | From the junction of al-Washahi to the junction of al-Mudhaybi-Samad | 12 km$^2$ | 0 | 0 |
| CS.12 | From the junction of al-Mudhaybi-Samad to Samad | 12 km$^2$ | 44 | 3.66 |
| CS.13 | From the junction al-Mudhaybi-Samad to the junction of al-Fatah | 12 km$^2$ | 33 | 2.75 |
| CS.14 | From the junction of al-Fatah to al-Mudhaybi | 8 km$^2$ | 170 | 21.25 |
| CS.15 | From al-Jarda to the junction leading to ar-Rawdhah village along the main road connecting Muscat and Sur | 15 km$^2$ | 0 | 0 |
| CS.16 | From the junction leading to ar-Rawdhah village on the main road connecting Muscat by Sur to al-Sharia'ah/Samad | 12 km$^2$ | 6 | 0.5 |
| CS.17 | The area around al-Aflaj village | 6 km$^2$ | 77 | 12.83 |
| **Total Cairns** | | | **1,987** | |

**Table 28 Location and number of Hafit cairns by area**

The results of the Hafit survey demonstrate that the density of these cairns varies within the study area. Map 11 shows the total number of cairns while Map 12 shows the relative density of cairns per square km found in each surveyed area. It appears that apart from CS.1 (yielded 20 cairns per square km), almost all the surveyed areas in the northern part of the study area, namely zones one and two, yielded a low density of cairns per sq km (e.g. between 0 and 9 cairns per square km). By contrast, almost all the surveyed areas within zones three and four yielded higher numbers of cairns per square km. The density of cairns in areas CS.5, CS.6 and CS.17 is between 10 and 19 cairns while in areas CS.10 and CS.14 it is between 20 and 29 cairns and area CS.8 is 30 cairns or more per square km. The last area is the densest area of all the surveyed area.




**Map 11 Hafit survey areas with the approximate number of plotted cairns (the dark-marked areas are those areas yielded cairns and the area encircling them is the main surveyed area)**




**Map 12 Hafit survey areas with the approximate density of plotted cairns**

So what does this difference in cairns density across the survey area indicate? The reason(s) behind these differences is unclear, but it might be related to the topography and availability of natural resources such as water and grazing lands within the densest zones, mainly zone three which represents the gravel hills and broad wadis. It should, however, be noted that this is a rough distribution of cairns, and one must bear in mind two factors. One is the fact that we do not know how many tombs have been destroyed; and two, there are other areas in the Wadi Andam which have not been surveyed yet. This includes, for example, the area from Sinaw to Barzaman, where only a quick car survey from the main road showed some cairns distributed on the hills along the road.

In general, the cairns appear to be built of piled stones of different sizes and colours, mainly black and brown, mixed with other smaller stones and sometimes with earth (Plates 10–24). They are built on high ground on tops of ridges, slopes and on lower elevations of rocky outcrops and gravel hills, and sometimes on the lower wadi terraces. They often cluster in groups, each group consisting of several cairns. However, there are a few isolated examples. Two to four concentric walls with a different thickness (30 cm–1 m) were noticed in a few examples; although they are hardly distinguishable. Some examples showed a badly disturbed burial chamber of possibly semi-circular or oval shape with an inner wall and another one or two outer walls. It was difficult to define the pavement of the chamber in many cases as a result of the bad state of preservation; however, few cairns presented signs of paved floors in the burial chamber. The chamber diameter varies from 1 m to 2.5 m with a height around 1.50–2.40 m depending on the state of preservation. The total size of the cairn is between 3–12 m in diameter with a height reaching a maximum of 5 m. No specific shape can be distinguished for the outer appearance of the cairn.

The majority of these cairns have been badly disturbed and/or robbed, which makes identification of their structural elements' difficult. Therefore, it has been difficult, for example, to identify entrances, which could be jammed with stones. Several finds were collected from some cairns but none of them can be dated to the Hafit period. The majority of finds are Early Iron Age (see section 4.3.5 below), indicating that they might have been re-used during this period, or even later. This raises the difficulty of proposing a definite dating for these tombs and of understanding their chronological development.

Additionally, their state of preservation and the absence of associated settlements makes the dating more complicated. These tombs could also have been re-used, or at least their stones could have been piled up during recent times to act as observation towers as several of the tombs are built in strategic locations. In fact, people, even nowadays, use the stones of older structures to build other structures either on top of the old ones or in other places. This has been noticed during the survey in many areas such as those around Mahleya and al-Ghoryeen where many structures and tombs' stones were removed by the local people.

It is important to repeat what was said earlier in Chapter Three (Section 3.2) that there are some uncertainties regarding the dating of these cairns. Some of them might be of a later date, perhaps extending into the Iron Age. I have, for the purpose of this thesis, assumed that the large concentrations of cairns across the wide fields are more likely to be dated to the Hafit period. This is due to the fact that they are found on the same locations, they show similar construction and they are located in those areas where there is no evidence at all of other occupation. I believe this suggests that they belong to the same period. This assumption is also based on those cairns that have been excavated at other areas that have provided evidence for Late 4$^{th}$ to early 3$^{rd}$ millennium BC (see dating problem at Chapter Three 3.2).

It should be indicated that no associated settlements with and around the cairns have been found, which does not increase our understanding of the settlement patterns of this period. It is logical that such a large number of cairns should indicate a large, if not dense, population which must have had settlements somewhere. Thus, is it possible to make a rough calculation of the possible size of population based on the number of tombs located by the survey? An attempt (see Appendix G) to calculate the possible population of the Hafit period was made based on the total number of recorded tombs, the total number of burials represented by tombs, a presumed 45 years life expectancy, and the total number of years in which the tombs were in use. However, this calculation cannot be precisely carried out due to the lack of data regarding some issues. The current estimation came out with a number of people between 44 and 176 which seems to be very low, but it might give some indication of the problem. The problem is we do not know how many tombs have been destroyed so far, there are also other areas around Wadi Andam which have not been surveyed yet, and there is the additional problem of dating (see Chapter Three 3.2).

There is also a lack of data regarding the total number of burials in the tombs and the life expectancy. Therefore, we are not yet in a position to make an estimation of population based on the available data, and this is something that might be done in the future.

The lack of associated settlement remains associated with these cairns raises the question of the possible reasons behind the absence of settlements during the Hafit period. One possible hypothesis is that the population who used these tombs was perhaps nomadic using the area as grazing land for its animals and living in temporary perishable 'campsites' such as tents or *barasti* huts. This hypothesis could perhaps be supported by the piled and paved stones that look like platforms, as well as cleared areas around these cairns found during the survey at several sites such as CS.2.42, CS.2.56, CS.2.59, CS.2.64, CS.2.67, CS.5.10, CS.5.15 and CS.7.2 (Map 13, Plates 25–29). People must have left some evidence of their occupation, and it might be these possible stone foundations of what would have been perhaps wooden houses or huts. These platforms consist of one course of stone alignment of different shapes (e.g. circular, rectangular and square) built of small black and/or brown wadi stones. They are either filled in the middle with a loose gravel of small stones. Good examples of these platforms are those found at sites CS.5.15 (Plates 1 & 28–29), which are square and rectangular in shape with a size around 1.20–2 m x 1.20–2 m for the square, and 1–1.50 m by 1.40–2.20 m for the rectangular ones. A similar possible rectangular platform, but larger, was also found at site CS.5.10. It was approximately 7.50 m x 3.20 m. The circular examples varied in size between 0.90–1.20 m in diameter. Examples were found at site CS.7.2 where three attached circles were discovered. There are also some possible platforms without any regular shape at site CS.2.67. Besides these possible platforms, the survey around the Hafit cairns yielded a group of stones cairns that vary in shape, mostly circular, with a varied size between 0.40–2 m in diameter and 0.15–0.60 m height. They are made of small black and/or brown wadi stones, and sometimes of small yellow limestone.

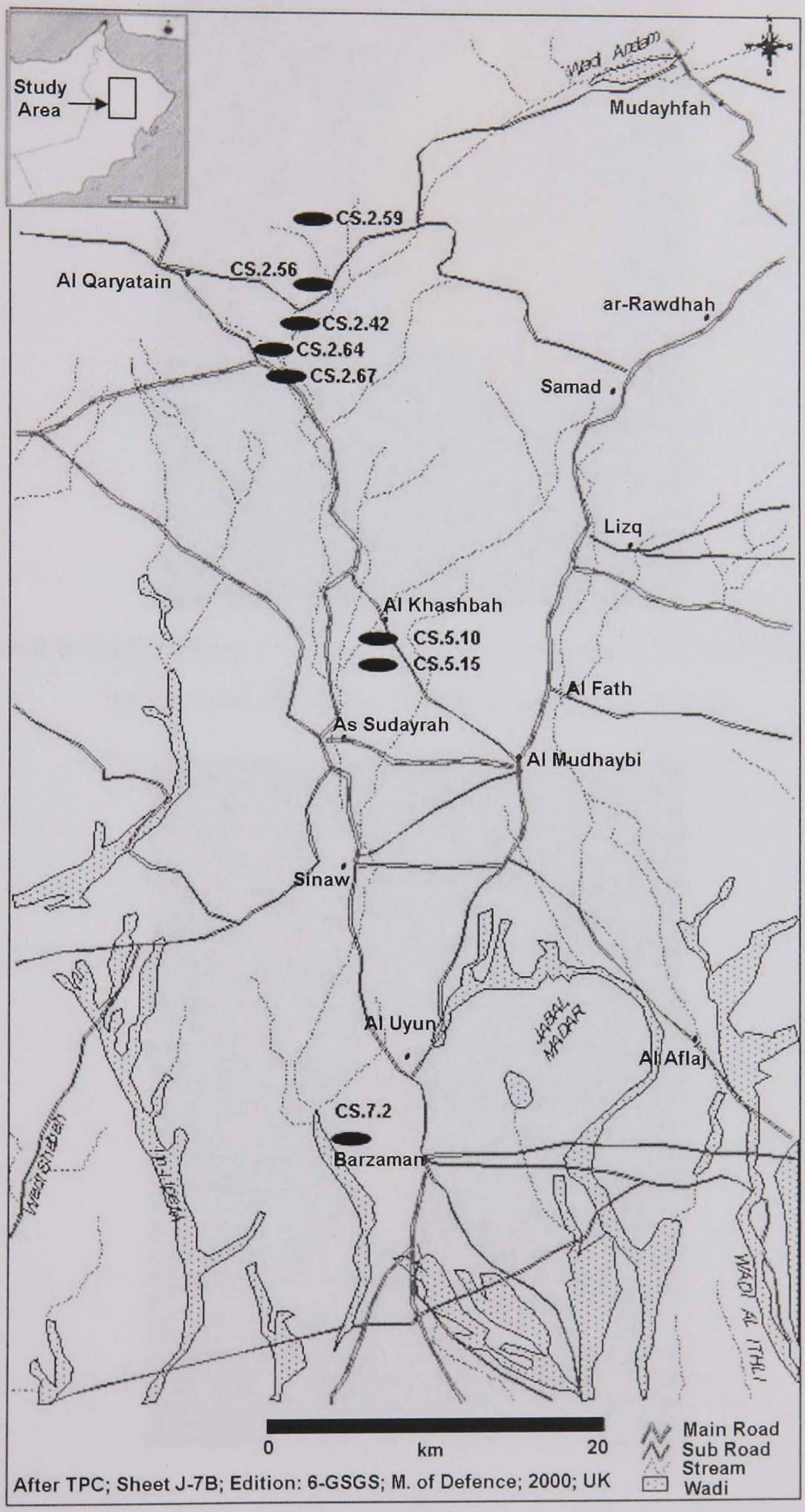
It is important to bear in mind that these structures could date to any time from the Hafit period onwards because unfortunately, none of them yielded any datable material. Only excavation might be helpful in telling us more about this type of structure. The occurrence of these structures in areas of Hafit cairns is very important as it makes them potentially a prime candidate for future excavations. Unfortunately, such excavation was impossible on

this occasion due to time and funding constraints. However, it is hoped in the future that such excavation can be made at two or three sites in different areas.

Another hypothesis for the lack of Hafit settlements is that they might have been buried by alluvium. Therefore, during the survey the idea was to look for any surrounded wells or cut-sections or any other land-moving activities with the hope of finding some buried remains of this time. However, apart from the above mentioned piled and paved stones, the survey results did not reveal any possible features.

**Plate 1 Rectangular stone alignment of possible platform close to Hafit cairn with white creamy soil at site CS.5.15**

The problem of not finding occupational remains is also emphasised by the failure to find any surface material such as pottery or flint that could be dated to this time. The only possible object of this period was a worked flint flake found at Site CS.1.2 north al-Khurais. It could be an unfinished tool made of reddish flint as suggested by the patina (W.D.1, Plate 2). The surrounding rocky hills of this site yielded Hafit cairns and Beehive tombs (Figure 50). Although, this is only one single piece and was not found close to the tombs but on the gravel terrace down the hill, one cannot dismiss the possibility of this being datable to the Hafit period.




**Map 13 Possible platforms near Hafit cairns**

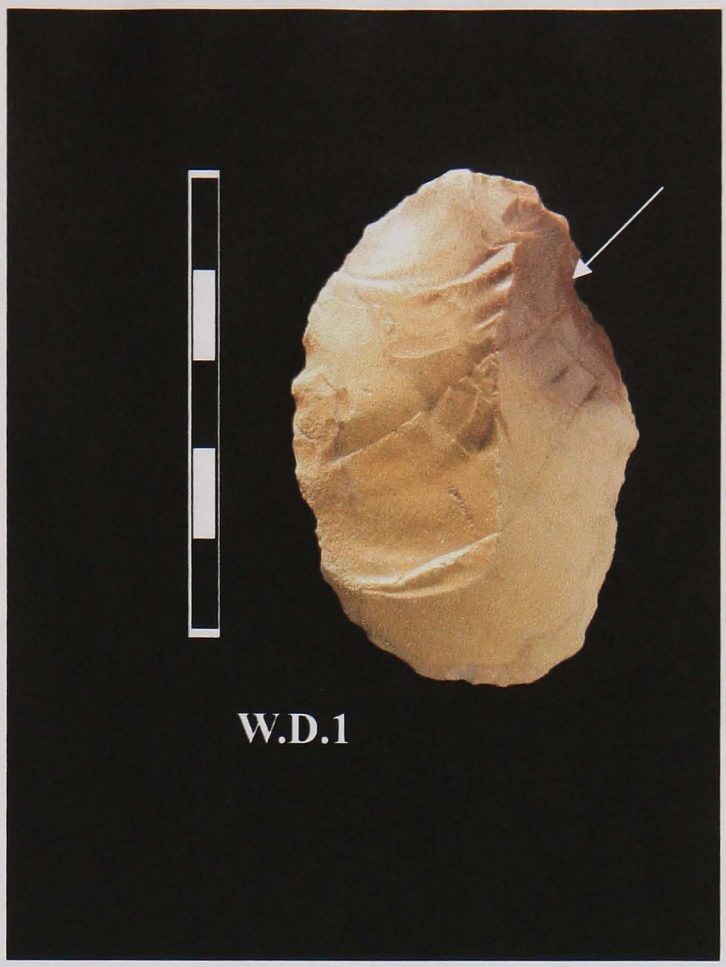



**Plate 2 Possible worked flint tool found at Site CS.1.2 north of al-Khurais (the white arrowhead shows the different colour of patina)**

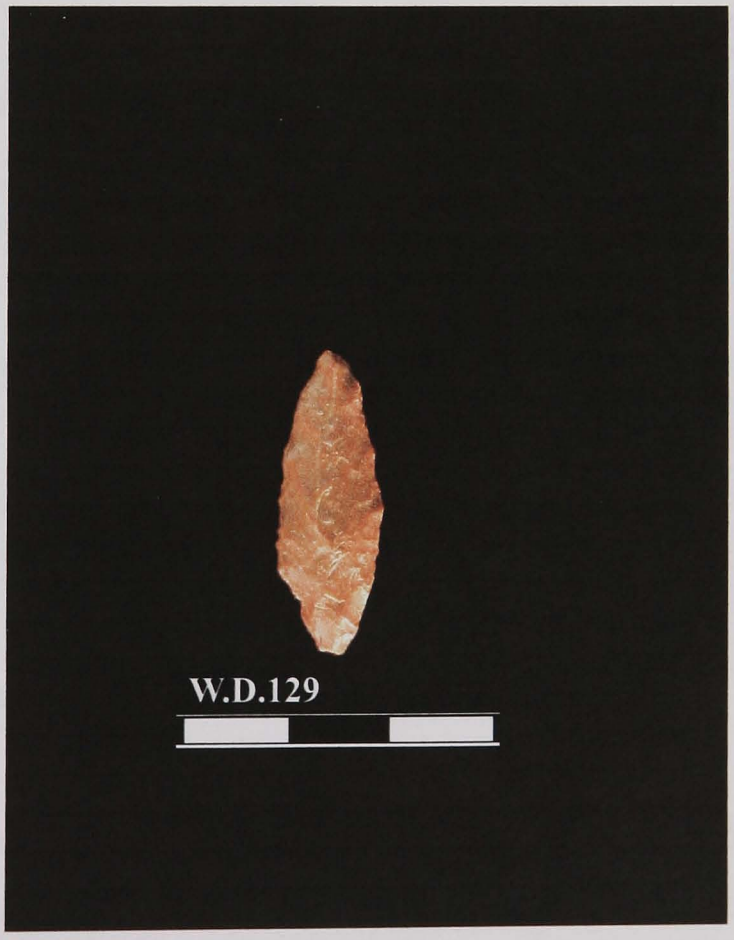



**Plate 3 Flint arrowhead found within a disturbed re-used Hafit cairn at site CS.2.69.1**

Another small flint arrowhead (W.D.129) was found in Tomb 4 at site CS.2.69.1 (Plate 3), which had been re-used during the Early Iron Age (see section 4.3.5 below). This arrowhead and the above mentioned worked flint tool (W.D.1) as well as other recovered flint pieces (Plate 30) were shown to H. Kallweit (2006, Pers. Comm.) and Jeffrey I. Rose (2006, Pers. Comm.). They identified them as possible Arabian Bifacial Tradition (ABT), and thus, possibly dated to the 5th millennium BC (Wadi Wutayya–Saruq facies, Potts 1993d: 169–177). However, as these were the only pieces found during the survey and as they are not from the same sites and are associated with material from later periods, mainly Early Iron Age pottery their dating remains problematic.

### 4.3.2.2- BEEHIVE TOMBS:

#### *4.3.2.2.1- SURVEY AREAS* (Maps 14 & 15):

| Site No. | Area | Approx. Area/km$^2$ | Total Tombs | Tombs Density/km$^2$ |
|---|---|---|---|---|
| CS.1 | The area around al-Fulayj village | 8 km$^2$ | 36 | 4.5 |
| CS.2 | Upper Wadi Andam | 39 km$^2$ | 82 | 2.10 |
| CS.4 | The area around al-Qaryatain village | 6 km$^2$ | 4 | 0.66 |
| CS.5 | The area around al-Khashbah village | 8 km$^2$ | 83 | 10.37 |
| **Total Tombs** | | | **205** | |

**Table 29 shows the location and number of Beehive tombs located during the survey**

Besides the above mentioned Hafit cairns, the survey yielded a large number of Beehive tombs (Table 29) in different states and shapes (see below).

#### *4.3.2.2.2- DESCRIPTION OF EVIDENCE:*

It is not obvious whether or not the period between 3,000–2,500 BC witnessed a development in the burial monuments from Hafit cairns to Beehives. It should be noted that there are some questions, among archaeologists, regarding Hafit and Beehive as well as the Beehive and Umm an-Nar tombs and their development[32]. The question is whether

[32] See, for example, Frifelt 1975: 389-390; 1991: 127-129; Doe 1983: 46-54; Gentelle & Frifelt 1989: 120-121; Yule & Weisgerber 1988: 14; 1998: 192-209, de Cardi et al. 1979: 66-67; Vogt, B. 1985: 58-103;

Hafit and Beehive tombs represent one chronological period or whether they are the result of a chronological development (see Chapters Three 3.2. and Seven 7.1.2).

During the survey, several locations yielded a large number of Beehive tombs. They appear to show lower densities than the Hafit cairns (see Maps 11–13 and 14–15). A quick look at their total number shown on Map 14 shows that they are concentrated in the northern part of the study area, mainly in zone three, and that no tombs at all were found in the southern part, namely zone four. Map 15 shows their relative density per square km according to each surveyed area. It can be seen that the densities of tombs are very low (between 0 and nine per square km) across the survey area with the exception of zone three where the area around al-Khashbah (CS.5) yielded a density of over ten tombs per square km. This is a completely different picture to that for the Hafit cairns (see Maps 11 & 12) where densities are very different across the study area. The reason behind the concentration of Beehive tombs in the northern part is unclear but, again, it might be related to the topography and availability of natural resources.

Beehive tombs are located on rocky outcrops and appear to be constructed from either rough stones or hewn flat stones based on the availability of local stones from the same rocky outcrop in which they are intended to be built, or from those outcrops in the surrounding area. Their construction includes double skin walls built on a circular stone base with kerbstones (Plates 31–35). The diameter of the total tomb ranges from 3–6 m and the height around 2.50–5 m with a wall thickness of around 1–1.50 m according to their state of preservation. They show a single burial chamber which is either a circular or semi-circular (Plate 34) shape around 1.50–2 m in diameter with an entrance on the east side with a lintel of flat slab placed over the entrance (Plates 31 & 35). The entrance looks like a small rectangle in shape, around 50–80 cm height and 30–50 cm wide. It has been remarked that the majority of entrances are open. This might be interpreted as being left for secondary burials as these tombs might have been used for more than one burial. Some tombs present an outer plinth around 50–80 cm wide in order to support the construction of the tomb. Several tombs show traces of a stone paved floor.

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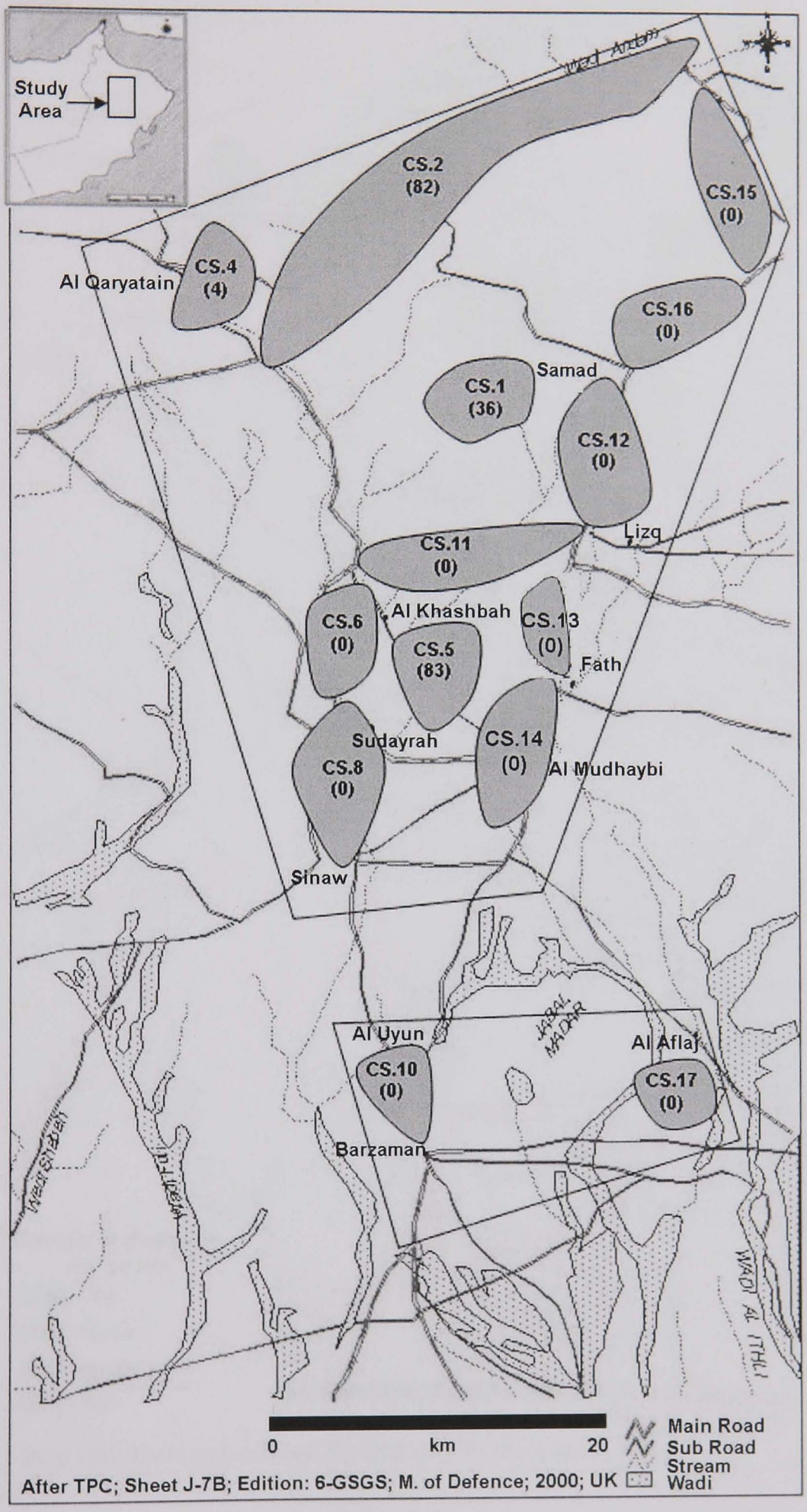
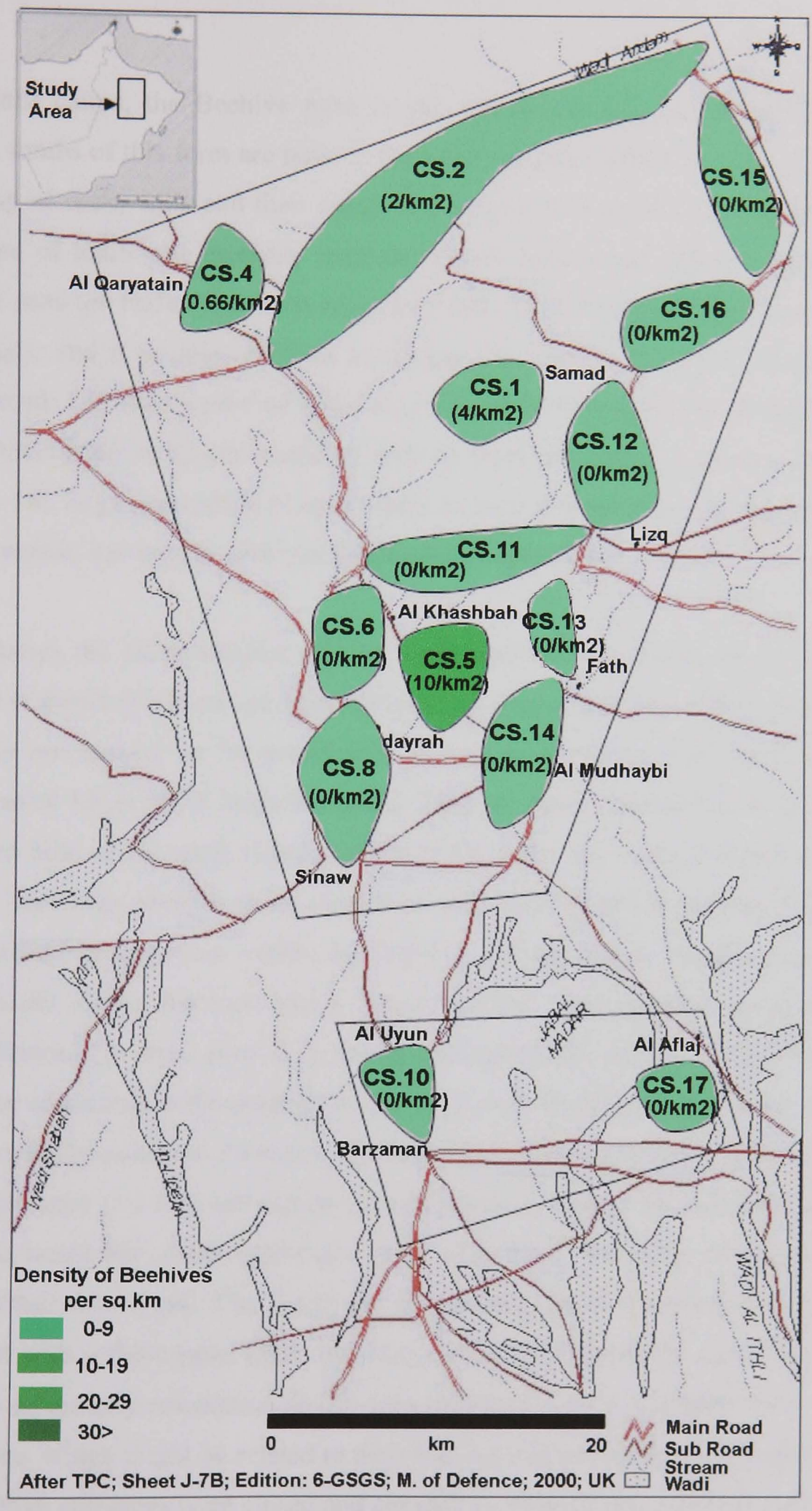
Orchard, J. & J. 1997: 10-19; Orchard, Jocelyn 1995: 149-155; Orchard, Jocelyn & Stanger, G 1999: 103-106; Potts 1986: 132; 1997: 69-70)




**Map 14 Distribution of Beehive tombs located during the survey (the dark-marked areas are those areas yielded tombs and the area encircling them is the main surveyed area)**




**Map 15 Location and desnity of Beehive tombs mapped during the survey**

As with Hafit cairns, the Beehive form is also distributed over large areas in which, sometimes, tombs of this form are built on the same outcrops where the Hafit cairns were built: on top of rocky hills and their ridges and slopes. It is possible to suggest that the Beehive-type of tomb was probably used for a short period and, perhaps, by the same people who used the Hafit-type. Both types are often found clustered in groups and rarely as individuals, and it is often difficult to distinguish between the types when they are badly disturbed. The well preserved Beehive tombs are best recognizable by their Beehive shape and their other structural elements such as their east-facing entrance topped with lintel slabs. The large occurrence of such tombs as well as their location and shape makes them more visible and easy to spot (see below and Chapter Seven 7.1.2).

Table 30 shows the characteristics of both Hafit and Beehive tombs found during the survey, and it shows that there are some differences among both types. The Beehives, for example, are not located on the gravel hills as well as the lower wadi terraces and flat interfluves areas where Hafit cairns are found. They are more clustered in the surrounding outcrops and hills of the wadi villages, while Hafit cairns are rarely found around these settlements. However, they do share some locations. Tomb shape is another difference in which the Beehives are more visible and have a distinguishable 'Beehive-like' shape; unlike the Hafit tombs that look like a 'pile of stones'. The entrance, moreover, bears another difference. In the cairns it is hardly distinguishable and possibly blocked and sealed by the concentric walls around the chamber, or it could no longer exist as most of the cairns are badly disturbed. However, the inner parts of a few chambers show a possible low single entrance possibly rectangular or trapezoidal in shape with one stone slab lintel. It should be noted that these tombs are badly disturbed; thus, they might be Beehive chambers rather than Hafit. The Beehives, by contrast, show a rectangular entrance at ground level with a flat-topped lintel slab that can be easily distinguished. This entrance often shows an easterly orientation and is open; however, many examples show no traces of an entrance, which might be related to their bad state of preservation. It is also possible that the Beehive entrances were closed and covered by slabs during construction but might have been lost due to being used for further interment or frequent plundering and disturbance.

| Characteristics | Hafit | Beehive |
|---|---|---|
| Location | On high ground: rocky outcrops & gravel hills' tops, ridges, slopes, lower wadi terraces, flat interfluves, few around wadi villages | On high ground: hills' tops, ridges, slopes, around wadi villages; |
| Distribution | More in northern zones; few in southern zones. | More in northern zones 1 & 3, nothing in southern zone 4 |
| Clustering | Groups; some individuals | Groups; some individuals |
| Total number | 1,987 | 205 |
| Shape | Cairn: overground structure looks like a pile of rounded wadi stones & rubble, circular or semi-circular | Beehive with convex topping |
| Entrance | Hardly distinguishable, possibly blocked by two concentric walls; some chambers show possible low single entrance. | East-facing, at ground level; open & sometimes closed; rectangular with a flat-topped lintel slab, more visible |
| Walls | Hardly distinguishable but may show possible 1-4 concentric ring-walls, c.0.30-1 m thick | Double-skinned walls on a stone circle platform with kerbstones forming an even edge; c.0.80-1 m wall-thick; possible external low plinth c.50 cm wide |
| Chamber | Single small simple chamber in the centre; 1-2.50 m dim; semi-circular or oval; examples with inner & outer walls | Single small central chamber; circular; 1.20-2.50 m dim |
| Chamber floor | Floor pavement not clear but possibly paved with flat stones | Examples showed possible flat stones pavement |
| Diameter | 2-12 m | 2-6 m |
| Height | Badly disturbed but best preserved around up to 3 m | 3-5 m |
| Disturbance & re-use | Many re-used & badly disturbed | Many disturbed & robbed, possibly re-used |
| Roof | Unclear | Central corbelled superstructure roof of flat stones |
| Passage | Unclear | Roofed single low entrance passage leading into the small single chamber |
| Stones | Piled of rounded wadi stones of different sizes and/or local limestone; black to brownish & yellowish; mixed with smaller stones; sometimes with white creamy soil; unshaped; uncut or very roughly cut | Flat hewn black-brownish wadi stones and/or cut limestone; roughly coursed; yellow-brownish local limestone; unshaped; uncut or very roughly cut |
| No. Burial | Unclear | Unclear |

**Table 30 Characteristics of Hafit and Beehive tombs**

The walls of the Hafit cairns are hardly distinguishable but some examples showed possibly one to four concentric ring-walls around 0.30 m–1 m thickness. By contrast, the Beehives show double-skinned walls on a stone circle platform with kerbstones forming an even edge with walls around 0.80 m–1 m thick. Moreover, the Beehives have a possible external low plinth around 50 cm wide, while the Hafit cairns show no sign of any such plinth. The chamber of both types is small [a single circular or semi-circular in the centre of the tomb with a diameter of around 1–2.50 m with a possible paved floor of flat stones in the burial chamber]. Due to disturbance and collapse, there is no sign of

roofing over the Hafit cairns, while the Beehives show a central corbelled superstructure roof of flat stones. Both types appear to have been subject to frequent disturbance and plundering as well as re-use, which makes their dating as well as typology problematic (see Appendix B). Finally, a comparison between Maps 11 and 14 reveals that the total number of Hafit cairns (1,987) is larger than the Beehives (205). It is possible that this might be related to the fact that the majority of the located tombs are highly disturbed and destroyed, which, to repeat, makes identification difficult. In fact, some of the identified Hafit cairns might be badly collapsed Beehive tombs, which also makes quantification and distinction problematic.

**4.3.2.3- SUMMARY:**

It is clear that activity during the late 4$^{th}$/early 3$^{rd}$ millennium BC is represented almost entirely by burial monuments, namely Hafit and Beehive tombs. It should be stressed that Hafit cairns are often located away from wadi villages, and no traces of settlements can be found associated with them. However, a few cairns are located in areas surrounding these settlements such as those at al-Khashbah, al-Fulayj, al-Qaryatain and al-Khurais. By contrast, the Beehives are clustered around these villages (see Table 30 & Map 14). The same pattern can also be said about the tombs from Umm an-Nar onwards which are associated with wadi villages. The evidence also demonstrates that many Hafit cairns have been re-used over time, mainly during the Iron Age. Several finds were collected from some of these cairns but none of them can be securely dated to the Hafit period. The associated finds suggest that the majority of them are of Early Iron Age, but stylistically the tombs appear to be Hafit period cairns, indicating a possible later re-use.

The Hafit period activity within Wadi Andam is enigmatic because there are many tombs but no associated occupational traces have been found. This fact complicates our understanding of the levels of settlement activity during this time. It has been argued above that the population of these tombs was perhaps nomadic and moving around looking for the best areas for animal grazing. Their sites might be perishable 'campsites', which have vanished over time, a hypothesis that might be supported by the possible platforms found associated with some of these cairns. Furthermore, the occupational

remains might have been deposited and buried by the alluvium, or eroded by surface run off.

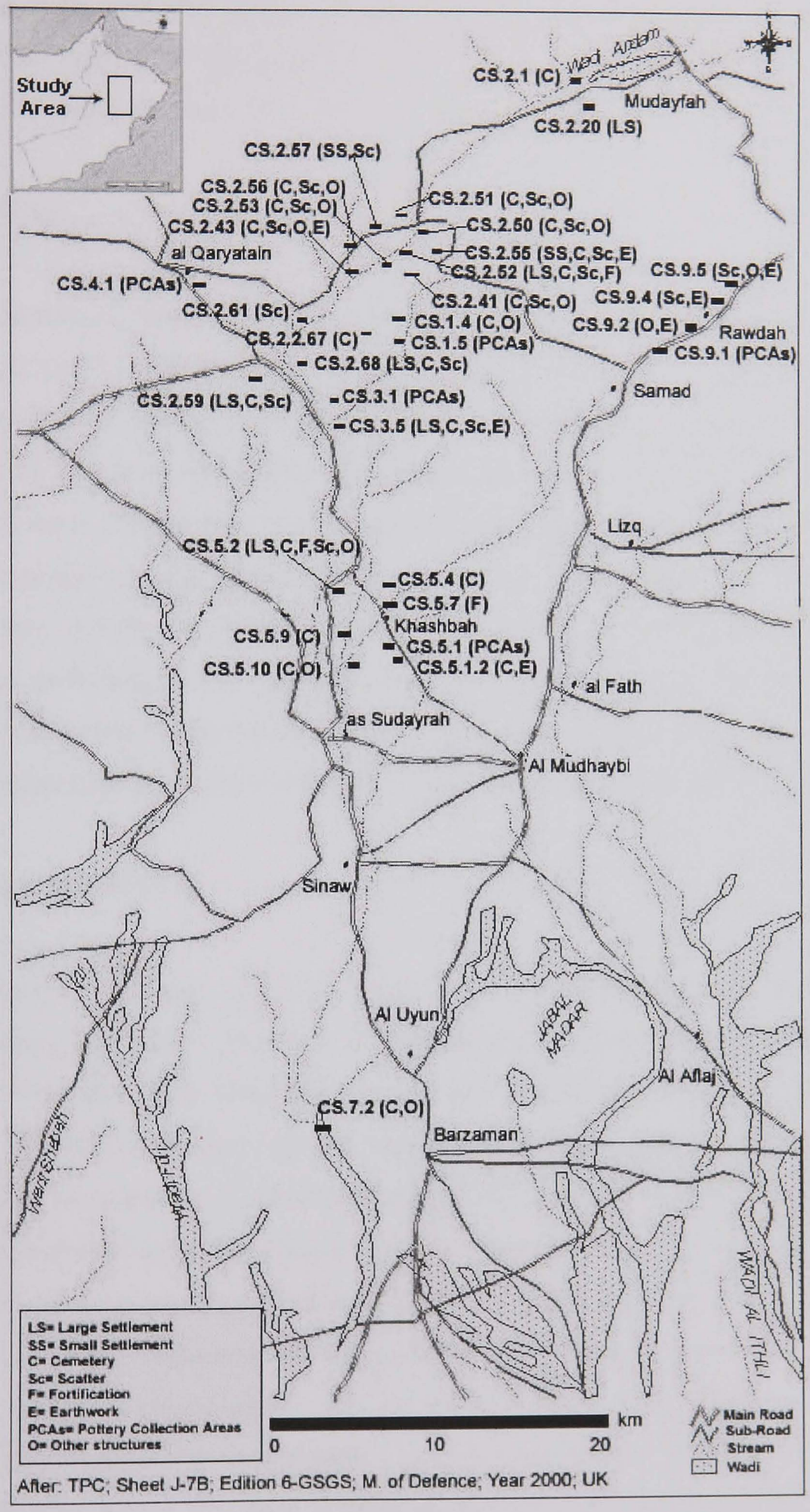
### 4.3.3- UMM AN-NAR PERIOD (c.2,500–2,000 BC):

#### *4.3.3.1- SITES (Map 16):*

1- PCAs: CS.1.5.1, CS.1.5.2, CS.1.5.5 and CS.1.5.6 at al-Fulayj; CS.3.1.4 at al-Khurais; CS.4.1.3 and CS.4.1.6 at al-Qaryatain; CS.5.1.1, CS.5.1.2, CS.5.1.3 and CS.5.1.5 at al-Khashbah; and CS.9.1.8 at ar-Rawdhah.
2- Major sites: CS.2.52, CS.2.67, CS.2.68, CS.2.69, CS.5.2, CS.5.4, CS.5.9, CS.5.7.
3- Minor sites: CS.1.1, CS.2.1, CS.2.20, CS.2.41, CS.2.43, CS.2.50, CS.2.51, CS.2.53, CS.2.55, CS.2.56, CS.2.57, CS.2.61, CS.3.5, CS.5.1.2, CS.5.10, CS.7.2, CS.9.2, CS.9.5, CS.9.4.

#### *4.3.3.2- DESCRIPTION OF EVIDENCE:*

The Umm an-Nar period is well represented by a considerable amount of archaeological evidence, consisting of wadi villages, pottery scatters and tomb fields. This demonstrates a high level of activity during this time. It appears that almost all the Umm an-Nar sites are concentrated in the northern part of Wadi Andam, which is a similar pattern to that found for the Hafit/Beehive tombs; while the southern part produced little evidence of this period (only 12 sherds from CS.7). The latter part also yielded little evidence for the other pre-Islamic periods, and much evidence for the Islamic ones (see Chapter Four, Section Two, Table 21). It is unclear whether the reasons behind this concentration might be related to environmental conditions that were attractive to the populations of the Umm an-Nar period in the northern area or related to cultural or economic reasons (see Chapter Seven 7.1.3).




**Map 16 Distribution of Umm an-Nar sites and their archaeological features recorded during the survey**

Several sites, both large and small, recorded during the survey yielded evidence for this period. For the purpose of this study, the Umm an-Nar evidence will be classified into three types: PCAs, major and minor sites.

**4.3.3.2.1- PCAs:**

It has seen earlier in Section Two of this chapter (4.2.3.1.1; Table 22), that apart from Barzaman, all the PCAs from the six surveyed villages yielded sherds of this period with al-Khashbah (CS.5) yielding the largest number of these sherds. The evidence clearly shows that the Umm an-Nar period is the most consistent and abundantly represented period in the wadi villages after the Late Islamic period. This picture suggests that there was more activity at these villages during the Umm an-Nar than at other pre-Islamic periods. In fact, with the exception of some Beehive/cairns in the area surrounding some villages (e.g. al-Fulayj, al-Khurais, al-Qaryatain and al-Khashbah), the Umm an-Nar is also the earliest evidence for the occupation of the wadi villages, suggesting that it may have been at this time that these villages first came into existence as settled villages.

**4.3.3.2.2- MAJOR SITES:**

Al-Khashbah (CS.5) village (ca. 912.5 ha.) yielded the greatest amount of evidence for both settlements and tombs (Figure 51). The published literature (Weisgerber 1980: 99–100; Potts 1990a: 102; Yule 1993: 143, Fig.2a–2b; Yule 2001a: 590, Fig. 590a–b; Orchard & Stanger 1994: 82) indicates only the occurrence of four Umm an-Nar towers in this village; but no more details of their accounts can be found. A total of 405 Umm an-Nar sherds were collected from this village's PCAs. Area CS.5.1.2 (ca. 4.41 ha.) includes a mound (CS.5.1.2.1) of around 0.18 hectares, which might have been caused by either land clearance activity or collapsed mudbrick buildings, with a large number of pottery sherds of different periods scattered on top and within the exposed section (Plates 36–39). The occurrence of Umm an-Nar sherds within such mounds might indicate buried sites that were disturbed by recent clearance activity in the area. The site also consists of a cut-section (CS.5.1.2.2) with Umm an-Nar sherds (Plates 40–41), which could be part of another clearance mound located in close proximity to the first one. Moreover, Umm an-Nar sherds were also found in an Islamic cemetery (CS.5.1.2.3) (Plate 42), just a few

meters south CS.5.1.2.2. Their occurrence within an Islamic cemetery could have resulted from the adjacent clearance mounds that showed surface Umm an-Nar sherd scatters, or the sherds may have been brought to the surface by the excavation of the Islamic graves.

There are also other sites that yielded Umm an-Nar evidence within and around al-Khashbah village such as CS.5.2 and CS.5.9. Site CS.5.2 (ca. 42.75 ha.) is a rocky outcrop with a group of cairns and pottery scatters in which a total of 424 Umm an-Nar sherds were collected. Below this outcrop, there are three Umm an-Nar towers with stone and pottery scatters (Figure 51). The site was divided into sub-sites of which CS.5.2.1 includes an Umm an-Nar rectangular tower around 40 m by 30 m in size, and around 2.50 m height (Plates 43–44). The tower is built of large rectangular stone blocks of different sizes; the largest being 2 m by 0.80 m by 0.50 m. Some stones showed picked rock drawings, representing scenes of mostly horses or camels and their riders (Plate 45). The surface is covered with a large number of Umm an-Nar pottery sherds. Site CS.5.2.2 includes an Umm an-Nar semi-square tower with possibly four rounded corners. It measures around 15 m by 15 m (Plate 46), while CS.5.2.3 consists of an Umm an-Nar round tower around 20 m in diameter (Plate 47). Site CS.5.2.4 (ca. 0.16 ha.) includes scatters of stone and Umm an-Nar pottery sherds near the square tower (Plate 48), while CS.5.2.5 (ca. 3 ha.) is a rocky hill with eighteen cairns/collapsed Beehives located on its top with stone and sherds, mainly Umm an-Nar, scattered over the site (Plate 49). The scattered stones are large and seem to be similar to those used in building the Umm an-Nar towers, which might suggest that they were cut in order to be used as building material for such towers. A fourth Umm an-Nar tower was found at site CS.5.7 (Plates 50–51), which has been badly disturbed by the local people. Furthermore, Site CS.5.9 is a tomb field (ca. 32.5 ha.) (Plate 52) in the south–western part of the village with a group of Umm an-Nar tombs associated with a large number of sherds of the same period (a total of 323 such sherds were collected). Other Umm an-Nar tombs have also been found scattered on another possible tomb field, Site CS.5.4 (ca. 3 ha.), in the north–western part, that yielded around twelve tombs (Plate 53).

Looking at the sketch plan of al-Khashbah village (Figure 51), and its Umm an-Nar remains (four towers [CS.5.2 & CS.5.7], tomb fields [CS.5.4 & CS.5.9], possible buried depositions [CS.5.1.2], sherd scatters), it appears that they might have formed one village

during this period. It must, however, be indicated that these features do not show any sign of organization or planning. The layout of the village shows large towers that might have been inhabited; perhaps each key family or clan had its own tower with a distance of almost 200–500 m between each tower. In fact, tower (CS.5.2.1) is larger than the other three towers (40 m by 30 m). One might speculate that this was perhaps the main tower, perhaps indicating the seat of power, while the other three smaller towers might have belonged to other inhabitants. On the whole, though, the evidence suggests that towers of this period had symbolic as much as domestic functions. The southwestern and northwestern parts of the village were reserved for the dead. There are also Beehive tombs on the outcrops surrounding the village on the southwestern and northern sides.

The survey along the Upper Wadi Andam (UWA) yielded several sites of the Umm an-Nar period, both major and minor sites. The latter are represented by very few Umm an-Nar-type pottery sherds associated either with tombs or 'other structures'. Among the major sites found in the UWA is CS.2.52 (ca. 15 ha.) which is the largest site to produce consistent evidence of the Umm an-Nar period. It is a possible Umm an-Nar village built on the western bank of Wadi Andam, near al-Ghoryeen village, the southeastern side of the site being mixed with the Islamic cemetery. The site includes a round tower, Umm an-Nar tombs, a Late Iron Age/Samad Mahleya-type tomb field mixed with Umm an-Nar structures and tombs, Umm an-Nar houses and other stone structures (Figure 56). The site was divided into six areas where Area one (CS.2.52.1) includes an Umm an-Nar round tower around 25–30 m in diameter and around 5–8 m high (Plates 54–55) and Area two (CS.2.52.2) includes around 58 tombs of Mahleya-type (see section 4.3.6 below) that are mixed with possible Umm an-Nar tombs (Plate 56). It is possible that they are built on top of the Umm an-Nar tombs the stones of which were re-used to build the later tombs. Area three (CS.2.52.3) is the northeastern cemetery that includes 144 tombs of Mahleya-type, mixed with tombs and stone structures of possible Umm an-Nar house remains with large numbers of Umm an-Nar pottery sherds (Plates 57–58). Area four (CS.2.52.4) includes 43 Umm an-Nar tombs and three black cairns with white creamy soil and travertine stones (Plate 59). Area five (CS.2.52.5) includes a group of stone structures of different shapes and sizes (Plates 60–61), associated with a large quantity of Umm an-Nar pottery sherds, particularly in the western and southern parts of the site. The pottery is good quality and fine painted with distinctive forms. Area six (CS.2.52.6) is the southeastern part of the

site, which includes an Islamic cemetery with old agricultural fields mixed with pre-Islamic tombs of possibly the Mahleya-type and some cairns of earlier periods (Plates 62–63), as well as a few stone horseshoes and circular structures. A group of 309 Umm an-Nar sherds was collected from the surface of these areas. Moreover, site CS.2.52.4 yielded one piece of a rim (ca. 5 mm thick) of a chlorite vessel (W.D.106, Plate 64 & Figure 57) with a row of incised double circles and dots between two horizontal lines.The shape of the vessel and its decoration has parallels with 3rd millennium BC sites in the peninsula[33].

This site (Figure 56) is more or less divided into four quarters with a round tower in the centre. The south/southeastern and to some extent the northeastern part of the site, include the site's burial ground that extends along the wadi bank. This part is the largest measuring around 200 m by 50 m. This might indicate that this part of the site was reserved for ancestors or dead family members. It is clear that, unlike the previous Hafit and Beehive tombs, the Umm an-Nar tombs show how different people can have different beliefs relating to the death and the afterlife (see Chapter Seven). The Umm an-Nar tombs are not built in high positions but in flat areas often close to the occupational areas. The third quarter is the settlement where the remains of around 120 stone structures and large amounts of Umm an-Nar pottery sherds were found. The fourth quarter is the north–eastern and north–western parts of the site which include the possible remains of Umm an-Nar tombs and structures which have Late Iron Age/Samad Mahleya-type tombs built on top. This layout of the site might indicate an Umm an-Nar village, whose boundaries were defined by the edge of the wadi bank and the terrace. The tower is in the centre of the site acting as a focal point; it might indicate the place of a possible high-status person. The inhabitants of this village were perhaps living in the houses southwest of the tower, while they reserved the southeastern and northeastern parts of the village for their dead.

A second large Umm an-Nar site is CS.2.68 (ca. 10.5 ha.) which is located west of Khadra Bani Dafa'a. It consists of a group of badly disturbed cairns and a large number of badly disturbed stone structures with a high density of Umm an-Nar-type pottery (Plates 65–66)

[33] Parallels can be found in the Umm an-Nar tombs at Bat (Frifelt 1975b: fig.28e: 418); Hili Tomb B (al-Tikriti 1981: Pls. 138-139); Hili North, Tomb A (Cleuziou & Vogt 1983: fig.10, Nos.7-9: 52 &1985: fig. No.3: 8); Hili Tomb N (Hadu 1989: Pl.13: 66) and Ajman Tombs A and B (al-Tikriti 1989b: Pl.45, Nos. C-G).

from where 137 sherds were collected. The site seems to have been bulldozed while carrying out the main road construction works, which has disturbed most of the archaeological features. A third large Umm an-Nar site is CS.2.69 (ca. 54.83 ha.) which is located a few meters south of CS.2.68 (Figure 52) being separated by the main road connecting Izki to Sinaw. It is possible that both sites actually form one site. The site was divided into three parts: the western part (CS.2.69.1) that includes a tomb field of around 26 cairns with white creamy soil (Plate 67–68); the eastern and southwestern parts (CS.2.69.2) that include a group of low mounds with possible Umm an-Nar structures; and the southern part (CS.2.69.3) which includes a group of white travertine low mounds. CS.2.69.2 includes mounds with stone walls which are possibly the remains of collapsed buildings with a high density of Umm an-Nar sherds. One large mound looks like a possible Umm an-Nar round tower with stone walls around its edges (Plate 69). This is around 3–4 m high and 15–20 m in diameter, and is surrounded by a group of about 34 lower mounds which are possibly ruins of houses. The site also includes four cairns with white travertine stones and white creamy soil. All parts of the site yielded surface material, mainly pottery and 102 sherds were collected as well as other objects from the cairns in CS.2.69.1, including a complete shell (W.D.117, Plate 70), worked flint pieces (W.D.009 & W.D.010, Plate 30) and one 5.8 cm long, copper/bronze leaf-shaped arrowhead (W.D.116; Figure 58) with midrib [34]. Moreover, one small flint arrowhead was found at tomb 4 (W.D.129; Plate 3).

**4.3.3.2.3- MINOR SITES:**

The last two sites worth noting are CS.9.2 and CS.9.4 at ar-Rawdhah village. The first (ca. 4.37 ha.) was sub-divided into two areas: an area with mudbrick building remains on a rocky hill and its slope (CS.9.2.1) (Plates 71–72), and a small date palm garden (CS.9.2.2) (Plate 73) that was checked for pottery. Both areas yielded a large number of sherds of different periods, including 21 of Umm an-Nar-type. The second site (CS.9.4) is a well cut-section north of ar-Rawdhah village around 3 m wide and 2.50 m deep which includes one layer around 60 cm thick containing Umm an-Nar pottery sherds (Plates 74–75), and possible evidence of fire cracked stones and mudbrick. A large number of pottery sherds

[34] This arrowhead is typical Iron Age and has parallels from many sites in the peninsula such as Rumeilah (Boucharlat & Lombard 1985: Pl.62, Nos. 1-7).

of different periods were found around the pit amongst which 76 of the Umm an-Nar-type were collected. The evidence might indicate buried Umm an-Nar remains in this area. There are other small sites that might be of Umm an-Nar date (see above); however, they yielded very little evidence, mostly only a few sherds, suggesting short occupation or temporary 'campsites.

### *4.3.3.3- SUMMARY:*

The survey yielded a significant amount of Umm an-Nar evidence from different types of sites such as PCAs, large (major) and small (minor) villages and occupational remains, tomb fields, scattered pottery sherds and 'other structures' that indicate limited activity. The evidence indicates that the Umm an-Nar period is represented by both settlements and tombs. This suggests that wadi villages and perhaps their surrounding areas were largely occupied, or at least used as burial grounds by the inhabitants of the Umm an-Nar period. The evidence from the pottery database analysis suggests that a large number of Umm an-Nar pottery sherds were collected from the whole survey, indicating more activity during the Umm an-Nar period than in any other of the pre-Islamic periods. As has been indicated above, with the exception of some Beehive/cairns in the vicinity of some wadi villages, the Umm an-Nar period is also the earliest evidence for the occupation of the wadi villages, suggesting that it may have been at this time that these settlements first came into existence as settled villages.

The larger sites are the possible village at CS.2.52, and sites CS.2.68, CS.2.69 and al-Khashbah village (CS.5). Al-Khashbah yielded the most evidence of Umm an-Nar activity. Moreover, the evidence shows that the larger sites are located within or close to modern villages such as al-Khashbah (CS.5), CS.2.52 near al-Ghoryeen, and sites CS.2.68 and CS.2.69 near Khadra Bani Dafa'a. These might be prime locations for practical reasons and may have been occupied until the present day. This could be related to the availability of natural resources such as water and fertile soils. Their location, too, could have played a significant role in the trade network. Nowadays, these villages are located along one of major routes that link al-Dakhilyah (in the interior of Oman) with al-Sharqyah (part of the interior and coastal zones). This could also have been true in the past when traders from the interior of Oman (e.g. from Izki) travelling to the coast (e.g. Sinaw) and vice versa

passed through. By contrast, almost all the smaller sites are located away from modern villages, and are scattered along the Wadi Andam banks (see Maps 20–21 below).

It should be noted that the evidence during the Umm an-Nar period appears to show a close association between tombs and settlement which is quite different to that from the previous Hafit and the following Wadi Suq periods. The evidence from the Umm an-Nar period indicates, as evidenced by sites CS.2.52 and al-Khashbah village (CS.5), that tomb fields are associated with the main settlements and located not far from them.

The Umm an-Nar larger sites all have similar features. Figure 53 shows the layout of three large Umm an-Nar sites all of which yielded towers (CS.2.52 and CS.5) or a possible tower (CS.2.69) as well as remains of structures, tomb fields and pottery scatters. The layout of sites CS.5 and CS.2.52 includes one central tower (CS.2.52) or four separated towers (CS.5) three of which are smaller than the main tower (CS.5.2.1). Thus, two types of large settlements can be distinguished:

1- A settlement (CS.2.52) with one main tower for a possible individual of high status; the tower being surrounded by houses.
2- A settlement (CS.5) with one main tower, again possibly for a chief, and other smaller towers for the other inhabitants; or each tower representing the residence of different families of high social status.

In both settlements the inhabitants have reserved parts of the settlement for their dead: the southeastern and northeastern parts of site CS.2.52 and the southwestern and southern and northern parts of site CS.5. It should, however, be said that this is speculation and it is unclear whether or not this layout indicates any social or religious beliefs (see Chapter Seven 7.1.3). By contrast, smaller sites yielded possible evidence of the Umm an-Nar period; mainly small amounts of pottery sherds, perhaps the remains of 'campsites' of seasonal Umm an-Nar pastoralist inhabitations as they are too small to represent long-term occupation. It is most likely that they were campsites. It is possible, however, that these sites were part of the wider activities of communities living in the larger Umm Nar villages.

To sum up, the large amount of evidence for the Umm an-Nar period from Wadi Andam might indicate that its inhabitants were involved in different activities such as agriculture, herding and production (e.g. pottery and metal) (see Chapter Seven 7.1.3). It is possible that during this time there were water resources and arable lands suitable for agriculture, and mineral resources from the surrounding mountains, perhaps copper. Pottery production, for example, was very probable from the large quantities of collected sherds and their good quality and variety as evidenced in the second section of this chapter. It should, however, be said that no clear evidence (e.g. kilns) was found during the survey to indicate any pottery manufacture.

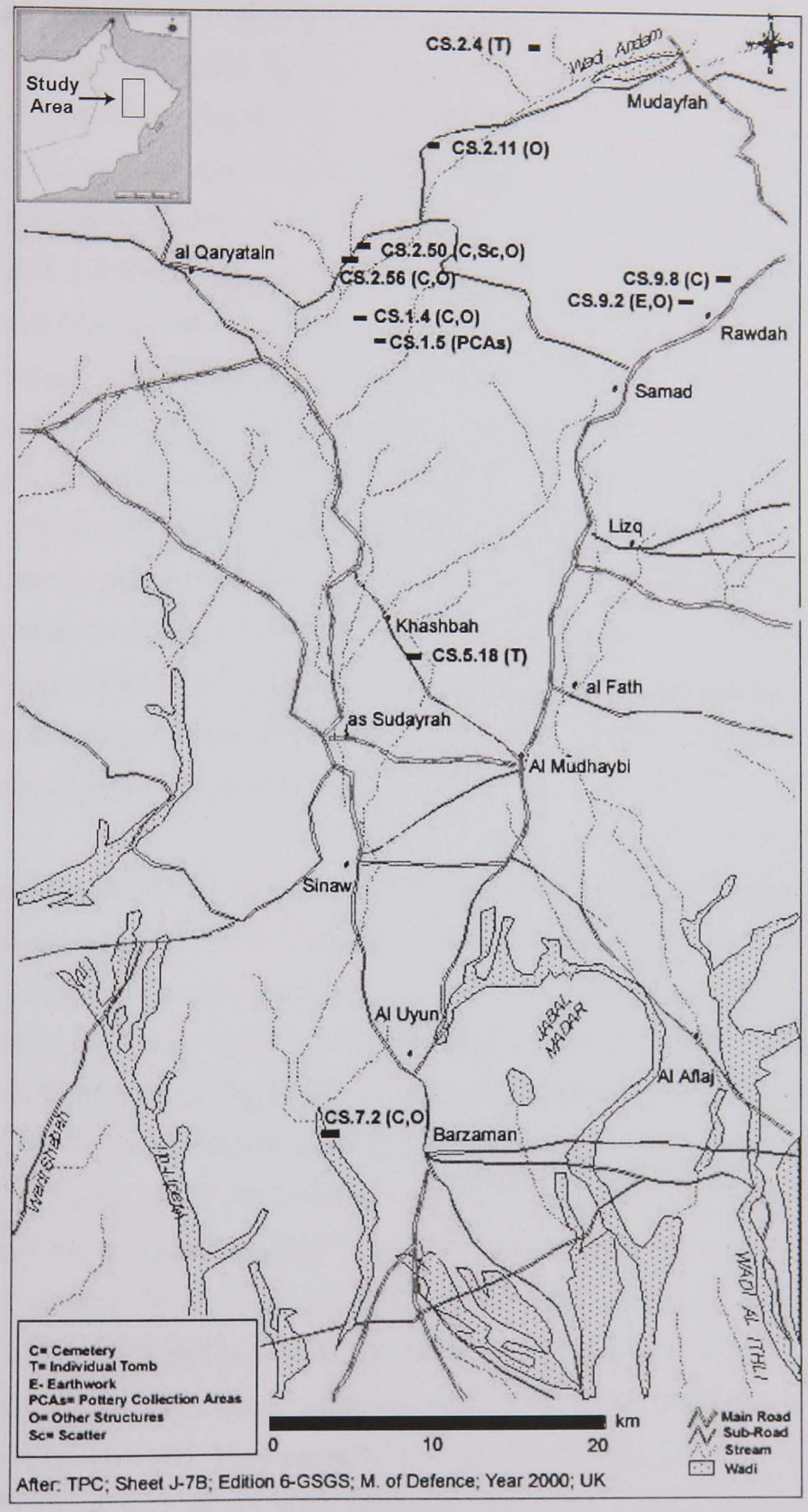
### 4.3.4- WADI SUQ PERIOD (ca.2,000–1,300 BC):

#### *4.3.4.1- SITES (Map 17):*

1- PCAs: CS.1.5.2 and CS.1.5.4 at al-Fulayj.
2- Other sites: CS.1.4, CS.2.4, CS.2.11, CS.2.50, CS.2.56, CS.5.18, CS.7.2, CS.9.2 and CS.9.8.

#### *4.3.4.2- DESCRIPTION OF EVIDENCE:*

Unlike the preceding Umm an-Nar period which yielded large settlements with monumental remains and large quantities of pottery, the Wadi Suq period is only represented by occasional pottery sherds and a few possible tombs whilst no other distinguishable features of settlements were found. Therefore, our understanding of this period is based only on these few sherds, which mainly come from tombs as evidenced in the quantitative part of this chapter (Section Two). This available evidence does not tell us anything about the level of settlement activity during this period. It only forces us to put forward hypotheses (see below). The absence of settlements does not necessarily mean that they did not exist, although this seems the most likely explanation, but it must at least indicate that there was significant cultural or economic change in the nature of settlement at this time.




**Map 17 Distribution of Wadi Suq sites and their archaeological features recorded during the survey**

The evidence indicates that the only PCAs (see Section Two of this chapter 4.2.3.1.1: Table 22) that yielded sherds of this period are those at al-Fulayj village (CS.1.5), consisting of only three sherds. Moreover, Site CS.7.2 in the area around Barzaman village covers an area of around 16 hectares and yielded different types of tombs on gravel and rocky hills, including Hafit cairns and Beehives and 43 oval tombs built of large and medium brown and black stones with gravel and smaller stones in the middle (Plates 77–79). The latter type yielded a total of seven sherds of the Wadi Suq-type. However, it cannot be argued with certainty that these are Wadi Suq tombs, and one cannot also exclude the possibility of their being Late Iron Age/Samad tombs as their structures bear similarities with those Late Iron Age/Samad tombs found at Mahleya site CS.2.51. Moreover, ar-Rawdhah village yielded two sites with Wadi Suq sherds. The first is CS.9.2.2, which is part of site CS.9.2 (ca. 4.37 ha.), and includes a small date palm grove (Plate 73) which was checked for pottery and three sherds of Wadi Suq-type were found. The second site is CS.9.8 (ca. 0.72 ha.). This includes four possible pre-Islamic tombs of piled brown and white travertine stones with other small piled stones (Plates 80–81) and yielded a total of ten sherds of Wadi Suq-type.

The survey along the UWA also yielded a few sites with Wadi Suq-type pottery sherds such as site CS.2.4 which is an isolated cairn with brownish-black stones and white creamy soil located on a wadi gravel terrace (Plate 82). It has a diameter of around five meters and four concentric walls. The tomb yielded a group of objects such as a spindle-whorl (W.D.123; Plate 83 & Figure 58), a fragment of chlorite vessel (W.D.124, Plate 83), three beads (W.D.015, W.D.147 & W.D.148, Plate 84 & Figure 59), a copper sheet (W.D.128), and a pin (W.D. 146, Plate 85), and three fragmented shells (W.D.125–W.D. 127; Plate 86). Additionally, a total of 12 Wadi Suq sherds were collected from the surface of this cairn. Another Wadi Suq site is CS.2.11 (Figure 54), which yielded a total of five Wadi Suq sherds. It is small in size (ca. 0.52 ha.), and includes several stone structures of different shapes built with a double stone wall around 30 cm thick and filled in the middle with gravel (Plates 87–89). They are built on a black gravel wadi terrace, directly on the edge of the western bank of the Wadi Andam. Furthermore, Site CS.2.50 is a large Late Iron Age/Samad site (see section 4.3.6 below); however, among the sherds collected from this site, were eight sherds of Wadi Suq-type. The area includes a large number of pre-Islamic and Islamic tombs on a gravel wadi terrace in which a few possibly Wadi Suq

subterranean tombs might exist. Lastly, Site CS.2.56 is an area west al-Ghoryeen that includes a group of cairns (Plate 90 & Figure 55) one of which (CS.2.56.3) yielded five sherds of Wadi Suq-type.

Twenty-five sherds of the Late Bronze Age should also be added from the PCAs within al-Fulayj village (CS.1.5). These sherds were given the term Late Bronze Age as it was impossible to attribute them either to the Wadi Suq or Early Iron Age period as they bear similar characteristics to both periods; therefore, it was preferred to attribute them to a broader chronology[35].

***4.3.4.3- SUMMARY:***

Our understanding of the Wadi Suq period in the Wadi Andam area is based largely on a few pottery sherds, which are mainly associated with tombs. The numbers of Wadi Suq sherds from all the survey parts (PCAs, OVAs and UWA) are consistently lower than for the other pre-Islamic periods, namely the Umm an-Nar and Iron Age. The Wadi Suq evidence comes mostly from tombs and there is a virtual absence of any evidence from settlement areas.

The remains of this period could be small sporadic and perishable structures of a nomadic or semi-nomadic population, which have possibly been eroded away or deposited by alluvium. Moreover, the population of this period perhaps used some places as cemeteries or burial grounds for their dead and they may have lived near or not far from these tombs in perishable structures, which do not leave any traces over time. Whatever the nature of settlement in this period, it should be noted that its pattern is very different to that of the Umm an-Nar and later periods. Moreover, unlike the Umm an-Nar period, where there is a clear association between tombs and settlements, there is clearly a different relationship between tombs and settlements during Wadi Suq: the tombs suggest that there was still

[35] It should be indicated here that the term 'Late Bronze Age' in the Oman Peninsula has been adapted by Christian Velde (2003: 101-113) who distinguishes between two distinct periods during the 2nd millennium BC: 'Wadi Suq' and 'Late Bronze Age'. He dates that first period between 2,000-1,600 BC and the second between 1,600-1,250 BC. However, as indicated in Chapter Three (3.5) the discussion within this thesis' chapters prefers to follow the broader chronology for the Wadi Suq period between 2000 and 1300 BC as argued previously by, for example, R. Carter in his PhD thesis (1997a). This is in order to have a broader chronology for the Wadi Andam Survey's evidence description and analysis.

activity of some sort in or around the wadi villages but there is no evidence of occupation. This raises the question of the reasons behind such a pattern. Were the people of Wadi Suq sedentary, semi-nomadic or nomadic? If they were sedentary where did they live? Where did they bury their dead? Did they use the older wadi villages as burial grounds for their dead because they had some sort of religious or cultural meaning? (see Chapter Seven 7.1.4).

### 4.3.5- EARLY IRON AGE (ca.1,300–300 BC)

#### *4.3.5.1- SITES (Map 18):*

1- **PCAs**: CS.1.5.1 and CS.1.5.6 at al-Fulayj, and CS.3.1.3 at al-Khurais.
2- **Other sites**: CS.2.11, CS.2.42, CS.2.43, CS.2.50, CS.2.51, CS.2.52, CS.2.56, CS.2.60, CS.2.64, CS.2.67, CS.2.68, CS.2.69, CS.3.8, CS.4.3, CS.4.4, CS.4.13, CS.4.14, CS.5.7, CS.5.10, CS.5.13, CS.5.14, CS.9.2 and CS.9.5.

#### *4.3.5.2- DESCRIPTION OF EVIDENCE:*

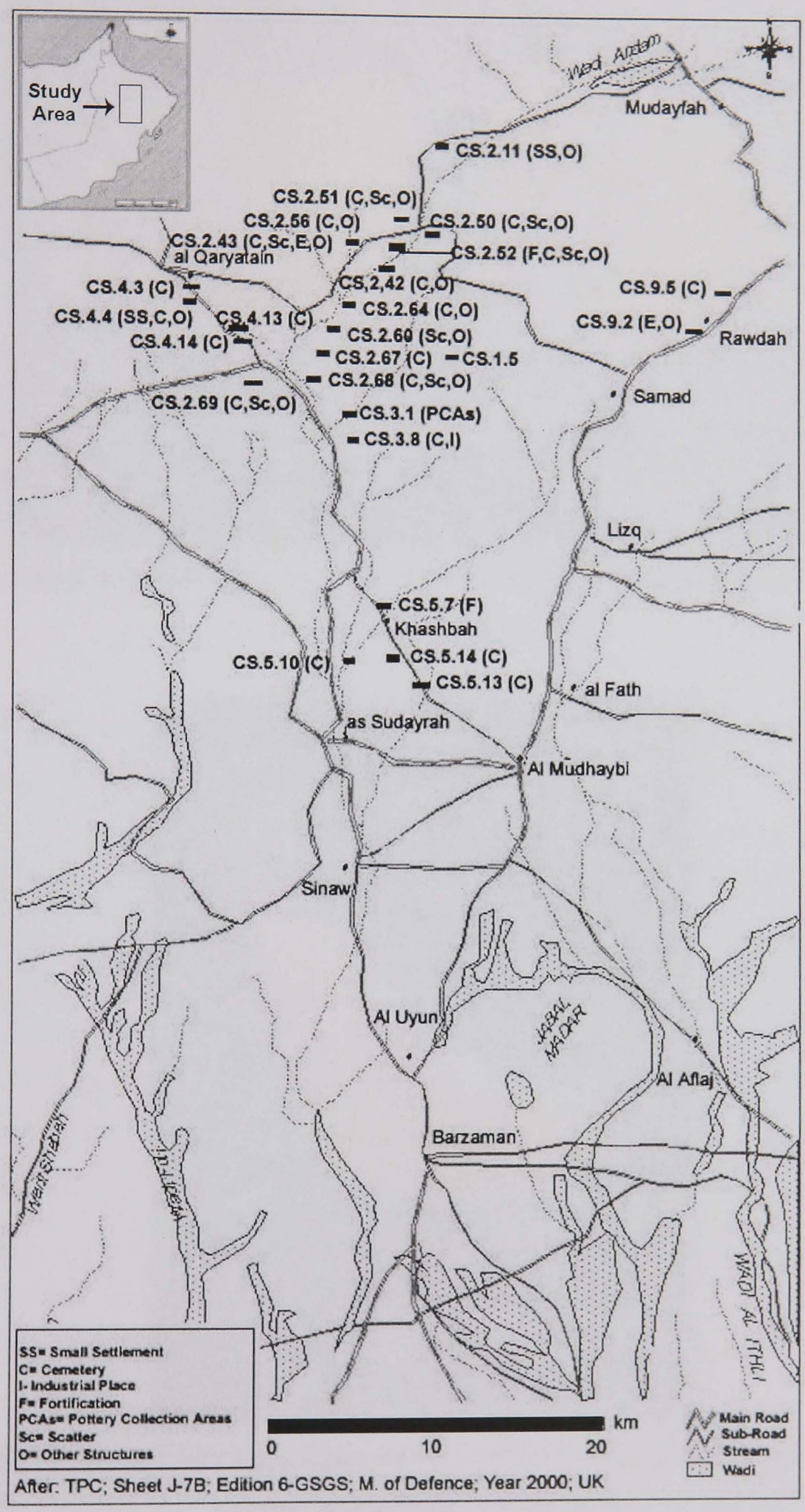
The Early Iron Age yielded more evidence than the Wadi Suq period, but again, it comes mostly from tombs. Several sites yielded pottery sherds mainly fine painted pottery (Plates 4–5), and other objects. One of the major difficulties in dealing with tombs which yielded Early Iron Age material is that they might be re-used tombs of the preceding periods- particularly the Hafit cairns, which might have been re-used in many different periods. This makes their dating and development over time difficult to assess. All the relevant tombs are located on top of gravel hills and terraces (see the problem of dating Hafit tombs at Chapter Three 3.2).

The areas surrounding al-Qaryatain yielded sites with Early Iron Age sherds which are all from tombs that are possibly re-used. Among these is CS.4.3 (ca.1.5 ha.). It includes two disturbed cairns (Plates 91–92) with 35 Early Iron Age sherds as well as one piece of chlorite vessel and one shell (W.D.107–W.D.108, Plates 93–94). Moreover, among the five cairns spread over a large area (ca. 20 ha.) of gravel terrace at Site CS.4.13 (Plate 95), Tombs 8 and 9 yielded 38 Early Iron Age pottery sherds. Tomb 8 also yielded a group of

beads (W.D.002 to W.D.008; Plate 96 & Figure 59), while Tomb 9 also yielded one bead (W.D.021; Plate 84 & Figure 59) and a complete shell (W.D.022, Plate 97). Tomb 1 yielded a pierced grey stone spindle-whorl (W.D.119; Plate 98 & Figure 58). Site CS.4.4 is the only possible occupational site within al-Qaryatain that yielded different types and shapes of structures and possible tombs. These are all located on a small outcrop, suggesting a fortified settlement (Plates 99–103). A total of 56 Early Iron Age sherds were collected from the site's half hectare surface.

Several sites around al-Khashbah village, mostly tombs, yielded sherds of the Early Iron Age. Among these is CS.5.10 that includes 39 cairns on rocky hills to the south and southeast of the village (Plates 104–105). Tomb 2 yielded 23 Early Iron Age sherds, one bead (W.D.017, Plate 106) and an iron/copper earring of 3.2 cm diameter (W.D.130; Plate 107 & Figure 58), while Tomb 27 yielded only one bead (W.D.011; Plate 84 & Figure 59). The largest number of Early Iron Age sherds from this village came from Site CS.5.13 that includes around eleven cairns on a rocky hill (Plates 108–109). Tombs 1, 2 and 3 yielded a total of 105 Early Iron Age sherds. Tomb 2 also yielded six beads (W.D.026 to W.D.031; Plate 110 & Figure 59) and six shells (W.D.094 to W.D.099, Plate 111); Tomb 3 yielded two shells (W.D.076 & W.D.077); and Tomb 4 yielded one bead (W.D.012; Plate 106 & Figure 59), six shells (W.D.059 to W.D.064, Plate 112) and four fragments of chlorite of the same vessel (W.D.112 to W.D.115; Figure 57). This vessel has an open rounded rim (ca. 4 mm thick) and bears incised decoration of horizontal lines just under the rim and opposed triangles as well as incised dots. The shape and decoration of this vessel is typical of the Early Iron Age type with parallels from Rumeilah Period II (Boucharlat & Lombard 1985: Pl.60, No.4) and the Honeycomb cemetery at Bawshar Area (Costa et al 1999: cf. figs. 17–19: pp: 63–65)[36].

[36] Thanks to Prof. P. Magee and Dr. J. Schreiber for their help in identifying these fragments.




**Map 18 Distribution of Early Iron Age sites and their archaeological features recorded during the survey**

**Plate 4 Fine painted Early Iron Age pottery sherds with a dusky red painted decoration on both sides**

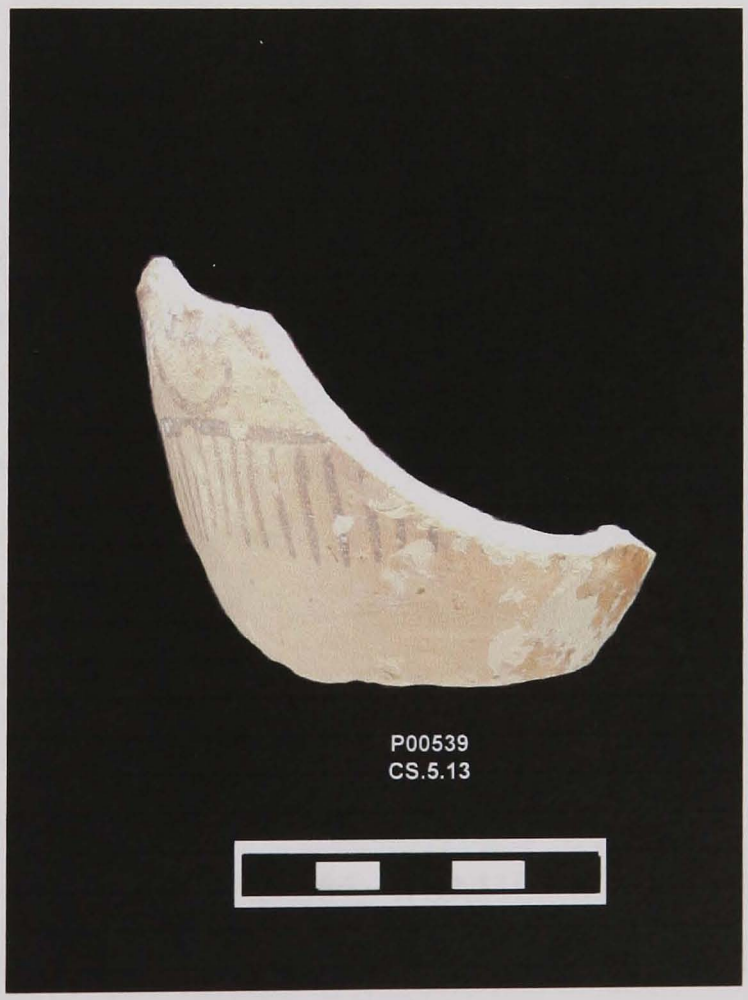



**Plate 5 Fine painted Early Iron Age pottery sherd of a small bowl with a dusky red painted decoration on both sides**

**Plate 6 Early Iron Age spouted chlorite bowl from site CS.2.67, Tomb 9**

The survey along the UWA also recorded some Early Iron Age sites, mostly tombs. Site CS.2.67 (ca. 19.25 ha.) yielded the most evidence of this period, including 150 sherds which are all from tombs. As stated earlier, this site includes a large number of possible disturbed Hafit and Beehive tombs (Plates 113–114); however, none of them yielded material earlier than the Early Iron Age. As has already been indicated in Chapter Three (Section 3.2) there are uncertainties regarding the dating of these cairns and some of them might be of a later date, perhaps extending into the Iron Age. Several of the cairns located during the survey yielded Iron Age material so it is difficult to say with certainty whether they can be dated to the Hafit or Iron Age, or they are Hafit which were re-used during the Iron Age. They yielded different types of material such as pottery sherds, a small bronze/copper leaf-shaped arrowhead with midrib (W.D.109, Figure 58), beads (W.D.014 & W.D.023, Plate 106), metal and chlorite objects and shells (W.D.067 to W.D.070, W.D.024, W.D.025, W.D.082 to W.D.084, W.D.110, W.D.111, Plates 97 & 115). The arrowhead has parallels with, for example, Rumeilah (Boucharlat & Lombard 1985: Pl.62, Nos. 1–7), al-Buhais Tomb BHS 64 (Jasim 2003: fig.3, pp: 87) and other many sites in the peninsula[37]. Tomb 9 yielded a large number of Early Iron Age pottery sherds of different

[37] I would like here to thank Dr. L. Weeks for his help in identifying some of the metal artefacts.

distinctive forms, one complete chlorite vessel with a spout (W.D.145; Plates 6 & 116; Figure 60), two chlorite fragments (W.D.142 & W.D.143; Plate 117 & Figure 57), a bead (W.D.144) and shells (W.D.132 to W.D.141, Plate 118). The chlorite bowl has a semi-rectangular spout around 1.9 cm wide and 4.3 cm long. It includes incised decoration of horizontal lines around the rim and above the base. This bowl is typical Early Iron Age (Iron II) and has parallels with Wadi al-Qawr[38]. The other two chlorite fragments (Plate 117) bear incised decoration of wavy, spiral, horizontal lines and hatching as well as everted triangles and circles with dot design, which have parallels with the Rumeilah Period II (Boucharlat & Lombard 1985: Pl.60, No.4).

What was a possible Early Iron Age site, CS.2.50 is in fact a Late Iron Age/Samad cemetery (see section 4.3.6 below). Among the finds are 76 Early Iron Age sherds that were collected from mixed structures. It appears that this cemetery and the associated settlement indicate an occupational level of activity that started during the Early Iron Age and continued, perhaps intensively, during the Late Iron Age/Samad. The same can be said about site CS.2.51 that yielded 37 Early Iron Age sherds, mostly from tombs. Moreover, there are three major Umm an-Nar sites - indicated earlier - which yielded Early Iron Age sherds: CS.2.52, CS.2.68 and CS.2.69. The first site yielded 38 Early Iron Age sherds from a large number of circular and semi-oval Late Iron Age/Samad tombs that were built on top of Umm an-Nar tombs and house remains. Sites CS.2.68 and CS.2.69 have almost the same situation in which both sites yielded Early Iron Age sherds from tombs: 18 sherds from CS.2.68 and 28 sherds from CS.2.69. The latter site consists of a tomb field of 26 cairns re-used during the Early Iron Age (CS.2.69.1), which yielded other material such as fragments of chlorite vessels, shells, beads and bronze arrowheads as well as one small flint arrowhead, indicated earlier, from Tomb 4 (Plate 3). In addition, 49 Early Iron Age sherds were yielded by Tombs 3, 4 and 5 at Site CS.2.56.

The only settlement site on the UWA that yielded evidence of the Early Iron Age is CS.2.11 (ca. 0.52 ha.), which, as indicated earlier, consists of a group of stone structures of different shapes and sizes (Plates 87–89 & Figure 54). The surface of this site yielded 25 Early Iron Age sherds.

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[38] I would like to thank Prof. P. Magee for bringing to my attention the parallels with Wadi al-Qawr. I would like also to thanks Dr. C. Velde for his help in identifying the date of this bowl.

### *4.3.5.3- SUMMARY:*

To conclude, unlike the Wadi Suq, the survey yielded little evidence of possible Early Iron Age settlements (see Section Two of this chapter 4.2.3.1.1). However, the majority of Early Iron Age sherds come from tombs as was the case with the Wadi Suq. Only two PCAs yielded a few sherds from this period, which might suggest that the PCAs were not inhabited during the Early Iron Age or, more accurately, were not used in the same way. On the contrary, the evidence from OVAs shows similar evidence from both tombs and occupational structures, perhaps suggesting that the areas around wadi villages were more inhabited by the Early Iron Age inhabitants than the centre of the modern settlements represented by the PCAs.

It is also possible that the Early Iron Age sites might have been inhabited over several periods during which populations re-used the preceding period's tombs and perhaps their settlements, as well as possibly constructing their own tombs. These sites were mainly established either before the Early Iron Age, namely the Umm an-Nar period, for example CS.2.52, CS.2.67, CS.2.68 and CS.2.69, or later during the Late Iron Age/Samad such as CS.2.50 and CS.2.51. Hafit cairns and Umm an-Nar sites were perhaps re-used by the inhabitants of the Early Iron Age for only a short time and maybe on certain occasions. By contrast, the larger Late Iron Age/Samad sites might primarily have been established and inhabited by the people of the Early Iron Age, perhaps small semi-nomadic groups using simple structures which were then extended during the Late Iron Age/Samad period. The re-used Hafit tombs are located away from the modern wadi villages. However, some examples can be found close to these villages some of which yielded large quantities of Early Iron Age material at site CS.2.69 near Khadra Bani Dafa'a. The material recovered from them shows different problems regarding their dating and architecture as many were badly disturbed and include materials from different periods, which does not help in defining the relative chronology of single burials within the tombs. It is also difficult to estimate the number of individuals buried within a specific tomb. It can be suggested. thus, that during the Early Iron Age, settlements appear to have been occupied for only short period of time, and that their size was very small. The reasons behind this could be that settlements were used by small sporadic populations, probably nomadic. This appears to have been the case during the Wadi Suq. The settlements might also have been

constructed of perishable materials that have vanished over time, and their foundations have perhaps been eroded or covered by alluvium. To some extent, one can say that the Early Iron Age might be a continuation of the pattern established during the Wadi Suq with a little, but not much, evidence of settlements, of possibly short occupation. The Early Iron Age settlement pattern is quite different to that noted during the Umm an-Nar period as well as the following Late Iron Age/Samad period.

### 4.3.6- LATE IRON AGE/SAMAD PERIOD (ca. 300 BC–200 AD):

#### *4.3.6.1- SITES (Map 19):*

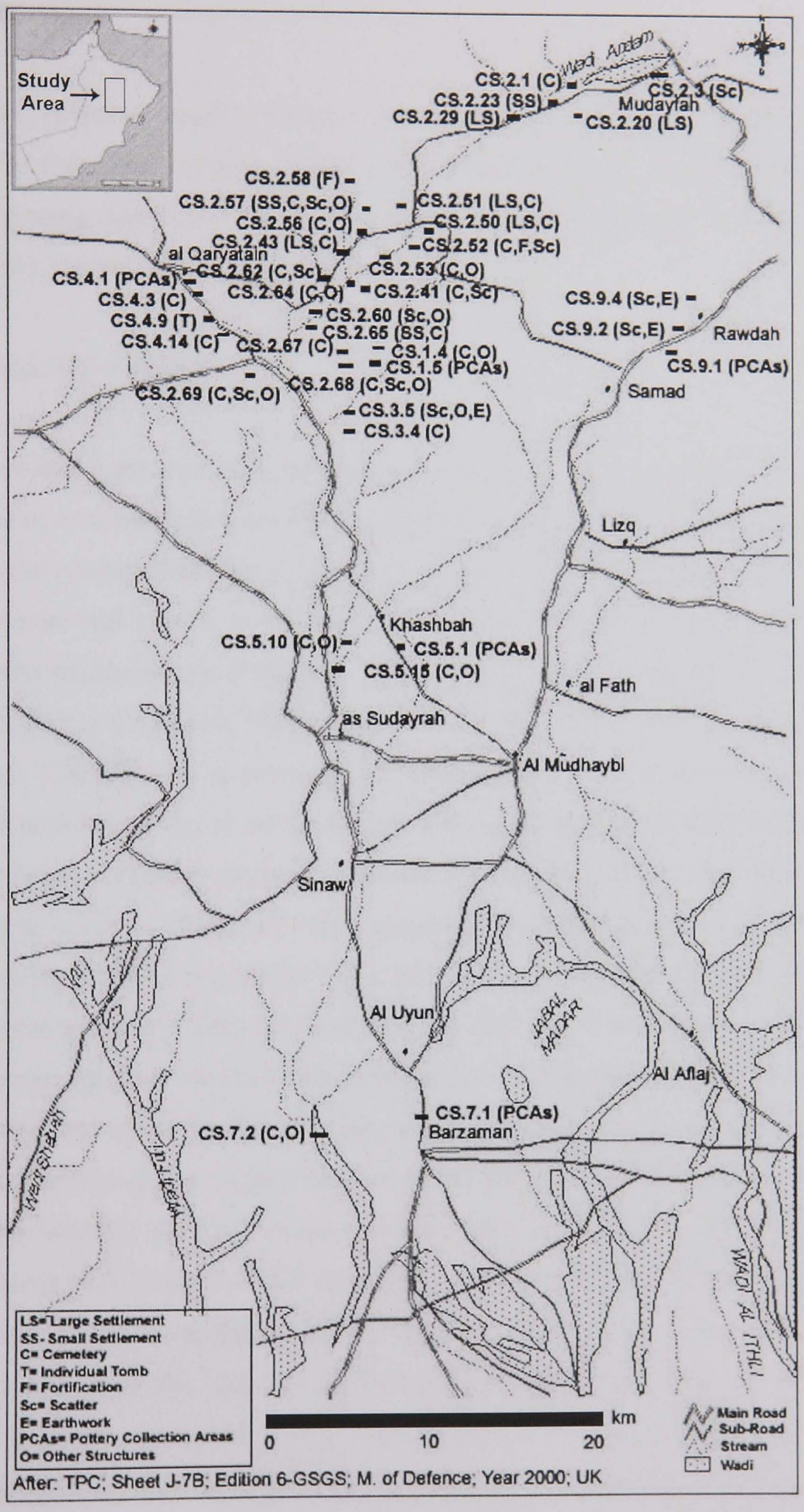
1- **PCAs**: CS.1.5.5 and CS.1.5.6 at al-Fulayj; CS.4.1.1 and CS.4.1.4 at al-Qaryatain; CS.5.1.1 at al-Khashbah; CS.7.1.4 at Barzaman; and CS.9.1.1, CS.9.1.7 and CS.9.1.8 at ar-Rawdhah.

2- **Major sites**: CS.2.43, CS.2.50, CS.2.51 and CS.2.52

3- **Minor sites**: CS.1.4, CS.2.1 CS.2.3, CS.2.11, CS.2.20, CS.2.23, CS.2.29, CS.2.41, CS.2.42, CS.2.53, CS.2.56, CS.2.57, CS.2.58, CS.2.60, CS.2.62, CS.2.64, CS.2.65, CS.2.67, CS.2.68, CS.2.69, CS.3.4, CS.3.5, CS.4.3, CS.4.9, CS.4.14, CS.5.10, CS.5.15, CS.7.2, CS.9.2 and CS.9.4.

#### *4.3.6.2- DESCRIPTION OF EVIDENCE:*

The Late Iron Age/Samad, together with the Umm an-Nar period, is better represented than any other pre-Islamic period with several sites and sherds being found. These sites vary in their density, size and the nature and amount of recovered evidence. Several of them might have been occupied by sedentary inhabitants while there are other small sites that could have been inhabited seasonally. As will be seen in Chapter Seven (7.1.5), it has been argued that the intensification of settlement during this time could be related to availability of water resources and the introduction of the *falaj* system.




**Map 19 Distribution of Late Iron Age/Samad site and their archaeological features recorded during the survey**

#### 4.3.6.2.1- PCAs:

The evidence, mentioned earlier, from the PCAs (see Section Two of this chapter 4.2.3.1.1) indicates that five wadi villages yielded a large number of Late Iron Age/Samad pottery sherds, suggesting that most wadi villages were occupied during this time after a possible decline during the Wadi Suq and Early Iron Age.

#### 4.3.6.2.2- MAJOR SITES:

One of the major Late Iron Age/Samad sites is Site CS.2.50 (ca. 94 ha.) that is located between the eastern bank of Wadi Mahram and the western bank of Wadi Andam (Figure 61), where the current Mahleya Village is situated. It includes a large number of tombs, both pre-Islamic and Islamic on a gravel wadi terrace, but the majority of them are pre-Islamic of the Mahleya-type (Late Iron Age/Samad). The site was sub-divided into five areas (CS.2.50.1 to CS.2.50.5; Figure 61) which yielded large quantities of sherds of this period. Area CS.2.50.1 is a cemetery of Mahleya-type tombs. In January 2004, the Department of Archaeology at Sultan Qaboos University and the Ministry of Heritage and Culture carried out a rescue excavation of 74 tombs in the northern part of this cemetery (cf. ElMahi & AlJahwari 2005: 57–69) (Figures 62–65 & Plates 119–121). All the objects found within these tombs (e.g. pottery jars, softstone vessels, metal objects) and the burial practices point towards a date between 400/300–100 BC. Furthermore, Area CS.2.50.2 includes a group of stone structures of different sizes and shapes (Plates 122–124) built on the wadi edge and which go down to the end of the wadi terrace's slope, forming what look like 'sloped-structures'. Again this makes identification of function and use difficult. It is unclear whether they are houses, fields, retaining walls or they served another function. Areas (CS.2.50.3 to CS.2.50.5) consist of a group of different structures and tombs as well as old agricultural fields (Plates 125–129). Among the collected surface sherds from the whole site, there are 127 Late Iron Age/Samad sherds in addition to the other finds from the excavated tombs. The evidence from this site shows that there has been a continuous level of activity from the Umm an-Nar until the Late Iron Age/Samad during which time this was a large wadi village with its own burial ground. However, caution must be taken into consideration for the evidence from periods earlier than the Late Iron Age/Samad as they are represented only by very few sherds.

Another major Late Iron Age/Samad site is CS.2.51 (ca. 28.5 ha.) which is located on the western bank of Wadi Mahram, which separates it from site CS.2.50 (Figure 66). The southwestern part of the site includes the densest area with pre-Islamic and Islamic tombs where two cemeteries of the Mahleya-type (CS.2.51.3 & CS.2.51.4) were located, and one Islamic cemetery (CS.2.51.2) (Plate 130). The eastern and southeastern parts (CS.2.51.1 & CS.2.51.6) yielded many stone structures on the gravel terrace and along the wadi edge and slope together with other possibly pre-Islamic tombs and piled stones (Plate 131–134). This site also includes four mounds with stone structures on the top and sides. Other stone structures and piled stones were found around these mounds (Plate 135). Moreover, there is one stone wall around 50 cm thick which extends around the wadi edge, and which may mark the mounds' boundaries. The site is covered with large amounts of pottery (Plate 136), mainly coarse Late Iron Age/Samad ware. The western and northern parts of the site (areas CS.2.51.3 to CS.2.51.8) include scattered cairns (Plate 137), large numbers of Mahleya-type tombs (Plate 130), possible pre-Islamic tombs, piled stones, possible platforms, some stone structures or walls remains (Plate 138), possible agricultural fields and retaining walls as well as structures along the wadi edge similar to those found at CS.2.50 (sloping-structures).

Not far from the last two major Late Iron Age/Samad sites, Site CS.2.52 is a major Umm an-Nar site (see section 4.3.3 above). However, the site also includes a large number of circular and semi-oval Iron Age tombs (CS.2.52.2 and CS.2.52.3) that were built on top and interspersed with other Umm an-Nar tombs and structures (Plates 56–58 & 139). It appears that the site was largely occupied during the Umm an-Nar then abandoned until it was again inhabited, or at least used as a burial ground, during the Iron Age, particularly the Late Iron Age/Samad. Among the large quantity of pottery collected from the surface, besides 38 Early Iron Age sherds indicated earlier, there are 73 Late Iron Age/Samad sherds.

A large possibly Late Iron Age/Samad settlement (ca. 16.5 ha.) is CS.2.43 (Figure 67 & Plates 140–149). It includes old agricultural fields, stone structures, pre-Islamic and Islamic tombs and other possible structures. It also includes a tomb field of Umm an-Nar tombs. Among the sherds collected from the surface are 63 Late Iron Age/Samad sherds.

#### 4.3.6.2.3- MINOR SITES:

There were several small Late Iron Age/Samad sites found during the survey. One of these is CS.2.20 (ca. 1 ha.). It consists of a group of circular, rectangular and square stone structures of different sizes (Plates 150–151) associated with a large number of Late Iron Age/Samad sherds of which 408 were collected. It has been indicated earlier (see section 4.3.3 above) that this site yielded Umm an-Nar evidence. This perhaps suggests that it was occupied for a short time during the Umm an-Nar period, probably as a campsite, and abandoned until it was reoccupied and extended during the Late Iron Age/Samad period. Moreover, Site CS.2.29 (ca. less than a hectare) includes circular and rectangular stone structures with double stone walls (ca. 40 cm thick) (Figure 68 & Plates 152–153). The surface of the site yielded a large number of Late Iron Age/Samad sherds of which 224 were collected.

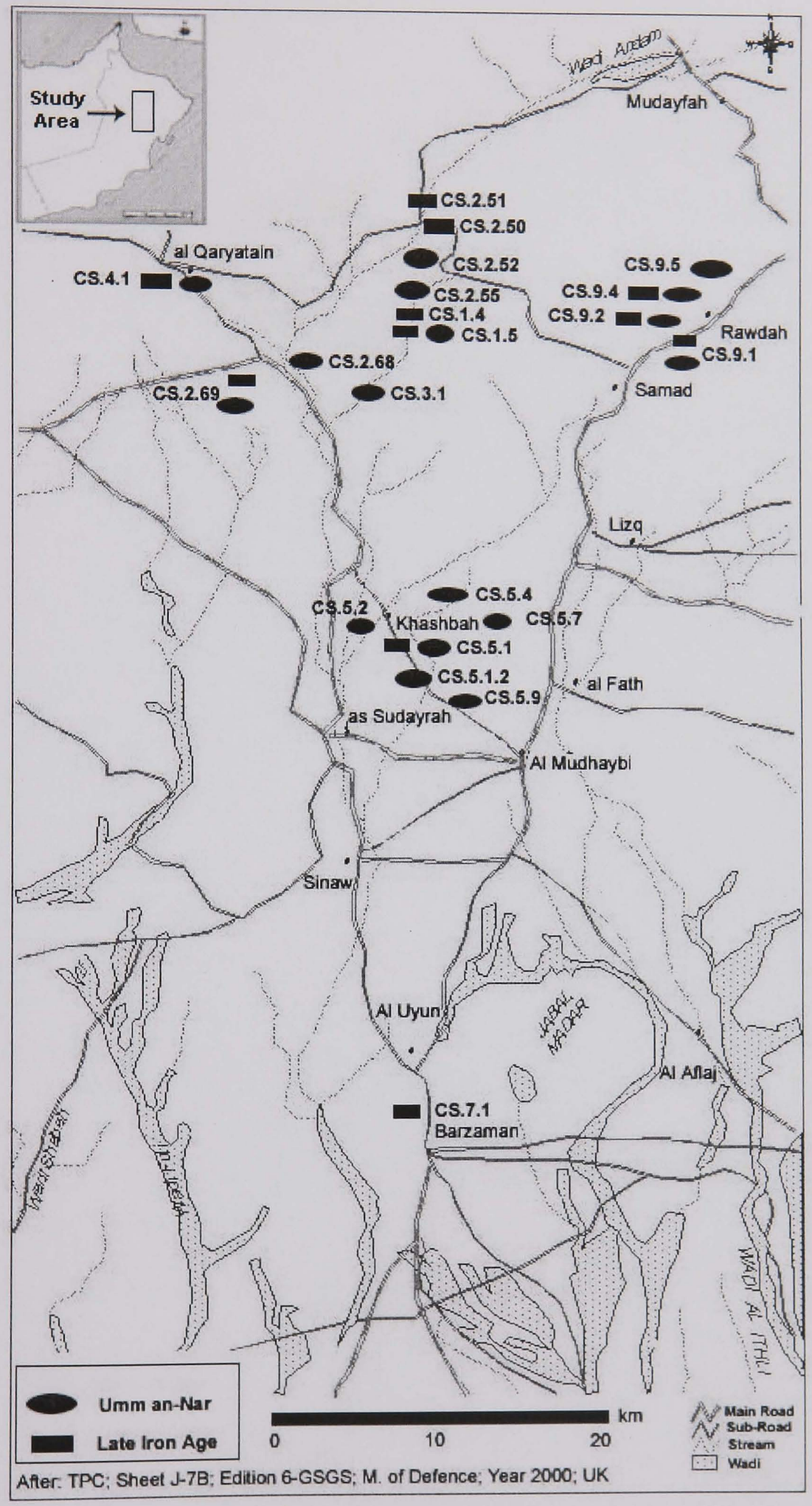
There are other possible small sites along the UWA such as CS.2.11 (ca. half hectare). These yielded structures (Plates 87–89 & Figure 54) with evidence from different periods. Besides the Wadi Suq and Early Iron Age evidence indicated earlier, CS.2.11 yielded a large number of Late Iron Age/Samad sherds, of which 70 were collected. Site CS.2.23 is also a small settlement (ca. 0.34 ha.) that includes six stone circular structures of double-skin stone walls around 50 cm thick (Plates 154–155). A large number of Late Iron Age/Samad sherds were scattered all over the site and within the structures, of which 50 were collected. Other Late Iron Age/Samad settlements along the UWA are CS.2.56, CS.2.57, CS.2.65, CS.2.68 and CS.2.69 all of which yielded evidence for tombs and stone structures associated with Late Iron Age/Samad pottery sherds as well as pottery types from other periods. Among these is site CS.2.57 (ca. 6.12 ha.) (Figure 69 & Plates 156–159). In addition to 54 Umm an-Nar sherds, it yielded a large number of Late Iron Age/Samad sherds from which a collection of 77 sherds was made. The same can be said about site CS.2.69 which is a major Umm an-Nar site that also yielded sherds of Early and Late Iron Age/Samad period and from which a collection of 69 Late Iron Age/Samad sherds was made.

Areas around the six surveyed wadi villages yielded sites with Late Iron Age/Samad evidence. The largest of them is Site CS.3.4 (ca. 2.92 ha.) in al-Khurais where 71 Late

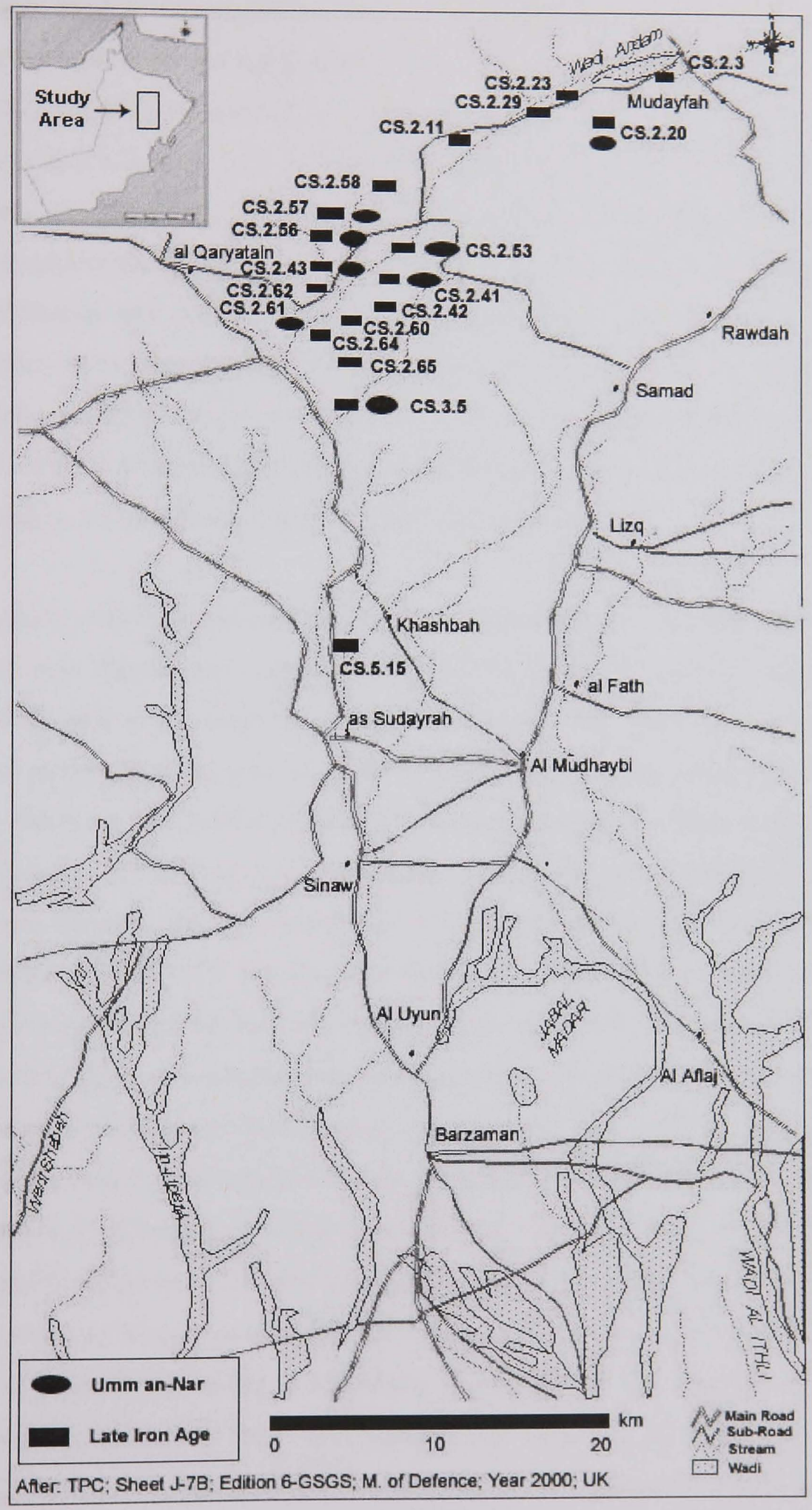
Iron Age/Samad sherds were collected. It consists of a group of piled stones, possibly tombs, of circular and semi-circular shape (Plates 160–161). There are other sites around these villages which yielded tombs with Late Iron Age/Samad material amongst which the largest number of pottery sherds was yielded by tombs at site CS.4.3 (ca. 1.5 ha.) in al-Qaryatain (Plates 91–92). A total of 66 sherds were collected from these tombs as well as one complete shell (W.D.108, Plate 94) and a fragment of a rectangular or square softstone vessel (W.D.107, Plate 93) with three incised horizontal lines just under a straight rim (ca. 4 mm thick). Additionally, Tombs 1, 5 and 13 at Site CS.5.10 in al-Khashbah (Plates 21–22) yielded 54 Late Iron Age/Samad sherds. Site CS.9.2 (ca. 4.37 ha.) at ar-Rawdhah yielded a total of 44 Late Iron Age/Samad sherds. It has been indicated earlier that this site includes two areas of which CS.9.2.1, an area with old mudbrick building remains on top of a rocky hill and slope (Plates 71–72), yielded 22 Late Iron Age/Samad sherds. This area seems to be a rubbish dump for the adjacent mudbrick buildings that has been used over time and in which sherds of different periods were noticed and a large collection made. The second area (CS.9.2.2) consists of a small date palm garden (Plate 73) that, besides the previously indicated Umm an-Nar, Wadi Suq and Early Iron Age sherds, yielded 22 Late Iron Age/Samad sherds. These sherds were collected from the earth piled around the edges of the garden that may have resulted from soil clearance and the sinking of a well. It may also indicate that this is a site that had once been occupied but which over time had been covered over.

### *4.3.6.3- SUMMARY:*

The survey yielded a significant amount of Late Iron Age/Samad evidence from all parts of the survey (PCAs, OVAs and UWA). This evidence comes from different types of site such as large and small settlements, tomb fields, and scattered pottery sherds. Thirty-four sites as well as nine PCAs in five wadi villages yielded evidence of this period. The evidence suggests that most wadi villages and their surrounding areas were occupied during the Late Iron Age/Samad period, perhaps for the first time since the Umm an-Nar period. The pottery database indicates that this period, together with the Umm an-Nar, yielded the largest number of pre-Islamic sherds from the whole survey.




**Map 20 Umm an-Nar and Late Iron Age/Samad wadi villages and adjacent settlement sites**




**Map 21 Other Umm an-Nar and Late Iron Age/Samad settlement sites away from wadi villages**

The available evidence demonstrates that activity during the Late Iron Age/Samad is represented by both large and small sites. Examples of the large sites are CS.2.11, CS.2.20, CS.2.29, CS.2.50, CS.2.51, and CS.2.52. These are concentrated within or close to modern villages such as CS.2.50 and CS.2.51 near Mahleya, CS.2.43, CS.2.52 and CS.2.57 near al-Ghoryeen, and CS.3.4 within al-Khurais. The majority of the large sites show similar features: several of them yielded different types of stone structures such as the possible remains of houses and walls, large cemeteries and pottery scatters. These are always located within and close to wadi villages along the wadi banks and on their edges and slopes. Good examples of these sites are CS.2.50 and CS.2.51. By contrast, although some are located close to villages, the majority of the smaller sites are located away from these modern villages, and scattered along the Wadi Andam banks.

The comparison with the Umm an-Nar settlement pattern shows a slightly different pattern in the Late Iron Age/Samad period. During the Umm an-Nar period, the evidence is represented by only a few large sites and several small sites, while during the Late Iron Age/Samad period there is greater evidence of both large and small sites. Moreover, during the Umm an-Nar period, almost all the smaller sites are located away from the modern villages while in Late Iron Age/Samad period there are some small sites located close to these villages, but the majority are not and tend to be scattered along the Wadi Andam banks (Maps 20–21). The layout of the larger Late Iron Age/Samad settlements is also different to the Umm an-Nar. In the latter, large settlements are normally divided into parts to include huge monumental buildings (towers) surrounded by other parts that are reserved for tomb fields and settlements or other activities. By contrast, large settlements during the Late Iron Age/Samad have a very simple layout with large burial grounds and stone structures of different types that appear to be randomly located. It also appears that the social and/or religious beliefs had changed by the Late Iron Age/Samad period. At that time there were no large monumental structures that perhaps belonged to a high status individual as in the Umm an-Nar. Additionally, it appears that the large Umm an-Nar sites were re-used during the Late Iron Age/Samad period, mostly as burial grounds (e.g. sites CS.2.52, CS.2.69). The layout of the smaller settlements, however, is the same during both periods in which several of the Umm an-Nar sites were reoccupied, or at least used as burial grounds, by the inhabitants of the Late Iron Age/Samad period. These sites include CS.2.20, CS.2.43, CS.2.53, CS.2.56, CS.2.57, CS.3.5, CS.5.10, CS.7.2, CS.9.2 and CS.9.4.

They are either tombs or settlements and consist of the same structures used during the older period with possibly a few later modifications and expansion.

To conclude, the available evidence shows that almost all Late Iron Age/Samad settlements found during the survey are located along the wadi banks on gravel terraces either close to or away from wadi villages. The evidence shows a large number of sites and finds from this period, which might indicate an important intensification in settlement and population.

### 4.3.7- SASANIAN-EARLY ISLAMIC PERIODS (ca. 200/100–900/1,000 AD)[39]:

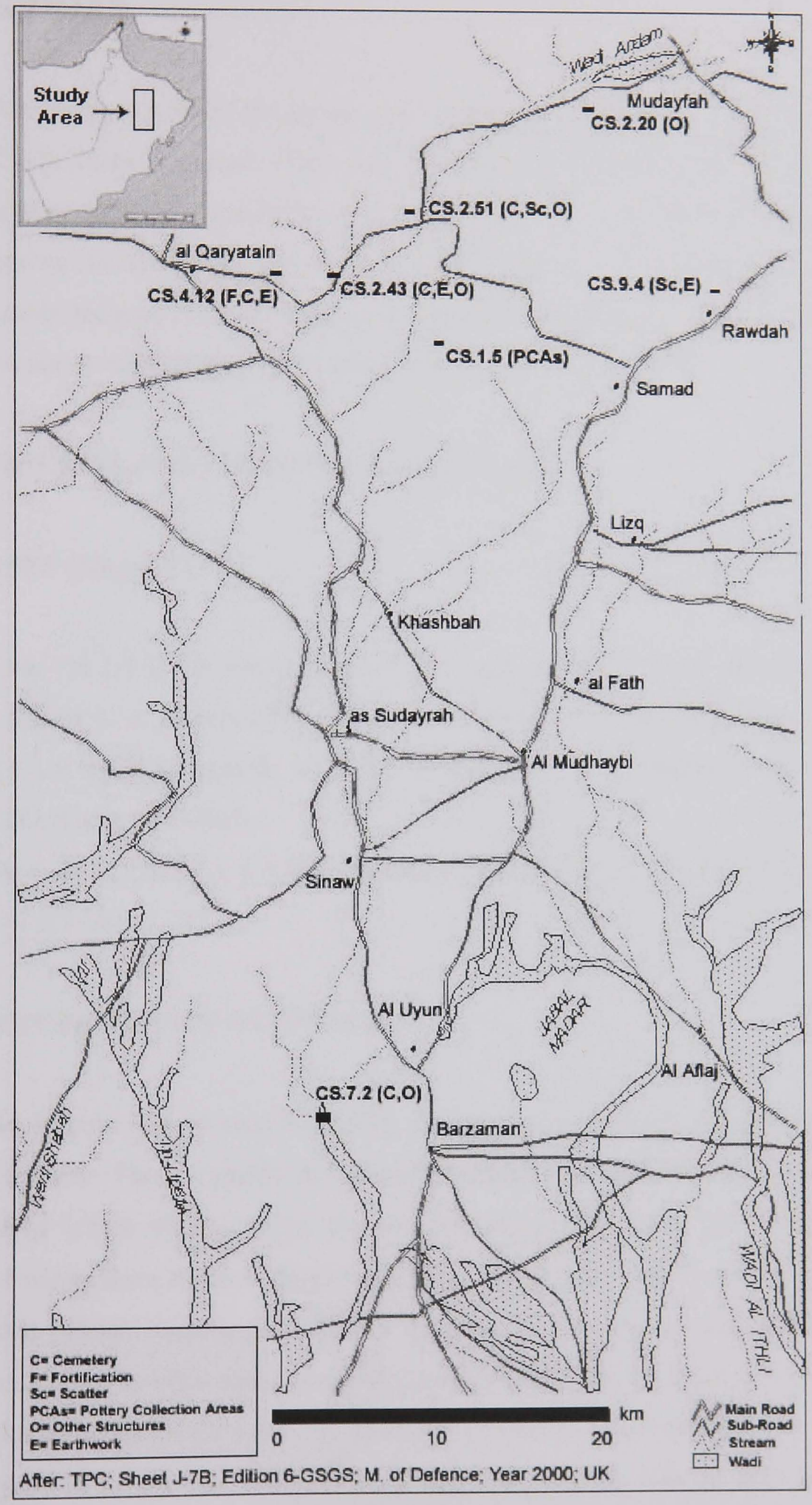
#### *4.3.7.1- SITES (Map 22):*

1- **PCAs**: CS.1.5.1, CS.1.5.2 and CS.1.5.5 at al-Fulayj.
2- **Other sites**: CS.2.20, CS.2.43, CS.2.51, CS.4.12, CS.7.2, CS.9.4.

#### *4.3.7.2- DESCRIPTION OF EVIDENCE:*

The Sasanian–Early Islamic period did not yield any structural remains and only a very few scattered pottery sherds were collected during the survey. This is not of a great help in presenting the level of activity at this time. The sherds are mainly green-blue glazed (Plate 162), which are probably imported from outside the peninsula, probably from Iraq (see Appendix C). These few sherds were found scattered at sites such as al-Fulayj PCAs (12 Sasanian sherds), CS.4.12 at al-Qaryatain, CS.7.2 at Barzaman, CS.9.4 at ar-Rawdhah, and at sites CS.2.43, CS.2.51 and CS.20 in UWA.

[39] As already discussed in Chapter Three, the dating of 'Samad Period' set out by the German Archaeological Mission (300 BC-900/1,000 AD) has been re-examined and it is now argued that it dates to the period between 300 BC and 200 AD (cf. Kennet 2007; see Chapter Three 3.6.3 & 3.7 ).




**Map 22 Distribution of possible Sasanian–Early Islamic sites and their archaeological features recorded during the survey**

### *4.3.7.3- SUMMARY:*

The evidence from all parts of the survey points towards a decline in settlement during the Sasanian–Early Islamic period. The only available evidence of this time are a few scattered pottery sherds. It should be noted, of course, that it is difficult to use tombs as evidence during this time, and also the later Islamic periods as has been done for the pre-Islamic periods because it is not possible to identify early Islamic tombs as distinct from later Islamic tombs as they show the same characteristics and features.

## 4.3.8- MIDDLE ISLAMIC PERIOD (1,000–1,300 AD):

### *4.3.8.1- SITES (Map 23):*

1- **PCAs**: CS.1.5.1, CS.1.5.2, CS.1.5.4, CS.1.5.5 and CS.1.5.6 at al-Fulayj; CS.3.1.1 to CS.3.1.6 at al-Khurais; CS.4.1.1 to CS.4.1.6 at al-Qaryatain; CS.5.1.2 to CS.5.1.6 at al-Khashbah; CS.7.1.1 to CS.7.1.5 at Barzaman; and CS.9.1.1 to CS.9.1.8 at ar-Rawdhah.

2- **Other sites**: CS.2.53, CS.2.62, CS.3.5, CS.3.7, CS.4.2, CS.4.12, CS.9.4, CS.9.6, and CS.9.10

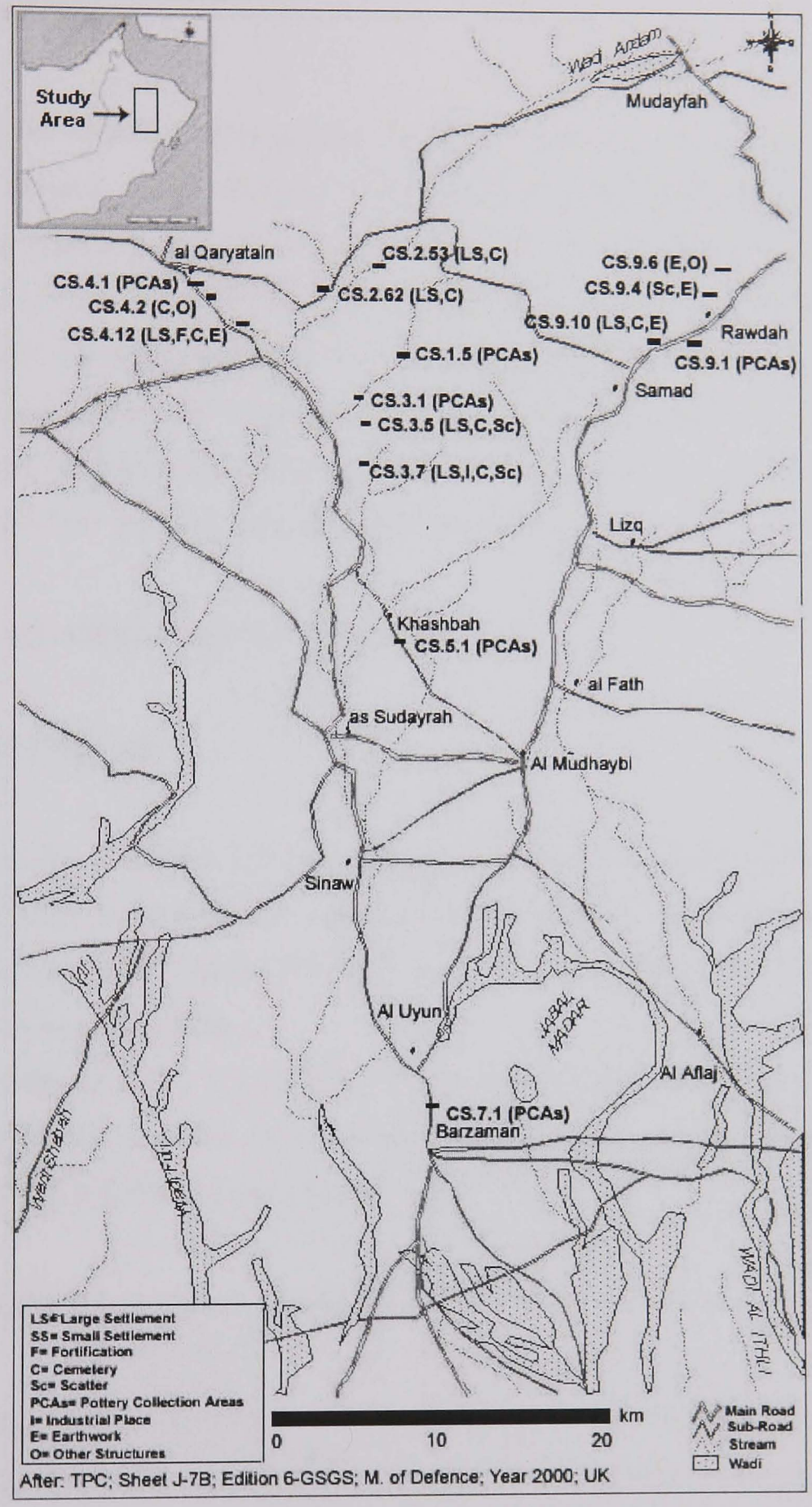
### *4.3.8.2- DESCRIPTION OF EVIDENCE:*

The Middle Islamic period seems to offer evidence of a small increase in the level of settlement activity. Pottery sherds of this period derive mainly from the PCAs within the villages all of which yielded large amounts of sherds. However, there are other sites around and away from these villages (e.g. from OVAs and UWA) which have yielded sherds of this period. Among these sherds are imported underglaze sgraffiato wares that were found at several sites along the study area (Plate 163). Moreover, there are a few scattered sherds of the Middle Islamic period from several small sites within and around these villages. There are also some possibly important Middle Islamic sites around these villages. Among these is Site CS.3.5 (ca. 108 ha.) at al-Khurais village that is located on the Wadi Andam terrace and consists of several stone structures, remains of walls, tombs and agricultural fields (Figure 70 & Plates 164–170). Among the sherds collected from

this site are 136 Middle Islamic sherds. The area around al-Khurais also yielded a site (CS.3.7) from this time that is an old copper smelting area (ca. 13.5 ha.). The site includes an area with high concentration of slag deposition associated with stone structures of different sizes and shapes as well as an Islamic cemetery (Figure 71 & Plates 171–176). Among the collected sherds from the site are 148 of the Middle Islamic period.

Al-Qaryatain village also yielded two important Middle Islamic sites. The first is CS.4.2 (ca. 5.98 ha.) that consists of four Hafit cairns on top of a rocky hill. Below this hill on a gravel terrace, there are around five stone circular structures and a group of piled stones (Plates 177–178). Among the sherds collected from this site are 68 of the Middle Islamic period. The second site is CS.4.12 (ca. 20.25 ha.) that includes stone structures on a rocky hill surrounded by old agricultural fields to the east and an Islamic cemetery to the west (Figure 72 & Plates 179–185). Pottery sherds were collected from the site's surface of which 39 are of the Middle Islamic period. The last village which yielded a major Middle Islamic site is ar-Rawdhah where Site CS.9.6 (ca. 5.64 h ) includes stone wall remains of old agricultural fields, some piled stones of circular shape, and a group of dried wells. It yielded 252 Middle Islamic sherds. Other possible Middle Islamic sites at this village are CS.9.4 and CS.9.10 in which the first is a well-section (Plates 74–75) that yielded a large number of pottery sherds, both pre-Islamic and Islamic of which 81 sherds are Middle Islamic. The second site (ca. 45 ha.) includes stone and mudbrick building remains that are badly damaged, two large Islamic cemeteries, old agricultural fields that extend over a large area and the possible remains of a *falaj* channel (Plates 186–189). The site yielded 86 Middle Islamic sherds.

Along the UWA, there are two possible major Middle Islamic sites: CS.2.53 and CS.2.62. The first (ca. 14.3 ha.) is a fortification located on a rocky hill and its slope, and consists of a group of stone structures of different shapes and sizes, piled stones and some possible cairns or tombs (Plates 190–195). Besides the 23 Late Iron Age/Samad sherds mentioned earlier, the site yielded 52 Middle Islamic sherds. The second site (ca. 80 ha.) includes a group of piled stones, stone structures of different types and shapes as well as possible pre-Islamic and Islamic tombs and old agricultural fields with the remains of possible stone-mudbrick buildings (Plates 196–203). Among the sherds collected there are only 39 of the Middle Islamic period.




**Map 23 Distribution of Middle Islamic sites and their archaeological features recorded during the survey**

### *4.3.8.3- SUMMARY:*

It appears that the Middle Islamic period witnessed a slight increase in the level of activity within and around wadi villages after their possible abandonment during the Sasanian/Early Islamic period. A considerable amount of pottery sherds were found within the PCAs and OVAs. All the PCAs yielded large numbers of sherds, indicating that the level of activity during the Middle Islamic period was well represented within wadi villages. However, other sites along the wadi banks and on some gravel or rocky hills also yielded evidence of this period. Finally, it was again impossible to use tombs as evidence during this period for the same reasons indicated earlier.

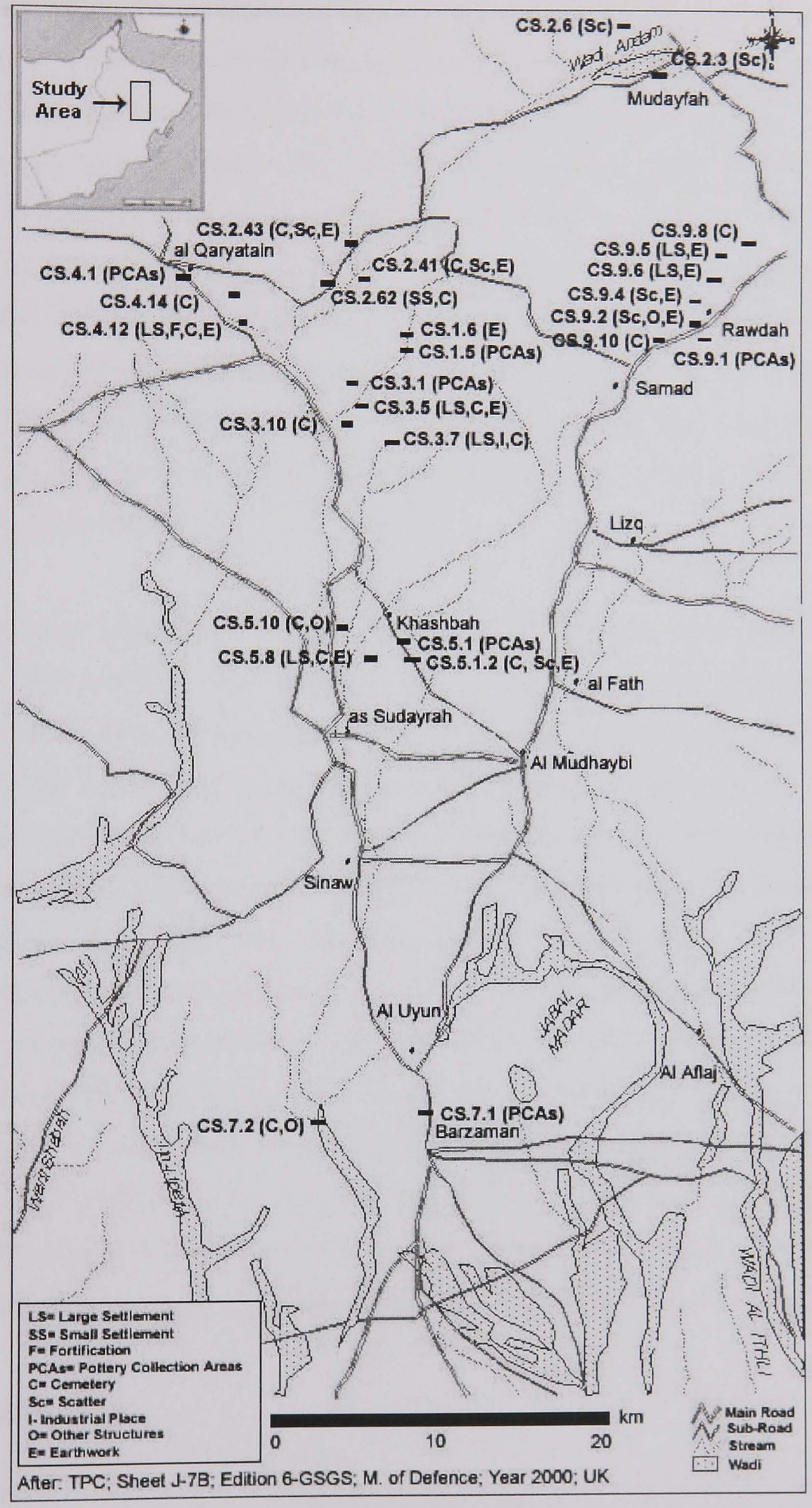
## 4.3.9- LATE ISLAMIC PERIOD (1,300–1,800 AD):

### *4.3.9.1- SITES (Map 24):*

1- **PCAs**: CS.1.5.1, CS.1.5.2, CS.1.5.4, CS.1.5.5 and CS.1.5.6 at al-Fulayj; CS.3.1.1 to CS.3.1.6 at al-Khurais; CS.4.1.1 to CS.4.1.6 at al-Qaryatain; CS.5.1.2 to CS.5.1.6 at al-Khashbah; CS.7.1.1 to CS.7.1.5 at Barzaman; and CS.9.1.1 to CS.9.1.8 in ar-Rawdhah.
2- **Other sites**: CS.1.6, CS.2.3, CS.2.6, CS.2.41, CS.2.43, CS.2.62, CS.3.5, CS.3.7, CS.3.10, CS.4.12, CS.4.14, CS.5.1.2.1, CS.5.8, CS.5.10, CS.7.2, CS.9.2, CS.9.4, CS.9.5, CS.9.6, CS.9.8 and CS.9.10

### *4.3.9.2- DESCRIPTION OF EVIDENCE:*

The Late Islamic period is the most commonly represented among all periods recorded by the survey. All the PCAs as well as several other sites yielded large quantities of Late Islamic pottery of which the majority were yielded by the PCAs. The pottery types collected are mainly glazed Bahla ware, combed ware, Julfar ware, celadon, Chinese Blue-and-White, enameled Chinese porcelain, and other types (see Appendix C). This large number of sherds indicates that a high level of settlement activity has apparently continued until modern days.




**Map 24 Distribution of Late Islamic sites and their archaeological features recorded during the survey**

All the PCAs within the surveyed villages yielded large amounts of Late Islamic sherds (see Section Two 4.2.3.1.1). Several other major Late Islamic sites were recorded during the survey. Among these is the large settlement at CS.3.5 (ca. 108 ha.) at al-Khurais that includes several stone structures, stone walls, tombs and old agricultural fields (Figure 70 & Plates 164–170). As has been indicated earlier, this site also yielded a few sherds of the Umm an-Nar period and a large number of Middle as well as Late Islamic sherds, suggesting that it has been occupied for a long time, although occupation might not have been continuous. Another important Late Islamic site at this village is the copper smelting settlement mentioned above CS.3.7 (ca. 13.5 ha.) (Figure 71 & Plates 171–176). Besides the Middle Islamic evidence, it yielded a large number of Late Islamic sherds, indicating continuity in occupation.

Among the other important Late Islamic sites is Site CS.4.12 (ca. 20.25 ha.) at al-Qaryatain. This includes stone structures on a black rocky hill surrounded by old agricultural fields from the east and an Islamic cemetery from the west (Figure 72 & Plates 179–185). In addition to the large number of Middle Islamic sherds, the site also yielded large numbers of Late Islamic sherds. Moreover, Site CS.5.8 at al-Khashbah is an old abandoned village that consists of mudbrick buildings with stone foundations, Beehive tombs, ancient fields and *falaj* channels (Figure 73 & Plates 204–210). These archaeological features are distributed over a large area, covering around 236.25 hectares. The surface of the site is covered with large quantities of pottery sherds, which are almost all Late Islamic sherds with very few sherds of recent times. Furthermore, the most interesting site at ar-Rawdhah village is CS.9.2. It was indicated earlier that this site includes two parts which yielded large quantities of pottery sherds from different periods. Among these sherds is a large number of Late Islamic sherds collected from both the possible 'dump area' (CS.9.2.1) and the small date palm garden (CS.9.2.2).

### *4.3.9.3- SUMMARY:*

The Late Islamic period seems to be the most represented of all periods. Most of our evidence for this period comes from the occupational areas, mainly PCAs which all yielded very large quantities of pottery, far more than any other period. It appears that the settlement pattern and the level of activity along the Wadi Andam witnessed a remarkable

change during this period. Wadi villages, both large and small, which were established along the wadi banks are associated with agricultural fields and supplied by irrigation systems and agricultural installations as well as fortifications. Many or most of these settlements were established during the earlier times (e.g. Umm an-Nar) and continued to be used over time or at least re-occupied from time to time.

The evidence for this period from the other parts of the survey comes much more commonly from OVAs, while little evidence was found from the UWA. Additionally, as was the case in the Early and Middle Islamic periods, the problem with using tombs during this time has affected our understanding of the level of activity during this period compared to that from the pre-Islamic period.

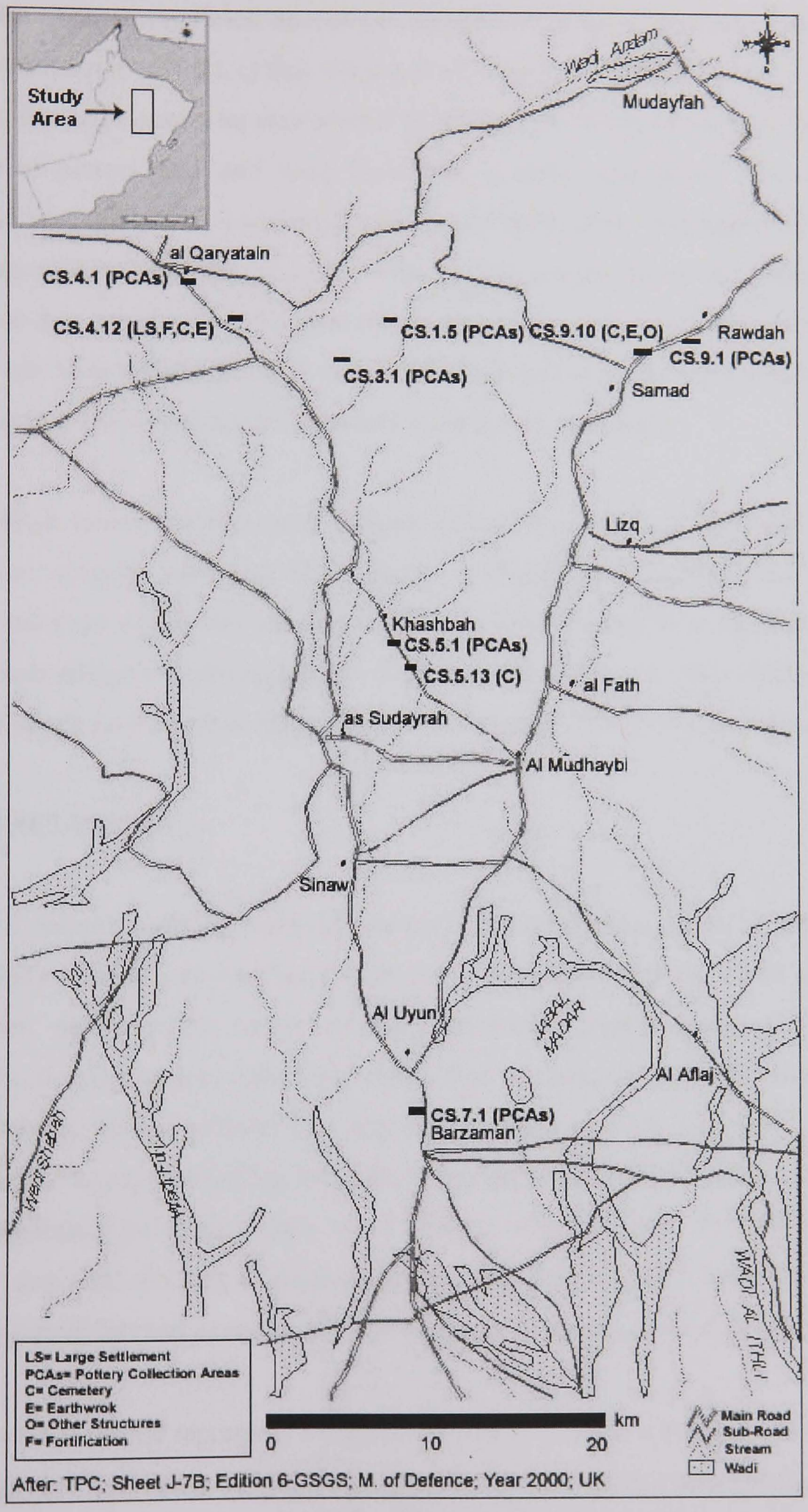
### 4.3.10- RECENT TIMES (1,800 AD Onwards):

#### *4.3.10.1- SITES (Map 25)*:

1- **PCAs:** CS.1.5.1, CS.1.5.2, CS.1.5.4 to CS.1.5.6 at al-Fulayj; CS.3.1.4 to CS.3.1.6 at al-Khurais; CS.4.1.1, CS.4.1.3 to CS.4.1.6 at al-Qaryatain; CS.5.1.1 to CS.5.1.6 at al-Khashbah; CS.7.1.1 to CS.7.1.4 at Barzaman; and CS.9.1.1, CS.9.1.2, CS.9.1.6, CS.9.1.7 at ar-Rawdhah.
2- **Other sites:** CS.4.12, CS.5.13, CS.9.10

#### *4.3.10.2- DESCRIPTION OF EVIDENCE:*

This period is only represented by two types of pottery sherds, the so-called European and Modern. Both types yielded a total of 552 of the sherds collected during the survey, of which the majority come from PCAs. All the modern wadi villages yielded remains of old mudbrick quarters or houses. Sometimes these remains are located away from the villages, as for example sites CS.5.8 (Figure 73 & Plates 204–210) to the northeast of al-Khashbah, CS.9.5 (Plates 211–212) in the northeast and CS.9.10 (Plates 186–189) in the southwest parts of ar-Rawdhah village.




**Map 25 Distribution of recent sites and their archaeological features recorded during the survey**

The majority of these mudbrick houses are abandoned. A good example of these is al-Qaryatain old quarter (CS.4.1.1) that is located on a rocky hill slope and the wadi terrace (Plates 213–216) and covers an area around 80 m by 50 m. Most of the buildings are in a good state of preservation and were built with a stone foundation. The rest of the construction was completed using mudbrick mixed with straw and gravel. The quarter seems to have been occupied until the 1970s as was evidenced by the pottery and the ethnographic data provided by the local inhabitants. The quarter has an outer wall which the houses are built within and they consist of either one or two stories with two to five rooms. There are lanes between these houses around 1.50–4 m wide.

Other mudbrick remains within these villages include fortified buildings such as towers, walls (*aswar*: singular *sur*) and forts. These fortifications are often built on natural mounds or outcrops within and around the villages. Good examples of these can be found at ar-Rawdhah village which yielded four forts three of which are badly collapsed (Plates 217–219) and one (ar-Rawdhah main fort) which has recently been restored (Plate 220).

**4.3.11- CONCLUSION:**

The level of activity emerged from the survey is summarized in Table 31 that indicates that the Wadi Andam area has been inhabited continually from the Hafit period until recent times, although the nature of occupation has clearly changed, often quite dramatically, throughout that time. The Hafit period is exclusively represented by a large number of Hafit cairns without any associated evidence with settlements. Different hypotheses can be put forward, as indicated above to explain this. It has been suggested that the population of these tombs were perhaps nomadic who favoured perishable 'campsites' and used the area as grazing land for their animals. This hypothesis might be supported by the piled and paved stones that look like platforms around the cairns.

The Umm an-Nar period represents a marked change from the Hafit and is well attested by several large and small sites of both settlements and tombs. It was during this period that the sedentary occupation and exploitation of this area appears to have begun and a settlement pattern remarkably similar to the pre-modern one came into existence. These sites are mainly concentrated in the northern part of the surveyed area. It is unclear

whether this is related to environmental conditions in the north that were attractive to the populations of this time or to other socio-economic factors. The inhabitants of these sites perhaps practised agricultural, animal herding and copper production.

By contrast, the Wadi Suq period is represented by only a very few sherds, largely from tombs, and no convincing settlements have been found. It represents a marked change from the Umm an-Nar. The few Wadi Suq sherds and tombs show that the Wadi Andam area was known to the population of Wadi Suq and they made use of its resources (see Chapter Seven 7.1.4). It is possible that the settlements of this period were of small temporary structures made by a small nomadic or semi-nomadic population.

During the Iron Age, the Wadi Andam witnessed important development and change in the settlement pattern, particularly during the Late Iron Age/Samad period. Although the beginning of this era (Early Iron Age) shows continuity of a possible nomadic way of life, similar perhaps to that of the Wadi Suq period, there are also a good number of pottery sherds, mostly from tombs, and other types of objects (softstone, metal, shell, beads) that have not been found in any other period. Evidence for settlement from this time is very limited but is better represented than the Wadi Suq that showed an almost complete absence of occupational remains. The Late Iron Age/Samad period clearly represents another marked change and intensification of settlement. This may be linked to the introduction of the *falaj* system, as will be discussed later in Chapter Seven (7.1.5).

It appears that there was a decline in settlement during the Sasanian/Early Islamic period as indicated by very low levels of evidence. However, during the Middle Islamic period, there appears to have been a small but significant increase during which older sites were reoccupied and new small settlements were established. During the Late Islamic period, there was a remarkable change in the settlement pattern as almost all the previously established villages were intensively occupied and several of them extended.

| Period | PCAs | Tombs | Settlements | Other |
|---|---|---|---|---|
| Hafit | None | Many cairns located away from wadi villages with few examples in the surrounding of wadi villages, Beehive tombs | None | There are remains of possible structures' platforms (piled, stones, square or rectangular paved stones) |
| Umm an-Nar | Many, most abundant | Tomb fields within & around settlements | Few large & many small | Dense period of settlement in northern part, first occupation of wadi villages, large settlement within & close modern villages, many sites in locations elsewhere that were never re-used, pottery scatters, close association between tombs and settlements |
| Wadi Suq | Very few | Only possible evidence in some places | None | Possibly no settlement in wadi villages, but tombs suggest that these areas were still used, pottery mainly from tombs & always lower than other pre-Islamic periods, different relationship between tombs & settlements |
| Early Iron Age | Very few | Many, mainly possible re-used Hafit tombs | Few and small, possible campsites | Few possible settlements in locations elsewhere & re-used of older periods' settlements like Umm an-Nar, possible short occupation, pottery mainly from tombs |
| Late Iron Age/Samad | Many, most | Large cemeteries within & around settlements | Large & small | Dense period of settlement within villages & away, many sites in locations elsewhere both re-used & new founded |
| Sasanian Early Islamic | Very few | Cannot be differentiated | None | Difficult to use tombs as evidence |
| Middle Islamic | All, most | Cannot be differentiated | Small | Small increase in settlement activity, other small settlement within & away from villages |
| Late Islamic | All, the largest | Cannot be differentiated | Large and small | Dense period of settlement within villages & away, re-used previous & new settlements |
| Recent | All | Cannot be differentiated | Large and small | Modern villages with mudbrick buildings, fortifications, agricultural installations & irrigation system |

**Table 31 Summary of the level of activity**

# CHAPTER FIVE:

# LOCAL AREA QUANTIFIED LEVEL OF ACTIVITY

# CHAPTER FIVE: LOCAL AREA QUANTIFIED LEVEL OF ACTIVITY:

## 5.1- INTRODUCTION:

The rationale behind this chapter has already been set out in Chapter One (1.1.2.2), where it was argued that several surveys in the region have been carried out but few of them have been concerned with developing methodologies that allow the collection of quantified data on settlement. They have instead, for the most part, set out to locate, explore and describe areas or settlements or to answer specific research questions. Nonetheless, it is important to take the results of these surveys into consideration. Therefore, this chapter reviews and synthesizes the results of previous surveys done within the geographical limit that will be called, for the purposes of this study, the 'Local Area' (see below). This is intended to provide a wider framework for the Wadi Andam Survey material and to allow a proper understanding of the history of settlement at a broader level (Level 3, see Chapter Four, Section One 4.1.2.1.3). Obviously it will be necessary to take into account (insofar as possible) differences in survey methodologies and project objectives.

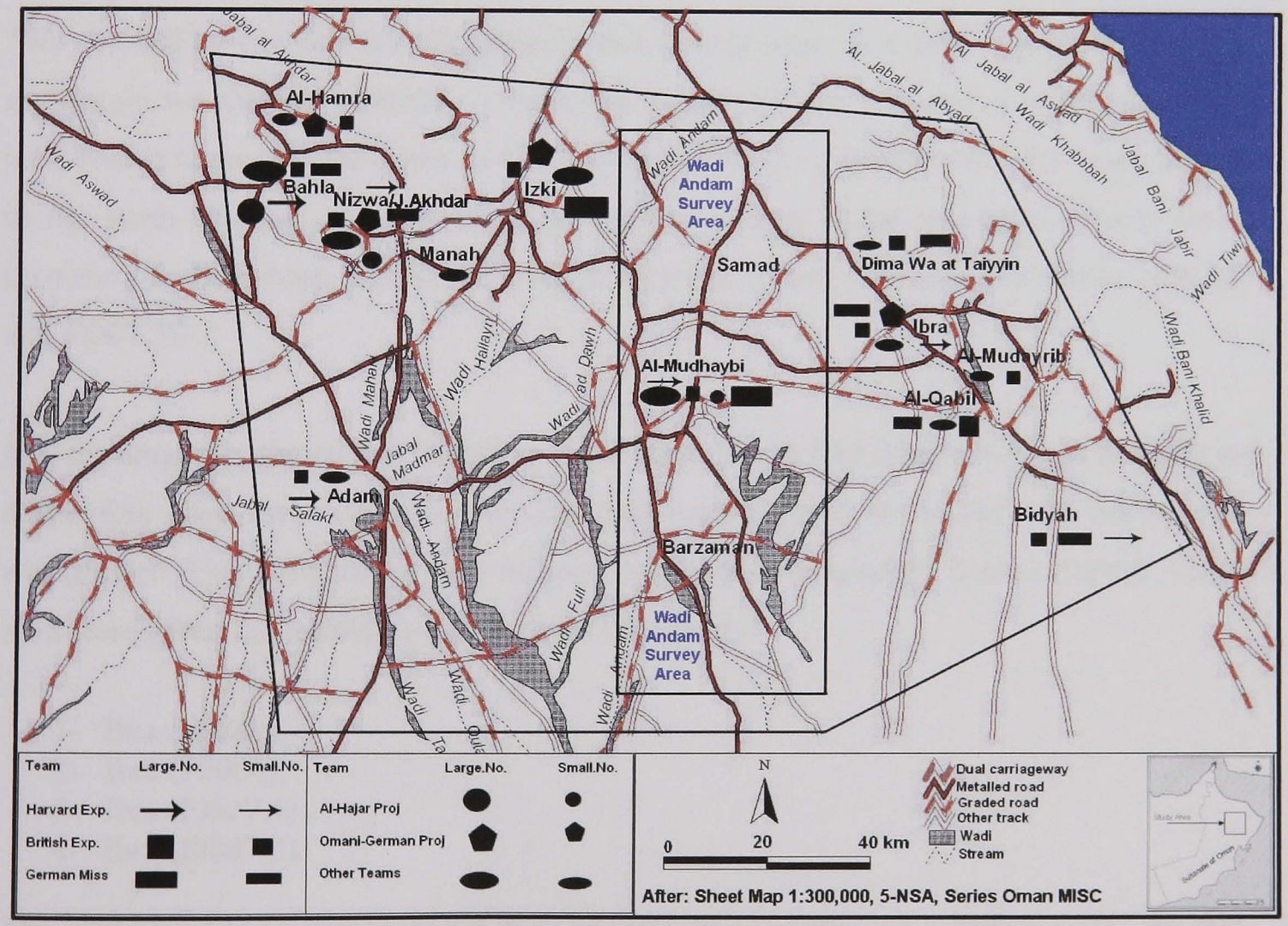
This chapter will start by defining the geographical extent of the area that will be considered by this review and the reason behind selecting it. It will provide a brief description of how sites were identified in order to show how sites were defined from the publications, and to understand the related problems. This will be followed by a review of the previous surveys in chronological order ending with the most recent surveys done by the Omani–German Project. It will initially present the evidence from these surveys. The review will present a brief description of the nature of the recorded sites, and discuss how these results might be turned into a quantified analysis. The chapter will then (5.5.3 below) undertake a period by period comparison between this evidence and that from the Wadi Andam Survey.

## 5.2- GEOGRAPHICAL EXTENT OF THE STUDY AREA:

The geographical extent of the area under study includes the Wadi Andam itself and some of its surrounding areas (Map 26). This area was defined based on the following considerations:

1- The area under study represents four geographical zones similar to those identified in the Wadi Andam Survey study area: the watershed and upper wadis zone in the north through the lower wadis, gravel hills and broad wadis to the gravel flat interfluves zones in the south. This includes only the inland zone as the coastal zone has different geographical characteristics and probably, to some extent, a different settlement pattern, which will be considered in Chapter Six.

2- As in the Wadi Andam study area, the local area is defined by some major wadis: the north–eastern and south–eastern limit extends from Wadi Andam in the north through Wadi Tayin in the east and Wadi al Bathā in the south–east, while the north–western and south–western limits extend from Wadi Bahla in the north down to Wadi Halfayn in the south.




**Map 26 Defined local area (the larger circled area) within and around Wadi Andam Survey study area (defined by the small rectangle) (Large and Small No. indicates the total number of recorded sites by Project)**

## 5.3- SITE IDENTIFICATION AND DEFINTION:

Sites were defined from published and unpublished materials, which did not in all cases provide a list of recorded sites. Thus, in many cases, the researcher had to go through these publications and attempt to identify sites and their dating and nature from the discussion. Thus, the sites defined were entered into a database that was analysed using Microsoft Access[40].

On the whole, site definitions were made by reading the available literature and attempting to find sites indicated within the text. To give an example, I quote a paragraph by Schreiber (2005: 255) from the Ibra survey:

"We decided to start our investigations in this neutral zone, in a hilly area overlooked by an Islamic watchtower (I0003) … Here, we discovered the remains of what must once have been a large circular Umm an-Nar building (I0004) … Located on a hill some 200 m to the north–east are the remains of at least two large round structures, which were, according to their shape and the scattered pottery (fig.4/1–4), Umm an-Nar tombs (I0007.1 and I0007.2)".

In this paragraph, the author describes the evidence from Ibra in which it was possible to define four sites: three Umm an-Nar (one large building and two tombs) and one Islamic watchtower. This watchtower was difficult to assign to a specific Islamic period. These sites were given the following names in the database:

1- Ibra (I0003).
2- Ibra (10004).
3- Ibra (I0007.1).
4- Ibra (I0007.2).

The publications sometimes do not directly indicate site names or numbers within the text as in the case cited above, which makes their identification difficult. Often they only

[40] The structure of this database and how sites were entered within it can be found in detail at Chapter Six (6.3).

indicate that in a specific area the survey plotted a group of features/sites and describe the type of evidence. For example, Schreiber (2004: 7–8) states:

"South of Iz0005, down the slopes several structures (a retaining wall, terraces, house foundations), … which probably belonged to a 3rd millennium BC settlement … Situated immediately to the west of the circular building Iz0005, are some large rectangular structures, possibly tombs… because of their NE–SW orientation, they were tentatively dated to the Late Iron Age or Samad-period… ".

From this paragraph, it is not obvious how many sites were recorded as there are no names or numbers and there is no indication whether these features belong to a single site or more. Consequently, the sites were defined according to the locations where they were found and their periods, as the following:

1- Saruj (South of Site Iz0005), which includes an Umm an-Nar settlement with a retaining wall, terraces, and house foundations.
2- Saruj (West of Site Iz0005), which includes Late Iron Age-Samad large rectangular structures that are possibly tombs.

Some sites were defined from the illustrations provided in the publications such as photographs, sketch plans and maps in which site numbers or periods are sometimes shown, whether or not they were included within the text itself. For instance, Schreiber (*ibid*: 9) provides a photograph of a Late Iron Age tomb with its number (Iz0334) indicated within the photograph's caption. This tomb was not indicated within the text itself, thus, it was counted as a Late Iron Age site and given the same number. However, the problem with some of these sites is that they are sometimes undated. In this case, they were added to the database, and assigned 'undated' sites. Additionally, there are materials published in languages such as German, French, Danish and Italian. Whenever possible, sites from these publications were defined using dictionaries. Moreover, there is a large number of individual, mainly excavated, tombs that were recorded by the survey projects and given a unique number. Thus, while defining sites within the database each tomb was entered as one site which has increased the number of tombs recorded. In other words, there might be one cemetery with, for instance, 15 excavated and numbered tombs, thus,

they will be counted as 15 sites. By contrast, if the survey project recorded only a cemetery that might include hundreds of tombs as one site without excavating or numbering specific tombs, then the whole cemetery would be counted as one site. This fact makes our quantification difficult and complicates the general pattern, for this will obviously increase the total number of tombs against settlements as will be noted in the analysis below and in Chapter Six.

It must also be stressed that apart from the Omani–German work and, to some extent, the German Archaeological Mission, most of the surveys did not clearly distinguish between the Early and Late Iron Age. Thus, both periods were combined under the broader Iron Age chronology. This has also complicated the comparison by making the total number of sites from each of these two periods unclear.

This part has briefly shown the method of defining sites from the previous surveys and the associated problems. The following discussion will review these surveys.

## 5.4- SURVEY PROJECTS REVIEW:

### 5.4.1- THE HARVARD EXPEDITION:

In the early 1970s, the Harvard Archaeological Expedition surveyed some parts of Oman, including the area west of Bahla to the east of Mintirib and the area south and east over the drainages of the Wadis Halfayn, Qant, Andam, Samad and Ibra. The results of this survey are published in a series of publications (Pullar 1974; Humphries 1974; Hastings, Humphries & Meadow 1975; Meadow, Humphries & Hastings 1976). As will be noted later, it appears that the project's members were mainly focussed on locating and recording 3$^{rd}$ millennium BC settlement sites (Map 46), which has created a bias towards this period.

To sum up the results of the survey, the oldest human activity can be dated to the Stone Age, which is represented by four flint sites: two Early Stone Age at Bahla (BB17 & BB18), and two Late Stone Age at Nizwa (Sayq, Jebel Akhdar) (Pullar 1974: 33) and at Adam (Wadi al-Umayri I) (Pullar & Jäckli 1978: 74). The first two sites were located on

the terraces on the edge of Wadi Bahla, while the latter were located on the Sayq Plateau itself and on the Wadi al-Umayri terraces. The Hafit period is represented by a large number of stone-built cairns that were noticed during the survey on the ridges and higher elevations around Bahla (BB16, BB19 & BB22), at Wadi Samad (Samad 4), Ibra (Batin 1 & Wadi Ibra 2, Zahir 2 & 3), Wadi Andam (sites 16, 19 & 28) and Adam (Wadi Halfayn 3) (Meadow, Humphries & Hastings 1976: 113). However, they were not recorded by the project as the main aim was locating settlement sites; a fact which was clearly stated:

"Throughout the survey numerous stone built cairns were observed, particularly on the ridges and higher elevations. Since the primary purpose of the survey was to locate settlement sites, it was decided to bypass the cairns on this occasion" (Humphries 1974: 49).

The Umm an-Nar period is the most represented period recorded by this project, which is probably related to the fact that it was the main interest of the team. The survey at Wadi Bahla yielded ten settlement sites of which seven are Umm an-Nar (BB6, BB15, BB16, BB19, BB20, BB21 and BB22). The dating of the sites was based on pottery parallels from south–eastern Iran, mainly Tepe Yahya and Bampur (*ibid*: 49). Site BB15 is a small settlement; BB16 is a large circular stone enclosure; BB19 is a settlement with stone-wall foundations and enclosure (Figure 74); BB20 is a small hill with a large stone wall; BB21 is a raised circular platform with wall foundations (Figure 75); BB22 is large circular stone enclosure; and BB6 is wall with stone foundations (*ibid*: 50–51). All these sites were located on low rocky outcrops. Moreover, the survey at Wadi Samad yielded three Umm an-Nar settlement sites on low hills and on the wadi terraces. Of these, Wadi Samad 5 and Samad 50 (Maysar 1) are copper producing/smelting sites with stone structures (Meadow, Humphries & Hastings 1976: 112). Maysar 1 also yielded Umm an-Nar tombs. Wadi Samad 4 is a fortified settlement with large circular stone enclosures (Figure 76). By contrast, the survey at Wadi Andam yielded four settlements of Umm an-Nar period (Wadi Andam 1, 16, 19 & 28) (*ibid*: 113–114). Five more Umm an-Nar settlements with large stone structures were located in the Ibra area (Hastings, Humphries & Meadow 1975:11–12; Berthoud et al. 1978), including the settlement site at Wadi Ibra 2 and another small one at Wadi Khafifah 1, which is also a smelting site. Wadi Ibra 2 is also associated with tombs. The other three sites from Ibra are Batin 1 and Zahir 2 and 3,

which are all smelting sites. What is more, the survey yielded two more Umm an-Nar sites at Bidiyah (Tawi Hulays 1) and Adam (Wadi Halfayn 3) of which both are settlements. By contrast, the survey yielded only one Wadi Suq site at Bahla (BB15) which is a small settlement on a low rocky outcrop (Humphries 1974: 51–52). The Iron Age is only represented by three settlement sites of which only two are mentioned by the project BB4 and BB15 (*ibid*: 51). These two sites also yielded evidence for the Hellenistic–Parthian period. The only site recorded as yielding Islamic evidence is BB15, which includes occupational remains from the Sasanian to the Middle Islamic periods (*ibid*: 51–52).

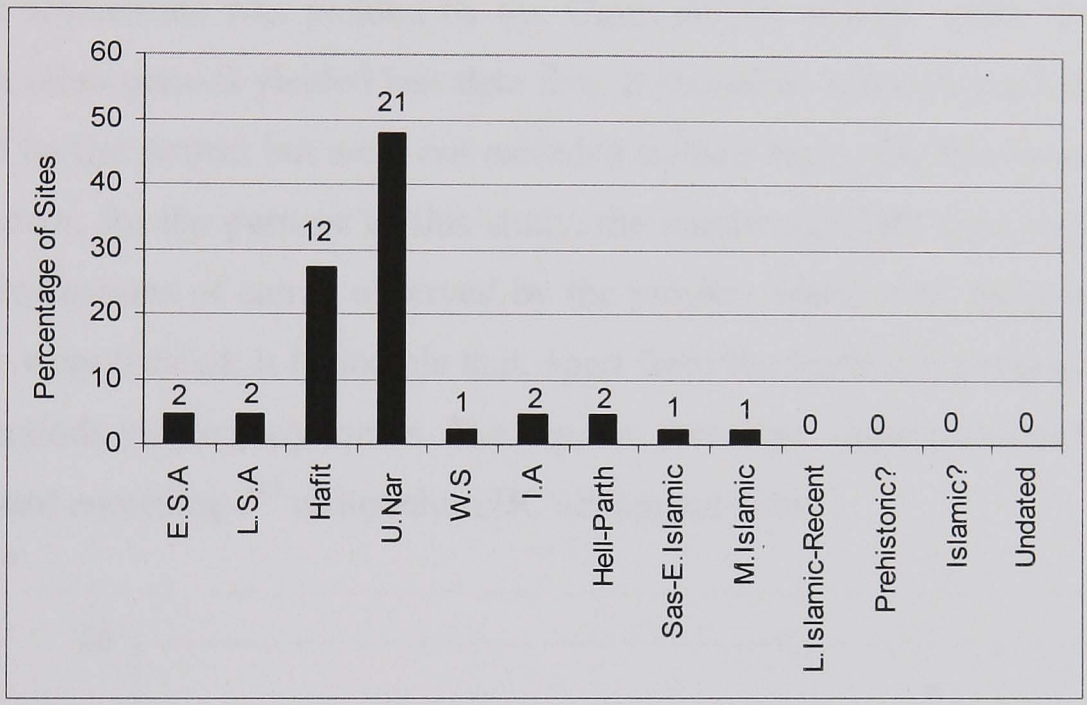



**Figure 23 Percentage of the total number of sites, by period, recorded by the Harvard Archaeological Expedition (% based on the total number of all sites)**

The above description demonstrates that there is a clear 'bias' towards locating 3rd millennium BC sites, mainly settlements that were the main interest of the survey project. This can be clearly seen from Figure 23 which shows percentages of the total number of sites, by period, recorded from all areas surveyed by the Harvard Expedition. The graph shows that almost all periods are represented, although only thinly. Moreover, the Islamic periods are only represented by one Middle Islamic site. This shows the bias towards locating only pre-Islamic sites as Islamic sites were not part of the Harvard project's aims. The graph shows that the most represented sites are those dated to the Umm an-Nar (ca. 48%), followed by the Hafit period (ca. 27%), while other periods are only represented by a few sites (less than 5%).

Although this graph (Figure 23) shows clearly the bias towards recording sites of a specific period(s), it does not show the bias toward specific types of sites. Thus, to understand the levels of activity during each period, Figure 24 and Table 32 show the total number and percentage of settlements and tombs recorded by the Harvard project. In compiling this all features/sites such as settlement, midden/scatter, fortification, industrial place, religious place, cave/rock shelter were counted as settlements and compared to the total number of tomb sites.

It appears from Figure 24 and Table 32 that, apart from the Hafit period that is only represented by tombs, all periods are more represented by settlement sites. The largest number of settlements was yielded by the Umm an-Nar period, which yielded over 20 sites, while other periods yielded less than five. It should be noted that several Hafit tombs were noted by the project but were not recorded as their main aim was locating settlement sites. However, for the purpose of this study, the number of Hafit sites was defined from the quick indications of cairns observed by the project. These were assigned to the areas where they were located. It is notable that, apart from the Hafit and Umm an-Nar, none of the other periods yielded any tombs. The figures, therefore, show the clear bias, indicated above, toward recording 3rd millennium BC settlement sites.

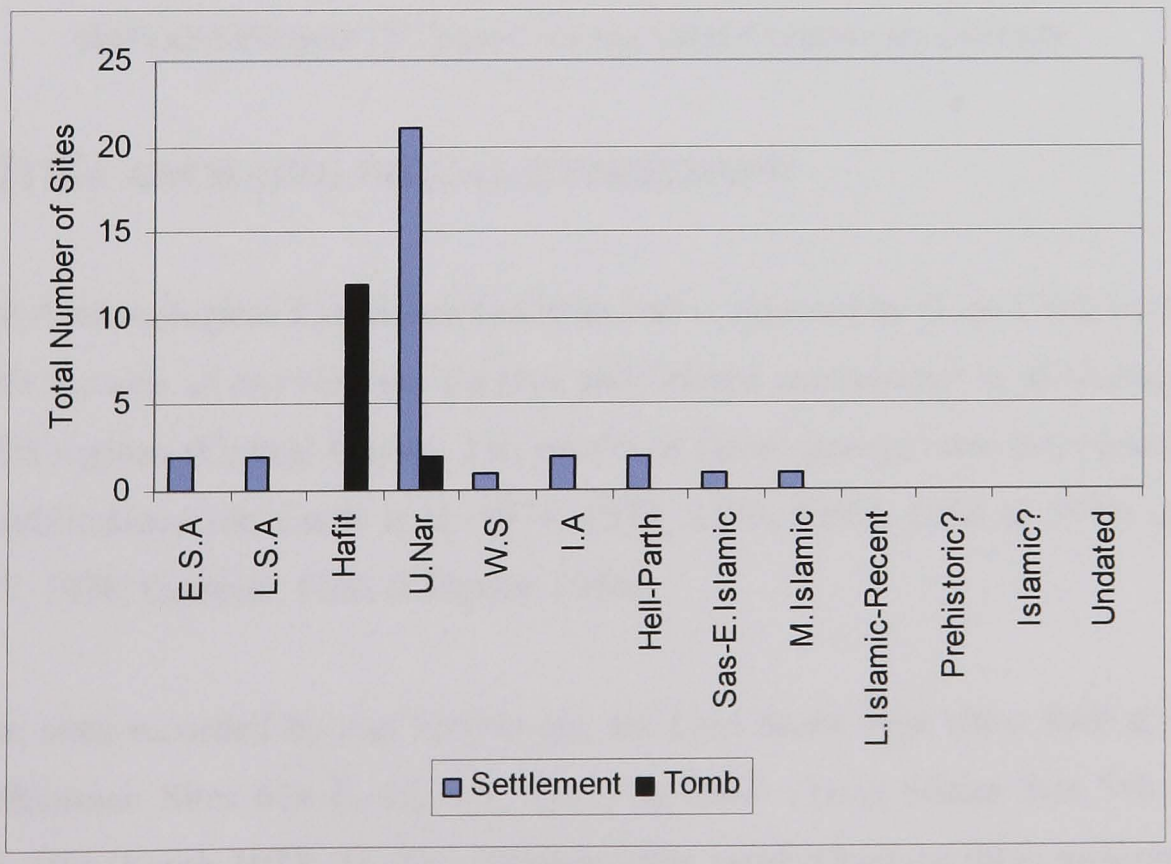



**Figure 24 Total number of settlements against tombs recorded by the Harvard Project (based on Table 32)**

| Period | Settlement | Tomb | Total/Period |
|---|---|---|---|
| E.S.A | 2 (100%) | 0 (0%) | **2 (100%)** |
| L.S.A | 2 (100%) | 0 (0%) | **2 (100%)** |
| Hafit | 0 (0%) | 12 (100%) | **12 (100%)** |
| U.Nar | 21 (91%) | 2 (9%) | **23 (100%)** |
| W.S | 1 (100%) | 0 (0%) | **1 (100%)** |
| I.A | 2 (100%) | 0 (0%) | **2 (100%)** |
| Hell–Parth | 2 (100%) | 0 (0%) | **2 (100%)** |
| Sas–E.Islamic | 1 (100%) | 0 (0%) | **1 (100%)** |
| M.Islamic | 1 (100%) | 0 (0%) | **1 (100%)** |
| L.Islamic–Recent | 0 (0%) | 0 (0%) | **0 (0%)** |
| Prehistoric? | 0 (0%) | 0 (0%) | **0 (0%)** |
| Islamic? | 0 (0%) | 0 (0%) | **0 (0%)** |
| Undated | 0 (0%) | 0 (0%) | **0 (0%)** |
| **Total/type** | **32** | **14** | **46** |

**Table 32 Number and percentage of settlements against tombs recorded by the Harvard Project (% based on the total number by period)**

### 5.4.2- BRITISH ARCHAEOLOGICAL EXPEDITION:

The British Archaeological Expedition to Oman was conducted by B. de Cardi in the mid–1970s, with the aim of carrying out surveys and limited excavations in al-Sharqiyah and al-Dhakhilia regions (Central Oman). The results of these surveys have been published in different publications (de Cardi et al. 1976, 1977, 1979; Smith 1976 & 1977; de Cardi 1975, 1977, 1978; Goettler, Firth & Huston 1976).

Among the sites recorded by this project are six Late Stone Age sites: four at Bidiyah (Jebel al Hammah Sites 61a–b, 62, 63), two at al-Qabil (Tawi Silaim Site 54b and ad-Dariz [Site 10]) (Smith 1977: 71–72). All these sites yielded surface lithic material, while the last site also yielded a walled structure. The Hafit period is only represented by cairns from 14 sites: two at Nizwa (Rawdah Sites 27 & 29), one at Izki (Zukayt 23 [Figure 77])

(de Cardi, Collier & Doe 1976: 158–161), and one site from Bahla (Wihi Al Murr Site 34) (*ibid:* 162), Ibra (Khafifa Site 12) (*ibid:* 155), and al-Mudhaybi (Fath Site 18 [Figure 78]) (*ibid:* 157), as well as seven sites from al-Qabil: Tawi Silaim Site 9 (*ibid*: 142 & 154) and Cairns 1, 2, 3, 4, 16 and 22 [Figure 79] (de Cardi, Bell & Starling 1979: 66–80; de Cardi 1978: 9–18). There are also cairns found at al-Mudhaybi area (Aflaj Site 17 and Fath Site 18) and one at Ibra (Khafifa Site 12) (de Cardi, Collier & Doe 1976: 155–157). All these cairns are located on tops, slopes, foothills and wadi terraces.

The Umm an-Nar period is represented by 16 sites of which the majority are tombs. Of these, ten sites are at al-Qabil: Tawi Silaim Cairns 1–4, 16, 22, 26 & Sites 9 & 501 (Figures 80–82, Plates 221–222), and Fulaj (de Cardi 1977: 61); two at al-Mudhaybi: Samad 15 (de Cardi, Collier & Doe 1976: 156), Shari'aj-Khudar (de Cardi 1977: 61), and two at Bahla: Bahla Site 33 & Zabi Site 37 (de Cardi, Collier & Doe 1976: 162–163) as well as one site at Izki (Sulaymi Site 19) (*ibid*: 145 & 158) and at al-Mudhayrib (Mudayrib Site 50) (de Cardi 1977: 59). Only six of these sites yielded settlements remains: al-Wasil, Bahla (Site 33), Shari'ah (Khudar), Samad 15 and Fulaj. The Wadi Suq period is represented by only two sites: Samad Site 15 at al-Mudhaybi that yielded settlement and tombs, and Tawi Silaim Site 9 at al-Qabil that yielded tombs (de Cardi, Collier & Doe 1976: 142–156). The Iron Age is represented by three sites which are all settlements: Salut (Site 38) at Nizwa, Bir Sayf and Samad (Site 15) at al-Mudhaybi (*ibid:* 145, 156 &164). The last two sites also yielded Iron Age tombs. No remains of Hellenistic–Parthian and Sasanian–Early Islamic periods were recorded by this project, while the Middle Islamic is represented by five sites. The later include two at al-Qabil: a fortification (Niba' 1) and a settlement with tombs (Niba' 2) (de Cardi 1977: 65–67), while at al-Hamra, the survey recorded a settlement with fortification Husn Khor (Site 31), and a settlement site (Salut, Site 38) at Nizwa (de Cardi, Collier & Doe 1976: 144–164) as well as one midden/scatter site at Dima Wa at-Taiyyin (Ba'id Site) (de Cardi 1977: 67).

The most represented Islamic period is the Late Islamic–Recent, accounting for 11 sites (de Cardi, Collier & Doe 1976: 143–164). Two are at al-Mudhaybi: a settlement at Fath (Site 18) and a midden/scatter at Aflaj al-Budu (Site 16); and five at Nizwa including two settlements (al- Jinah Site 26 & Salut Site 38) and five cemeteries with walled structures at Firq (Sites 24 & 25), Rawdah (Site 28), as well as three sites at Izki including one

settlement at Izki (Site 20), and two cemeteries at Zibb (Sites 21 & 22). Al-Qabil yielded only one site of this period that is the settlement at an-Niba'2.

Figure 25 shows clearly the evidence from the above description. It presents the percentage of the total number of sites by period recorded by the British Expedition. It demonstrates that almost all periods are represented by a small number of sites. The largest number of sites is represented by the undated sites followed by the Umm an-Nar and Hafit periods. Although, this graph shows clearly the evidence from each period, it does not tell us that much about the different sorts of activity within each period, namely settlements and tombs. Consequently, Figure 26 presents the total number of settlements and tombs, and it appears that the Late Stone Age, Iron Age and Middle to Late Islamic–Recent periods are more represented by settlement sites, while the Hafit to Wadi Suq are more represented by tombs. The figures also indicate that there is a large number of undated settlements, which could be related to the lack of datable finds and parallels from these settlement remains.

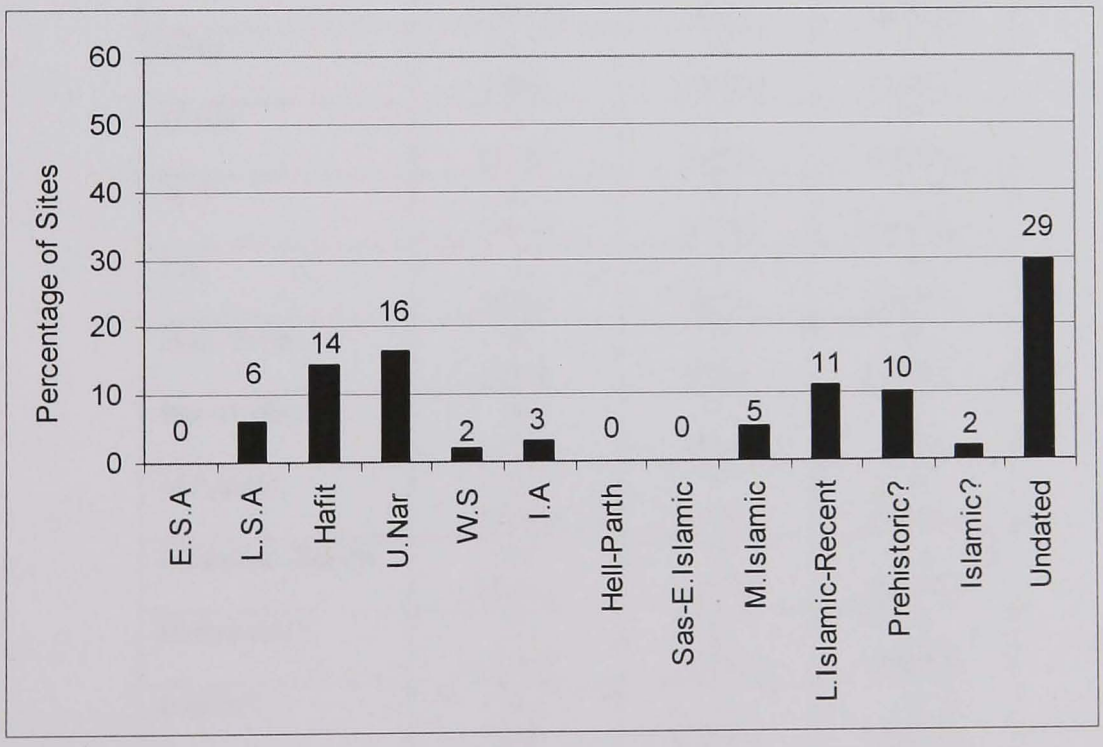



**Figure 25 Percentage of sites by period recorded during the British Archaeological Expedition**

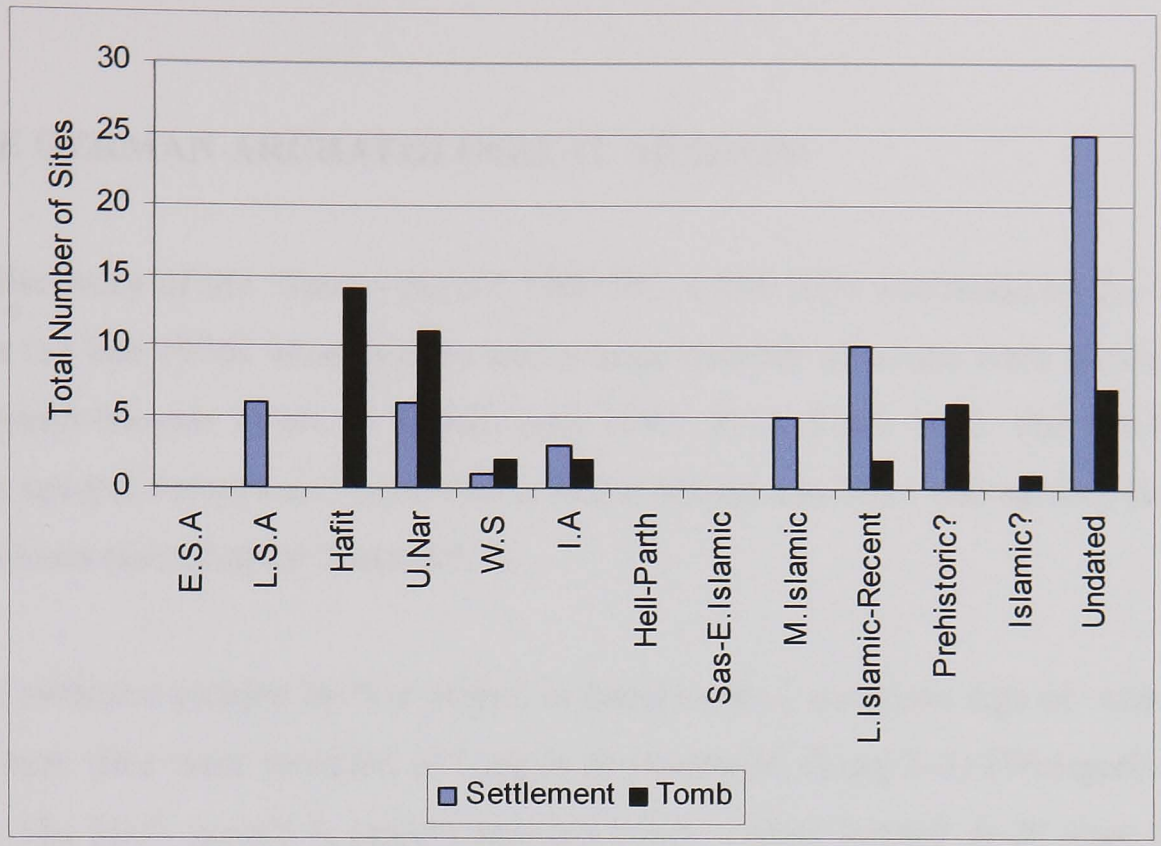



**Figure 26 Total number of settlement and tomb sites recorded by the British Archaeological Expedition (based on Table 33)**

| Period | Settlement | Tomb | Total/Period |
|---|---|---|---|
| E.S.A | 0 (0%) | 0 (0%) | **0 (0%)** |
| L.S.A | 6 (100%) | 0 (0%) | **6 (100%)** |
| Hafit | 0 (0%) | 14 (100%) | **14 (100%)** |
| U.Nar | 6 (35%) | 11 (65%) | **17 (100%)** |
| W.S | 1 (33%) | 2 (67%) | **3 (100%)** |
| I.A | 3 (60%) | 2 (40%) | **5 (100%)** |
| Hell–Parth | 0 (0%) | 0 (0%) | **0 (0%)** |
| Sas–E.Islamic | 0 (0%) | 0 (0%) | **0 (0%)** |
| M.Islamic | 5 (100%) | 0 (0%) | **5 (100%)** |
| L.Islamic–Recent | 10 (83%) | 2 (17%) | **12 (100%)** |
| Prehistoric? | 5 (45%) | 6 (55%) | **11 (100%)** |
| Islamic? | 0 (0%) | 1 (100%) | **1 (100%)** |
| Undated | 25 (78%) | 7 (22%) | **32 (100%)** |
| **Total/type** | **61** | **45** | **106** |

**Table 33 Total number of settlement and tomb sites recorded by the British Archaeological Expedition (% based on the total number by period)**

## 5.4.3- THE GERMAN ARCHAEOLOGICAL MISSION:

The first discovery of the 'Samad period' (300 BC–1,000 AD) was made by the German Mission in the late 1970s when pottery and a large number of tombs were located in the area of Samad–Maysar (Yule & Kazenwadel 1993: 251). Since 1980, this Mission has carried out several surveys and excavations in the Samad ash-Shan and surrounding areas in central Oman (see Chapter Three 3.6.3).

The oldest evidence yielded by this project is dated to the Late Stone Age of which three midden/scatter sites were recorded at Lizq in al-Mudhaybi (Lizq 2–4) (Weisgerber 1981: 254–259). The Hafit period is largely represented by cairns located at 29 sites from al-Mudhaybi: Samad S9, S22 (Plate 223), S27 and S29, Maysar M3–M5, M8, M10, M15, M18–M22, M30, M37–M40 (*ibid*: 174–263), M27020/3–4 (Yule 2001a: 444), M501–2 (*ibid:* 92), as well as al-Shariq Sha1, Sha2, Sha5 and Sha8 (Yule & Weisgerber 1998: 210–211), and at Rawdah/Muqatta Tombs (Mu10–11) (Yule 2001a: 397). There are also four sites with Hafit cairns that were found at Dima Wa at-Taiyyin (Maqta'ah Maqt1, Maqt2 and Mqt3, and Isma'iyah Ism2, 'Qarn Suwaich') (Yule & Weisgerber 1998: 209–210). These tombs were located on the low hills and their slopes. The first settlement to be found and excavated by this project was the Umm an-Nar copper production/smelting site at Maysar M1 (Plates 224–225) (Weisgerber 1980: 77–88; 1981: 191–197). This site was first found by the Harvard Expedition in the early 1970s and recorded as Samad 50 (Weisgerber 1978: 15–17). Other settlement sites of this time were located at al-Mudhaybi area, including Maysar M25 (Plates 226–227, Figure 83) that is a round Umm an-Nar tower surrounded by stone structures. There is also Mullaq which yielded a settlement with tombs, smelting site and fortification (Weisgerber 1981: 186–189 & 198–203). Apart from Maysar M1 and Mullaq, the project recorded five more copper producing/smelting sites, including Maysar M2, M16, and M49, and Bilad al-Maaidin-1 and 2 (*ibid:* 174–263). Of these, only Maysar M2 and Mullaq yielded an Umm an-Nar settlement with tombs. Apart from Maysar M25 and Mullaq, another Umm an-Nar fortified settlement was found at al-Hind just south al-Khashbah village (Weisgerber 1978: 27), which includes large Umm an-Nar ashlar masonry buildings (Figure 84). Finally, there are six Umm an-Nar settlements recorded at Maysar, including Maysar M6, M7, M25, M26, M29 and M31 (Weisgerber 1981: 174–263) as well as Maqta'ah Maqt5 at Dima Wa at-Taiyyin (Yule &

Weisgerber 1998: 210). In addition to Umm an-Nar tombs from Maysar M2, M25 and Mullaq, nine other sites yielded tombs of this period: eight at Rawdah/Muqatta (Tombs Mu5, Mu5/2, Mu6, Mu9, Mu12, Mu13, Mu15 & Mu17) (Yule 2001a: 397); and one at Samad (Samad S30) (*ibid*: 348–362 & 401).

The Wadi Suq period is represented by a large number of tombs that were located and excavated in the Samad area, particularly at the cemeteries of Samad S10, S20, S21 and S22, as well as Maysar M8 (Yule & Weisgerber 1988: 8–12; Yule & Kazenwadel 1993: 253–254). Other tombs were excavated at al-Akhdar (Yule et al. 1994: 385, 391 & 409) and one at al-Bustan (Gr.Bu6) (*ibid*: 386 & 2001b: 494) as well as Nizwa N1985 (*ibid*: 394–396). Furthermore, Early Iron Age or 'Lizq Period' sites were for the first time recorded by this project at Lizq fortress where a pottery assemblage of this time was recovered (Plates 228–229) (Weisgerber 1982: 81). Another Lizq period fortress was also found at Maysar M34 (Weisgerber 1981: 233–238, fig.74–79). Excavations at Maysar M43 revealed Lizq period mudbrick houses (Plate 230) situated along the *falaj* (Weisgerber 1982: 81–82). Two more settlements of this time were found at Dima Wa at-Taiyyin (Isma'iyah Fort Isml, 'Qarn Suwaich') (Yule & Weisgerber 1998: 209) and al-Mudhaybi (Mayasr 42) (Weisgerber & Yule 1999: 105–108). Moreover, very few free-standing hut-tombs of the Lizq period were located at Samad S10, the best examples being located at Maysar M8, M9, M27 and M36, Bilad al-Ma'din, Muqatta–Rawdah, and in the Jebel Salayli (Yule & Kazenwadel 1993: 254); M803 (Yule & Weisgerber 1988: 43–48), S19, S22, S23 and S24 (*ibid*: 6–7).

The period best represented by the German Mission is the Late Iron Age to Hellenistic–Parthian (Samad period), which is largely represented by tombs. The majority of these tombs are located within the Samad/Maysar area. Other tombs were found at Izki cemetery and al-Akhdar (Yule et al. 1994: 398–402 & 409), al-Bustan and Mahleya (Yule 2005: 305), Mullaq (Weisgerber 1981: 186–189) and Muqatta–Rawdah (Yule & Kazenwadel 1993: 254). The project excavated many of these tombs at Samad/Maysar such as the those at Samad S10, S30, S19, S20, S21, S22, S23, S24, S26, S28, S30, S32, S33, and Maysar M4, M8, M45 as well as al-Akhdar (Yule 2001a; 2001c: 256–259). Fieldwork at al-Fueda area also yielded 25 tombs that were dated, based on their finds, to 400 BC–1st century AD (Yule, 2001c: 255–257). Late Iron Age–Samad period

settlements and fortified sites were located at different sites in Wadi Samad such as al-Akhdar, Khadra Bani Daffa, Mahleya, Maysar M6, M34, M42 and M43, Samad S1, S2, S4, S6, S7 and S23, as well as Samad/Mendesseh (S30/H1) (*ibid*: 256–264). Other settlements were located at al-Bustan, al-Niba, al-Shariq, Manah (copper mine site), Muti, Rawdah/Muqatta and Mullaq (Yule 2005: 303–311).

The Sasanian to Recent periods are only represented by a few sites[41]. For the Sasanian–Early Islamic period, the project recorded 12 settlements of which seven are at al-Mudhaybi: al-Akhdar, al-Maysar, Khadra Bani Daffa, Rawdah/Muqatta, Samad ash-Shan, (Yule 2005: 305), Maysar M49 (Weisgerber 1981: 178) and Musfah (Weisgerber 1980: 101–103). Other settlements of this period were located at Ibra (al-Niba), Bidiyah (al-Shariq), Manah (Manah), Bahla (al-Maskuteh) and Izki (Muti). Moreover, there are four coppermine Middle Islamic sites which are all from al-Mudhaybi, including Khadra Bani Daffa, Maysar M16 and M49 and Washihi (Weisgerber 1981: 174–263). All these sites yielded evidence of Late Islamic to Recent times. Other Late Islamic–Recent fortified settlements were located in the Samad area (Samad S2–6 and S28) (Yule & Weisgerber 1988: 8–9) and a copper mine at Mullaq (Weisgerber 1981: 186–189).

The above evidence shows clearly that there is a 'bias' towards specific periods, namely from the Wadi Suq to the Hellenistic–Parthian, as well as certain types of sites, namely tombs. This could be related to the fact that the aim of the project was related to its main period of interest. This bias can be seen in Figure 27 which shows the percentages of the total number of sites, by period, recorded by this project. The graph shows a sharp increase in the number of sites dated to the Iron Age–Hellenistic periods as well as the Wadi Suq. The other pre-Islamic and Islamic periods are thinly represented (less than 10%), which must also be related to the bias indicated earlier.

[41] As seen in Chapter Three (3.6.3) the 'Samad period' has recently been re-examined by Kennet (2007) and it appears that there are some incorrect $C^{14}$ dates for this period, particularly those dated to the period after around 200 AD.

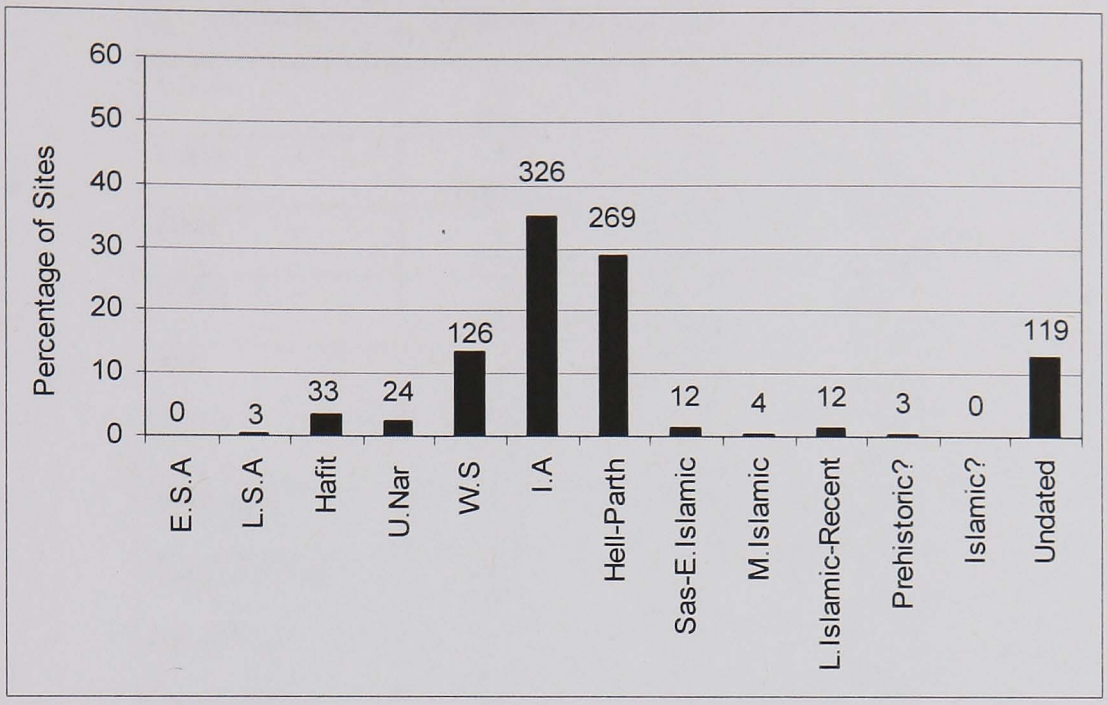



**Figure 27 Percentage of sites by period recorded by the German Archaeological Mission**

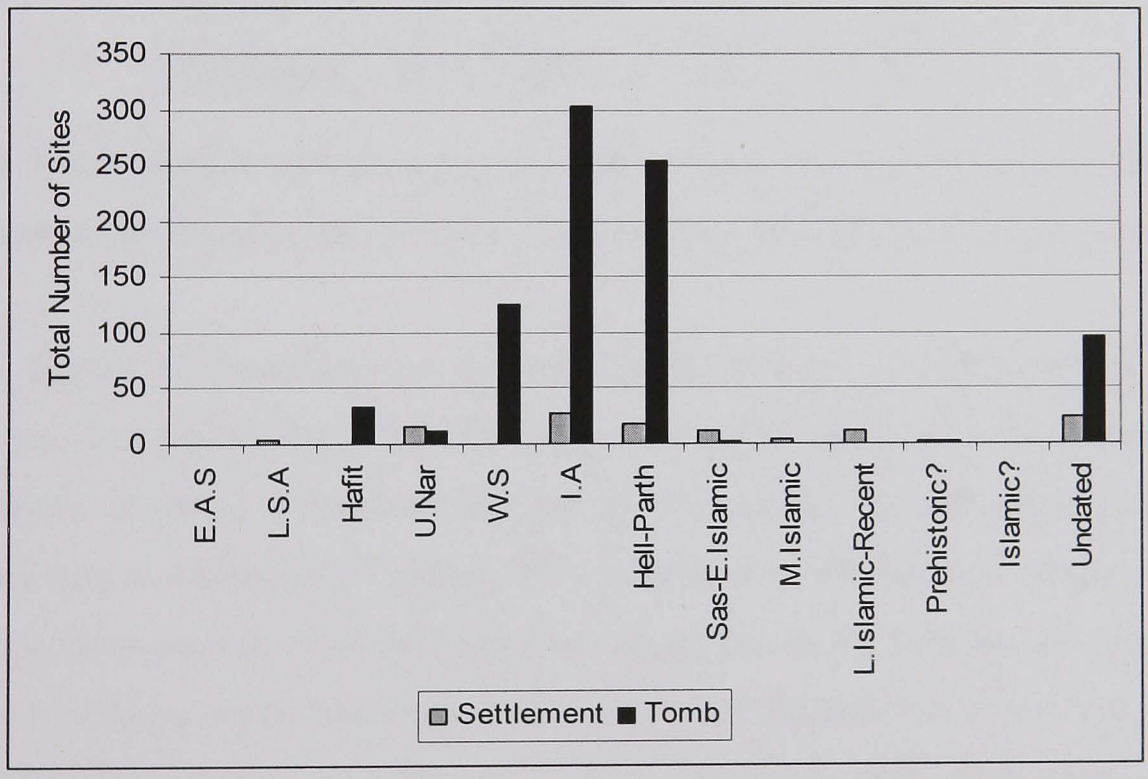



**Figure 28 Total number of settlements against tombs recorded by the German Archaeological Mission (based on Table 34)**

| Period | Settlement | Tomb | Total/Period |
|---|---|---|---|
| E.S.A | 0 (0%) | 0 (0%) | **0 (0%)** |
| L.S.A | 3 (100%) | 0 (0%) | **3 (100%)** |
| Hafit | 0 (0%) | 33 (100%) | **33 (100%)** |
| U.Nar | 15 (58%) | 11 (42%) | **26 (100%)** |
| W.S | 0 (0%) | 126 (100%) | **126 (100%)** |
| I.A | 27 (8%) | 304 (92%) | **331 (100%)** |
| Hell–Parth | 18 (7%) | 255 (93%) | **273 (100%)** |
| Sas–E.Islamic | 12 (92%) | 1 (8%) | **13 (100%)** |
| M.Islamic | 4 (100%) | 0 (0%) | **4 (100%)** |
| L.Islamic–Recent | 12 (100%) | 0 (0%) | **12 (100%)** |
| Prehistoric? | 1 (33%) | 2 (67%) | **3 (100%)** |
| Islamic? | 0 (0%) | 0 (0%) | **0 (0%)** |
| Undated | 24 (20%) | 95 (80%) | **119 (100%)** |
| **Total/type** | **116** | **827** | **943** |

**Table 34 Total number and percentage of settlements against tombs recorded by the German Archaeological Mission (% based on the total number by period)**

Although, Figure 27 shows the bias towards specific period(s), it does not show the bias towards specific types of site. Therefore, Figure 28 shows the total number of settlements against tombs. It shows a dramatic increase in the number of tombs during the periods from Wadi Suq to Hellenistic–Parthian. This is related to the fact that a large number of tombs from these periods were excavated by the project in the Samad area. As indicated earlier, each of these tombs was entered and counted in the database as one site, which has increased the total number of tomb sites against settlement sites. Moreover, the figures show a large number of undated tombs. Although these tombs were excavated in the same cemeteries where tombs of the Wadi Suq to Samad period were excavated and dated, they were not dated by the survey project. It is unclear why these tombs are undated but it might be related to the fact that either they are in a bad state of preservation or they did not yield any datable finds. By contrast, there are very few settlement sites from all periods.

It should be noted here that there are problems in dating some of the Wadi Suq and Late Iron Age–Samad period tombs recorded by this project. According to the excavators, several of these tombs yielded finds from different periods, making their dating problematic (see also the problem of $C^{14}$ dates at Chapter Three 3.6.3).

### 5.4.4- THE AL-HAJAR PROJECT:

The al-Hajar Project is focussed only on recording the visible monumental structures of the 3rd millennium BC. It is attempting to develop some hypotheses about these monuments by stating that there are two types of architecture during this period in which differ in style: the Umm an-Nar and al-Hajar (see Chapter Three 3.4). The results of this work are published in a series of papers (Orchard & Stanger 1994 & 1999; Orchard 1995; Orchard 2000; Orchard & Orchard 1997 & 2002). The al-Hajar Project yielded large circular monumental structures (tower buildings) at several sites around Bahla, Nizwa and al-Mudhaybi areas, which have been called 'al-Hajar Oases Towns'. The suggested plan for these towns (Figure 85) includes circular structures and rectangular buildings, which form a complex that includes towers or fortifications on the tops of outcrops, groups of buildings lower down the slopes and areas of cultivation on the plain in between (Orchard & Stanger 1994: 80). They are also associated with large cemeteries of Beehive tombs that can be seen on the mountains and outcrops in the vicinity of these large buildings. The authors give a good example of the al-Hajar oasis town by Bisya (Orchard 2000: 168; fig.3), which yielded four large buildings: Jebel Juhēlāt, Qarn Qarhat Lahwīd, Qarn Qantarat Nizwa and Jebel Sulēmān 'Alī (*ibid*: 170–174; fig.7-13) (Figures 86-87). All areas surveyed by the al-Hajar Project yielded sites from the Hafit and Umm an-Nar periods, largely from Bahla. This could be related to the fact that the project's main interest is more concentrated on this type of site and on this area than the other area (see below).

The Hafit period is largely represented by Hafit and Beehive tombs located by the project on the hills surrounding the Bisya area (Akhdar al-'Akaba, Jebel al-'Alam, Jebel Jebit Shmesa, Jebel Limu'akkal, Jebel Mirbakh, Jebel Suleman 'Ali (a) and (b), Jebel Bu Rzuz, Jebel Ghbera Dhib, Jebel Juhelat (Jahalah), Jebel Limwelaha, Qarn Qantarat Nizwa, Qarn Qarhat Lawahid, Madkhal al-'Akaba and Jebel al-Milla) (*ibid*:169–172), and around al-

Khashbah in al-Mudhaybi as well as Firq at Nizwa (Orchard & Stanger 1994: 82 & 91). In total, 18 sites of the Hafit period were located of which all are tombs.

The Umm an-Nar period is represented by a total of 16 settlement and tomb sites of which seven sites yielded only settlements, three settlements with tombs and six only tombs. Of the settlements, six sites yielded fortifications. The settlements, as indicated above, include large circular or oval buildings associated with stone foundations of other houses surrounding these large and high buildings. These settlements include seven sites at Bahla (Bisya Area Site, Farud, Jebel Juhelat (Jahalah), Jebel Suleman 'Ali (b), Qarn Qantarat Nizwa, Qarn Qarhat Lawahid and Shuh) (Orchard 2000:169–172) (Figures 86–87), one at al-Mudhaybi (al-Khashbah), and two at Nizwa (Firq and al-Gubra) (Orchard & Stanger 1994: 82 & 91). They are located on top of low rocky hills/outcrops or on their slopes or the bottom of their slopes as well as on the wadi edges or terraces. Several of these sites yielded Umm an-Nar tombs such as Akhdar al-'Akaba, Jebel Ghbera Dhib, Jebel Suleman 'Ali (b), Qarn Qarhat Lawahid, Bisya Area Site, Jebel Jebit Shmesa (Orchard 2000:169–172), and Limwelaha (Tombs 1 & 2) (Orchard & Orchard 1997: 16).

The only Wadi Suq settlement evidence is that from the Bisya Area site, however, the project does not say much about this evidence. The only information given is that the site yielded evidence from the late 4$^{th}$ to 1$^{st}$ millennium BC (Orchard & Stanger 1994: 73; Orchard 2000: 167). Limwelaha (Tomb 1) is the only site that yielded evidence for tombs, this is an Umm an-Nar tomb re-used during the Wadi Suq period. The Iron Age is only represented by four sites from Bahla: Bisya Area Site is a 3$^{rd}$ millennium BC settlement that might include Iron Age evidence and Jebel Bu Rzuz with two pill-box tombs (Orchard & Stanger 1994: 73); Qaryat Sallut (Orchard & Stanger 1999: 99–100) is a fort with circular stone building platforms and other structures; and Limwelaha (Tomb 2) which is an Umm an-Nar tomb re-used in the Iron Age (Orchard & Orchard 1997: 16). Only Qaryat Sallut, yielded evidence from the Hellenistic–Parthian to Late Islamic periods, while site Bisya Area yielded evidence from the Middle to Late Islamic periods.

The al-Hajar project results show a bias towards recording the 3$^{rd}$ millennium BC sites that can be clearly seen from Figure 29 which presents percentages of the total number of sites by period recorded by this project. It demonstrates that there is a remarkable number

of Hafit and Umm an-Nar sites and, thus, the pre-Islamic sites are more represented than the Islamic ones, which is certainly related to the above mentioned bias.

Figure 29 provides a clear idea about the total number of sites from each period. However, it does not show how many of these are settlements or tombs. Hence Figure 30 presents the total number of settlements against tombs. It shows that the Hafit and Iron Age periods are more represented by tomb sites. The Umm an-Nar and Wadi Suq periods yielded similar evidence for both types of site, while the other periods either did not yield any or yielded very little evidence, mainly settlement remains. It must, however, be stated that the total number of sites recorded by this project is small and thus does not allow proper comparison between the types of site.

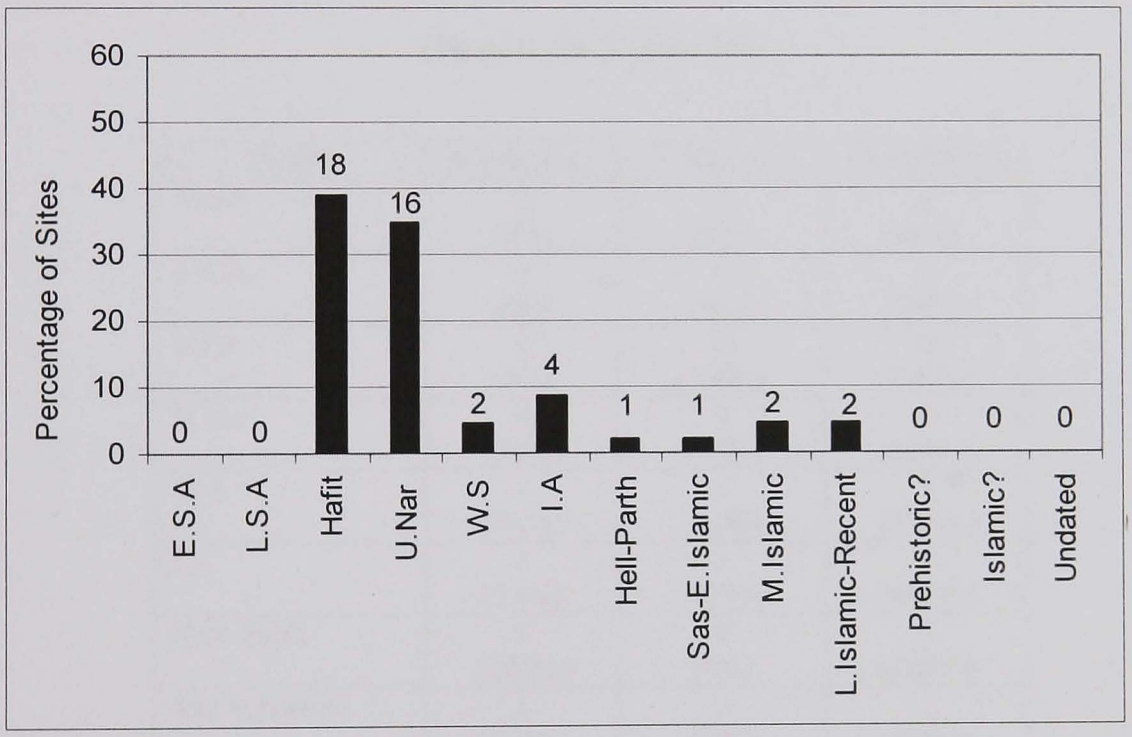



**Figure 29 Percentage of the total sites by period recorded by the al-Hajar Project**

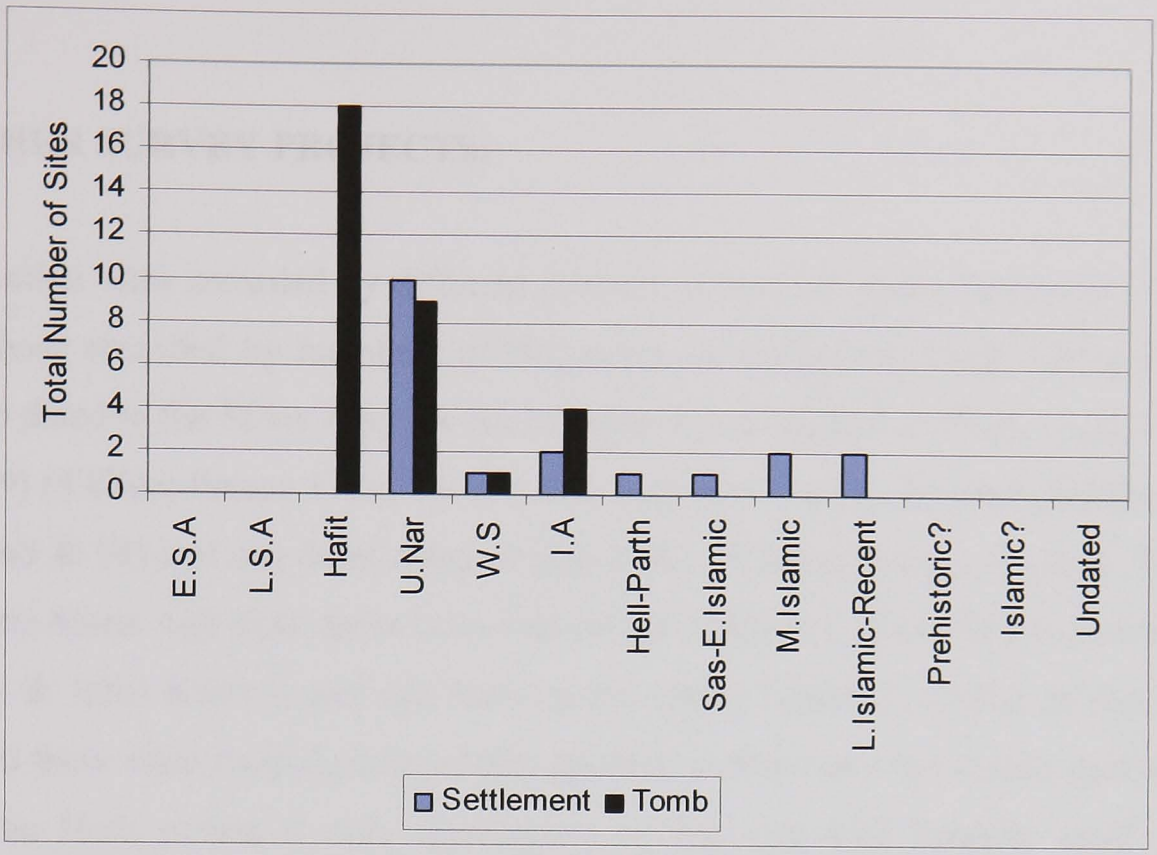



**Figure 30 Total number of settlements against tombs recorded by al-Hajar Project (based on Table 35)**

| Period | Settlement | Tomb | Total/Period |
|---|---|---|---|
| E.S.A | 0 (0%) | 0 (0%) | **0 (0%)** |
| L.S.A | 0 (0%) | 0 (0%) | **0 (0%)** |
| Hafit | 0 (0%) | 18 (100%) | **18 (100%)** |
| U.Nar | 10 (53%) | 9 (47%) | **19 (100%)** |
| W.S | 1 (50%) | 1 (50%) | **2 (100%)** |
| I.A | 2 (33%) | 4 (67%) | **6 (100%)** |
| Hell–Parth | 1 (100%) | 0 (0%) | **1 (100%)** |
| Sas–E.Islamic | 1 (100%) | 0 (0%) | **1 (100%)** |
| M.Islamic | 2 (100%) | 0 (0%) | **2 (100%)** |
| L.Islamic–Recent | 2 (100%) | 0 (0%) | **2 (100%)** |
| Prehistoric? | 0 (0%) | 0 (0%) | **0 (0%)** |
| Islamic? | 0 (0%) | 0 (0%) | **0 (0%)** |
| Undated | 0 (0%) | 0 (0%) | **0 (0%)** |
| **Total/type** | **19** | **32** | **51** |

**Table 35 Total number of settlements against tombs recorded by al-Hajar Project (% based on the total number by period)**

### 5.4.5- OTHER SURVEY PROJECTS:

There are other sites recorded by different projects in several areas. The earliest of these sites are those recorded by members of Petroleum Development Oman during the early 1970s, and dated to the Stone Age: six Early Stone Age from Bahla (Wadi Umayri (Loc.1, 2, 3, 5, 8, 9) (Villiers-Petocz 1989: 54–57), one from Izki (Suq Al Qadim) (Pullar & Jäckli 1978: 64–65 & 74) and one from Adam (Huqf Area) (Whalen 2004: 175–182). There are also six Late Stone Age sites: three from Izki (Wadi Halfayn I, II and III), two from Bahla (Al Hubi I & Jebel Kawr I) and one from Adam (Jebel Salakh I) (Pullar & Jäckli 1978: 53–74). All these sites yielded surface lithic material without any associated structures. By contrast, the Hafit period is only represented by one site with Beehive tombs at Izki (Frifelt 1975b: 390–391), and the Umm an-Nar period by one site found at Bahla (al-Aqir), which yielded a mining site and tombs (Weisgerber & Yule 2003: 24–53). These surveys yielded no evidence from the Wadi Suq period, while the Iron Age and Hellenistic–Parthian periods are represented by 16 sites with tombs which were recorded at Mahleya in the al-Mudhaybi area (ElMahi & AlJahwari 2005: 57–69).

The following Sasanian–Early Islamic period is represented by eight copper mine sites: four from al-Mudhaybi [Wadi Andam 32 (Whitcomb 1975: 126), Majazah (Site 43), Rawdah (Site 26) and Wadi Andam (Site 17)]; two from al-Qabil [Niba (Site 99) and Wadi Dumha (Site 68)]; one from Bahla [Bahla (Site 109)] and one from Nizwa [Lashaya II (Site 48)] (Goettler, Firth & Huston 1976: 43–55). All these copper mine sites continued to be used during the Middle Islamic period. Moreover, Middle Islamic fortifications were located at Izki (Wadi Qant 3) (Whitcomb 1975: 127), as well as tombs and mosques at Nizwa (Maqbarat al-A'immah, Maqbarat al-Uwaynah-1–3 and Masajid al-'Ubbad) (Ibrahim 2001: 97–113). All the above Middle Islamic sites also continued to be used during the Late Islamic–Recent sites, which is also represented by fortifications located in different areas.

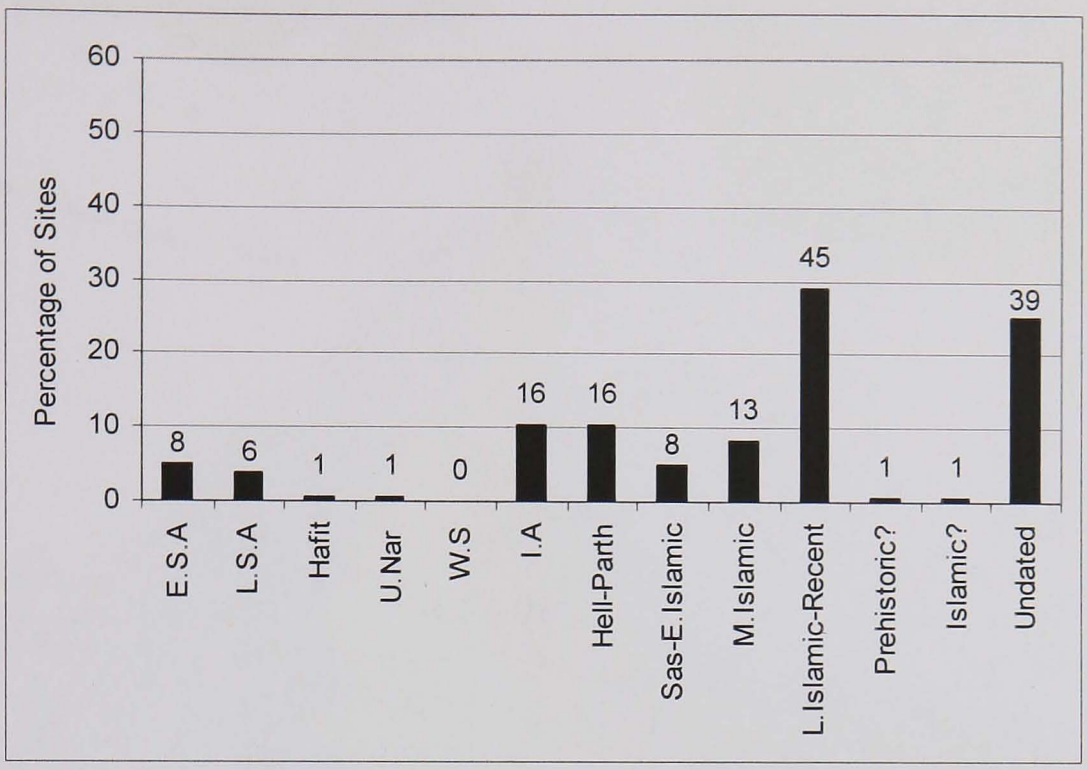
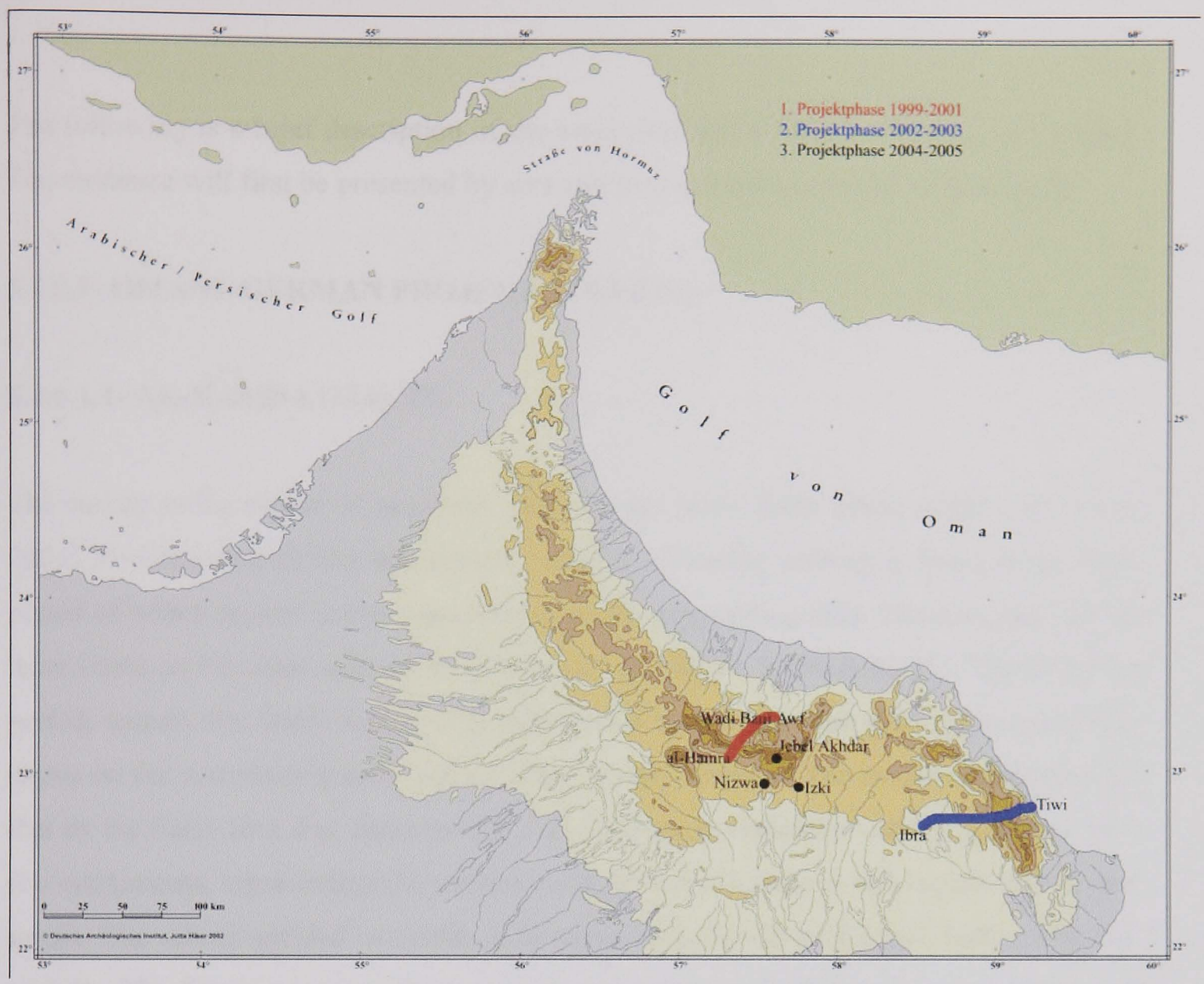



**Figure 31 Total number of sites recorded by other surveys**

It should be indicated here that these other surveys yielded only a small number of sites and from few periods (Figure 31), thus, they do not provide enough information for quantified analysis. The reason behind this might be related to the fact that these early surveys did not apply systematic methodologies. Additionally, some of these sites were recorded by amateurs who were at that time working in different sectors/organisations in Oman. Whatever the reasons for the small number of sites, these sites were at that time, and are still, a good contribution to the general history of the peninsula, and covered areas that had not been subjected to any investigation.

### 5.4.6- THE OMANI–GERMAN PROJECT:

Since 1999, the interdisciplinary Omani–German cooperation project "*Transformation Processes in Oasis Settlements in Oman*" has accomplished three major project phases (Map 27) that included five stages in which the survey covered some areas in the interior of Oman. These include al-Hamra (Ibrahim & Gaube 2000; Häser 2000 & 2003); Izki and Nizwa (Schreiber 2004 & 2007a–b) in al-Dhakhilia Region as well as Ibra in al-Sharqiyah Region (Schreiber 2005).




**Map 27 The three project phases carried out by the Omani–German Survey (after: Schreiber 2007b: Map 12, p. 69)**

The aim of this project is documenting the settlement history over time, particularly the development of oasis (wadi) settlements. It appears, as will be seen below, that all the published reports about this project are short and describe the results of each season without a detailed examination. There is no indication of the applied survey methodology and no list of recorded sites and their findings[42]. For example, there is no indication of the pottery sampling or collection methodology and no list of the pottery types found during the surveys. This might be related to the fact that the project has not yet arrived at its final stage of publication.

[42] The only sites list from Izki, Nizwa and Jebel Akhdar has recently appeared in J. Schreiber's PhD thesis, which was kindly given to me by the author in June 2007, just close to the completion of my thesis. Thus, it was impossible to include some of the unrecorded sites within this database of this thesis.

The following is a brief description of the main sites and evidence found by this project. The evidence will first be presented by area and then a short conclusion will be given.

### 5.4.6.1- OMANI–GERMAN PROJECT SURVEYS:

#### 5.4.6.1.1- AL-HAMRA (Map 27):

The survey in the region of al-Hamra (Ibrahim & Gaube 2000; Häser 2000: 115–118 & 2003: 21–30) indicates that the earliest evidence of human activity is dated to the Hafit period of which several cairns were located on the surrounding hills. The area also yielded three Umm an-Nar sites with tombs (al-Hamra Sites 86/10, 86/30 & 86/31). The following period, namely the Wadi Suq, is only represented by one site with possible re-used Hafit cairns on the surrounding hills, and no occupational remains. The evidence demonstrates that by the Early Iron Age there had been an increase in settlement activity as shown by a few settlements, representing the earliest occupational evidence in this region, and several tombs. The survey yielded two main settlements from this time of which both are located on hills. The first is a large enclosure which surrounds six large houses, while the second settlement consists of small houses. There are also possible settlement ruins of this period: Sites 86/10 and 86/29, and different types of Early Iron Age tombs on the surrounding hills of al-Hamra.

The succeeding period, the Late Iron Age, is possibly represented by one cairn, a few subterranean tombs and a few pottery sherds (e.g. al-Hamra Sites 86/10, 86/18 and 86/32), but there is an almost complete absence of any settlement remains. It is, however, possible that the Early Iron Age settlement at Site 86/29 continued to be used in this period. There are also other sites that yielded Iron Age pottery such as al-Hamra Sites 86/5–86/7. Furthermore, the Early Islamic is only represented by a few scattered sherds (e.g. al-Hamra Site 86/6). During the Middle Islamic period, there was a small increase in settlement activity where several sites yielded underglazed sgraffiato sherds, and two main settlements were located on hills and their slopes. This period was followed by a dramatic change in the settlement pattern within al-Hamra village during the Late Islamic period. Most of the existing wadi villages yielded evidence of this time.

### 5.4.6.1.2- IBRA (Map 27):

The results of this survey (Schreiber 2005: 255–270) indicate that the oldest settlement activities are dated to the Late Stone Age, which is represented by a few flint tools and flakes that were found near al-Thabiti area. The area also yielded the remains of large boulder walls and rectangular and oval structures of double walls (e.g. I0267, I0272 and I0310). The Hafit period is represented by badly disturbed cairns that are located on the higher hills east of the main oasis along the Bidbid–Sur road, and north of al-Thabiti along the eastern terrace of the Wadi Ibra (al-Thabiti Sites I0088, I0122, I0163, I0177, I0220, I0249, I0316 and I0399). The settlement during the Umm an-Nar period shifted to the western edge of Wadi Ibra near the main modern oasis (Plate 231). Here, a settlement was established where the survey yielded a partly disturbed large circular Umm an-Nar building (I0004) (Plate 232). It is also represented by two round Umm an-Nar tombs with scattered pottery sherds (I0007.1 and I0007.2), and other tombs located to the north of al-Thabiti (e.g. al-Thabiti Sites I0088, I0112–4, I0122, I0163, I0177, I0220, I0249, and I0316 and Ibra (Sites I0007–I0008). The Wadi Suq period is possibly represented by a badly disturbed cemetery (I0006) (Plate 233), which yielded a few circular/oval underground tombs. It is also represented by a badly bulldozed area (I0005) that yielded Wadi Suq funerary pottery sherds.

The Early Iron Age is represented by two main settlements. The first (I0002) was built in the same area where the previous Umm an-Nar settlement was located. It is associated with a cemetery (I0007) that re-used the stones of the earlier Umm an-Nar tombs. The second settlement (I0039) includes the remains of house foundations associated with a scatter of Early Iron Age settlement pottery. Early Iron Age tombs were found in a bad state of preservation on the foot of a hill surrounding the settlement (cemetery I0040) and on lower hills east of the main oasis along the Bidbid–Sur road as well as at Site I0052. On the mountains above Wadi Garbi, a new settlement was founded by the start of the Late Iron Age (site I0052) (Plate 234) and the previous Early Iron Age settlement at I0039 continued to be used during this time. Other Iron Age tombs re-using the older Hafit tombs were also found in the al-Thabiti area.

During the Early Islamic period, there was a settlement shift, back to the plain at the edge of Wadi Garbi (Plate 231). Settlement (I0046) traces were noticed during the survey above Wadi Garbi associated with the cemetery (I0047) at the southern and eastern edge of the area and two mosques (I0044 & I0056). This settlement was abandoned during the later Islamic periods and the pottery indicates that the settlement shifted to the oasis where the modern inhabitants live. It is suggested that there was a shift in the settlement location over time, but they were always close to the wadis.

**5.4.6.1.3- IZKI (Map 27, Plate 235):**

The results of this survey (Schreiber 2004: 6–10) indicate that the earliest evidence in Izki is dated to the Hafit period. Several Hafit and Beehive tombs were found on different locations: on the edges, slopes, low hills and flat areas such as those recorded at Zukait, north of the old Nizwa–Muscat road, the western edge of Harat ar-Raha, the village of Wuddai, the south Saruj Plateau, and the slopes above the modern houses. The Umm an-Nar period is represented by a large circular boulder structure in the Saruj area (Iz0005) (Plate 236) associated with a number of Umm an-Nar pottery sherds. Several structures of large boulders were also found south of this structure, and they might be part of a 3rd millennium BC settlement. Possible Umm an-Nar tombs were found on the flat plateau south of the canyon where the small village of Wuddai is located. No remains of the Wadi Suq period were found, while the Early Iron Age remains are represented by the re-use of Hafit cairns. During this time, the Umm an-Nar structures were probably re-used (Iz0118). A possible campsite of the Early Iron Age including re-used Hafit cairns and some circular structures with some Early Iron Age pottery sherds were found on the southern part of the plateau at Saruj. Moreover, new Early Iron Age tombs were also constructed in different parts of the oasis such as those to the north old Nizwa–Muscat road and on the western edge of Harat ar-Raha. The Late Iron Age–Hellenistic–Parthian period is represented by a large cemetery on the slopes of the western hills and by a settlement area between the two quarters of al-Yaman and al-Nizar. Other tombs of this time were also found over other areas such as those on the Saurj Plateau, and Sites Iz0005, Iz118, Iz334, Iz0127, etc. The survey did not yield any evidence of the Sasanian–Early Islamic period, while the evidence for the Middle and Late Islamic–Recent periods is presented by watchtowers, house ruins, walls and cemeteries as well as the main oasis settlement.

### 5.4.6.1.4- NIZWA AREA:

The survey at Nizwa included two parts: Jebel Akhdar and the Nizwa 'Oasis' each part of which was surveyed in a different season. The first part was surveyed in 2004 and the second in 2004/2005. The following is a brief description of the recorded evidence from each part.

#### 5.4.6.1.4.1- THE JEBEL AKHDAR (Map 27):

A short reconnaissance was made at Jebel Akhdar, mainly on the Saiq-Plateau (Schreiber 2004: 10–11). The survey recorded around 70 archaeological features, mostly tombs (Plate 238). The Hafit period is represented by several remains of cairns, which were built on flat mountain ridges such as those recorded on the southern edge of the plateau, Hail and above Saiq. No remains of the Umm an-Nar and Wadi Suq periods were recorded by the survey, and the Early Iron Age is represented by three Hut-tombs that were built re-using the older Hafit cairn stones found on the southern edge of Saiq Plateau (Plate 239). The Late Iron Age is represented by the practice of secondary burial within one of the disturbed Hafit cairns above Saiq. The Islamic periods are represented by the remains of a possible campsite and Islamic cemetery. This available evidence from the Jebel Akhdar area has led the author to argue that this part of Oman was not a remote area but was already inhabited early in prehistory (*ibid*: 11). The level of this occupation might have been very low.

#### 5.4.6.1.4.2- NIZWA (Map 27):

The results of this survey[43] (Schreiber 2007a) demonstrate that the earliest evidence at Nizwa is represented by a few Hafit and/or Beehive tombs on the eastern hills between Farq and the centre of Nizwa town as well as in a large valley to the northeast of the oasis. No occupational remains of this period were found. The first settlement remains are those of the Umm an-Nar period which were located in the southern and northern parts of the

[43] Sites from this survey were taken from the presentation given by J. Schreiber in the Seminar for Arabian Studies held in the British Museum between 27th and 29th July 2006. A copy of the final publication was kindly given to me by the author in the following year during a similar Seminar held in the British Museum between 19th and 21st July 2007.

oasis. They include large monumental structures that perhaps served as fortified positions, including the previously known structures at Farq recorded by de Cardi and Doe (e.g. de Cardi, Collier & Doe 1976: 159–160) and by the al-Hajar Project (e.g. Orchard & Orchard 2002: 228). These structures have been named Structures 1, 2 and 3 (Plate 237). Other Umm an-Nar remains were found north of the oasis, including a few remains like stone foundations and a badly disturbed tomb (N109). Remains of walls associated with mixed types of pottery sherds (e.g. Umm an-Nar, Early Iron Age and Islamic) were also located on different rocky outcrops, which, it is suggested, were campsites, settlements and/or fortifications. These include a rectangular stone built fortification (N120), which is protected by a large stone wall, and a circular structure built of unworked stones (N188) that was located close to Wadi Samit and the road connecting Nizwa with Bahla. South of this fortification the survey located a small group of badly disturbed tombs. It was concluded that the whole wadi was used as a settlement area during the Umm an-Nar period.

The evidence seems to demonstrate that there was a decline in settlement during the Wadi Suq period followed by a dramatic increase during the Early Iron Age. The older Umm an-Nar monuments were re-used during the Early Iron Age, and new settlements were established in the eastern side of Wadi Kalbuh of which several settlement remains were located along the mountain foothills. These include abandoned fields with mixed kinds of pottery sherds, including a large number of Early Iron Age-type, and the remains of stone foundations. It was suggested that these are the remains of Early Iron Age houses or farmsteads such as the large sęttlement remains at site (N012) located to the east and site (N261) on the western edge of Wadi Kalbuh. Another settlement of this period is located north of Soa'al amongst which a pottery scatter and stone wall foundations have been recorded. Site N061 is an Early Iron Age hill-fort that is located on Jebel al-Hawrah and includes the remains of a semi-circular fortification with collapsed towers, buildings and a cistern. Remains of another fortification were also found below this hill-fort. Furthermore, N075 is an Early Iron Age settlement area that was found in close proximity of Siba' village. It includes an Islamic cemetery intermingled with stone wall foundations and Early Iron Age pottery sherds. Other possible settlement remains of this period were found at N059 and N076. By contrast, the survey yielded very little evidence of Early Iron Age tombs such as those located at the southwestern part of the settlement N261.

Little evidence of the Late Iron Age and Hellenistic–Parthian periods was found. It included pottery sherds scattered in an Islamic cemetery in the western part of Wadi Kalbuh. Hellenistic–Parthian tombs were located north–west of the Early Iron Age settlement N261. Lastly, a badly disturbed mosque was built on the remains of a Late Iron Age structure. This small amount of evidence might indicate low levels of settlement activity that might have lasted until the Early Islamic period; and then by the Middle Islamic period, settlement increased considerably and remained high until modern times. The later periods are the most represented during the survey and include cemeteries (e.g. N245 & N108), the remains of mosques (e.g. N247, Samad al-Kindi & N063), the remains of a Middle Islamic potter's workshop (N030) and pottery scatters within deserted fields. The aforementioned Early Iron Age hill-fort (N061) was also re-used during the Middle Islamic period.

**5.4.6.2- SUMMARY:**

**5.4.6.2.1- QUANTIFICATION OF SITES:**

To sum up the evidence from the Omani–German project, Figure 32 shows the total number of sites by period from each of the areas surveyed by this project. It shows that Ibra is the only area that yielded sites from the Late Stone Age, and that all areas yielded Hafit, Umm an-Nar and Iron Age sites amongst which Ibra yielded the largest number. Two areas out of four yielded very little Wadi Suq evidence (Ibra and al-Hamra). Middle Islamic to Recent periods are represented at all the areas surveyed, of which al-Hamra yielded the largest number. The Hellenistic to Early Islamic periods are only represented in one or two areas. It is remarkable that al-Hamra is the only area to have yielded continuous evidence from all periods. This might be related to the fact that the first stage of this survey was carried out at Wadi Bani Awaf. The al-Hamra region is one of the main parts of this wadi and here more attention was paid in terms of the number of specialists and time[44].

[44] The current researcher was representing the Omani part in this first stage which included specialists from different disciplines such as archaeology, geology, architecture and agriculture. By contrast, the later stages, namely at Ibra, Izki and Nizwa included only a few members of the team.

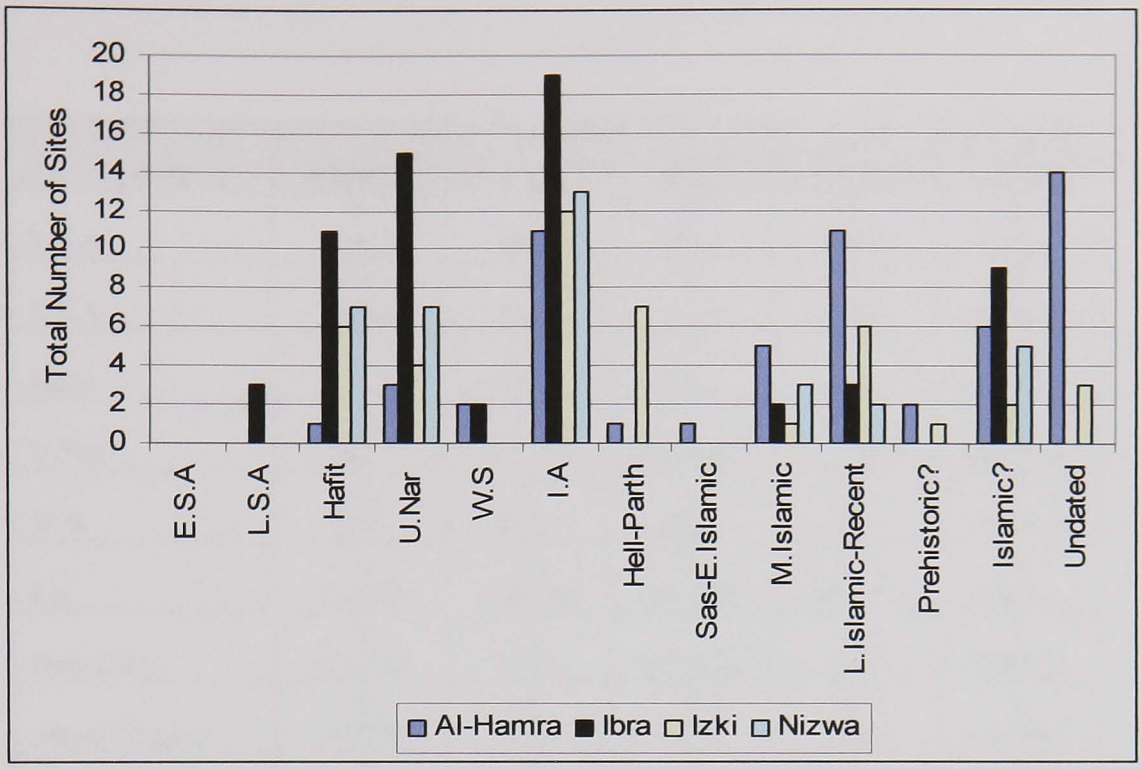



**Figure 32 Total number of recorded sites by the Omani–German project by period and area (based on Table 36)**

The above figures show the evidence from each of the areas surveyed. It is necessary to combine the evidence from these areas in order to have a general picture of the evidence recorded by the Omani–German Project, and this is presented in Figure 33. This includes only those sites mentioned in the literature of which the present researcher was aware until the final writing of this chapter[45]. As has been stated earlier no full list of sites recorded by each survey is given in the publications where only the most important sites were indicated, which makes our quantification difficult and potentially misleading. The number of sites recorded by this project was based on the method indicated at the beginning of this chapter. For the purpose of this analysis, all identified archaeological features were defined as sites regardless of their size, function and type etc. Thus, it appears from Figure 33 that all periods are represented by the surveys with the exception of the Early Stone Age. The most represented sites are those dated to the pre-Islamic periods, mainly Iron Age. Figure 33 also demonstrates that the Umm an-Nar and Hafit periods, consecutively, yielded a large number of sites, while the Late Stone Age, Wadi Suq and Hellenistic to Early Islamic periods yielded the smallest number of sites, representing less than 10% of the total.

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[45] The final version of the sites' database was completed at the beginning of August and this chapter was completed by the end of August 2006.

| Period | al-Hamra | Ibra | Izki | Nizwa | Total/ Period |
|---|---|---|---|---|---|
| E.S.A | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | **0 (0%)** |
| L.S.A | 0 (0%) | 3 (100%) | 0 (0%) | 0 (0%) | **3 (100%)** |
| Hafit | 1 (4%) | 11 (44%) | 6 (24%) | 7 (28%) | **25 (100%)** |
| U.Nar | 3 (10.3%) | 15 (51.7%) | 4 (13.8%) | 7 (24.1%) | **29 (100%)** |
| W.S | 2 (50%) | 2 (50%) | 0 (0%) | 0 (0%) | **4 (100%)** |
| I.A | 11 (20%) | 19 (34.5%) | 12 (21.8%) | 13 (23.6%) | **55 (100%)** |
| Hell–Parth | 1 (12.5%) | 0 (0%) | 7 (87.5%) | 0 (0%) | **8 (100%)** |
| Sas–E.Islamic | 1 (100%) | 0 (0%) | 0 (0%) | 0 (0%) | **1 (100%)** |
| M.Islamic | 5 (45.5%) | 2 (18.2%) | 1 (9.1%) | 3 (27.3%) | **11 (100%)** |
| L.Islamic–Recent | 11 (50%) | 3 (13.6%) | 6 (27.3%) | 2 (9.1%) | **22 (100%)** |
| Prehistoric? | 2 (66.7%) | 0 (0%) | 1 (33.3%) | 0 (0%) | **3 (100%)** |
| Islamic? | 6 (27.3%) | 9 (40.9%) | 2 (9.1%) | 5 (22.7%) | **22 (100%)** |
| Undated | 14 (82.4%) | 0 (0%) | 3 (17.6%) | 0 (0%) | **17 (100%)** |
| **Total Sites** | **57** | **64** | **42** | **37** | **200** |

**Table 36 Number and Percentage of sites by period from each of the surveyed areas by the Omani–German Project (% based on the total number of each period)**

It should be noted that this evidence is different than that yielded by the Wadi Andam Survey, which demonstrates that the Islamic periods are better represented than the pre-Islamic. This could be related to the fact that no pottery collection areas within wadi villages similar to those made in the Wadi Andam were carried out by the Omani–German project. Most of the evidence for the Iron Age, as evidenced from the above discussion (see 5.4.6.1), comes largely from the Early Iron Age. By contrast, the Wadi Andam Survey evidence indicates that the Iron Age is less well represented than the Islamic periods. Figure 33 also shows that among the pre-Islamic sites there are few Late Stone Age sites, while no sites earlier than the Hafit period were found during the Wadi Andam Survey. However, the evidence for the Wadi Suq, Hellenistic and Sasanian/Early Islamic periods is similar to that from the Wadi Andam Survey.

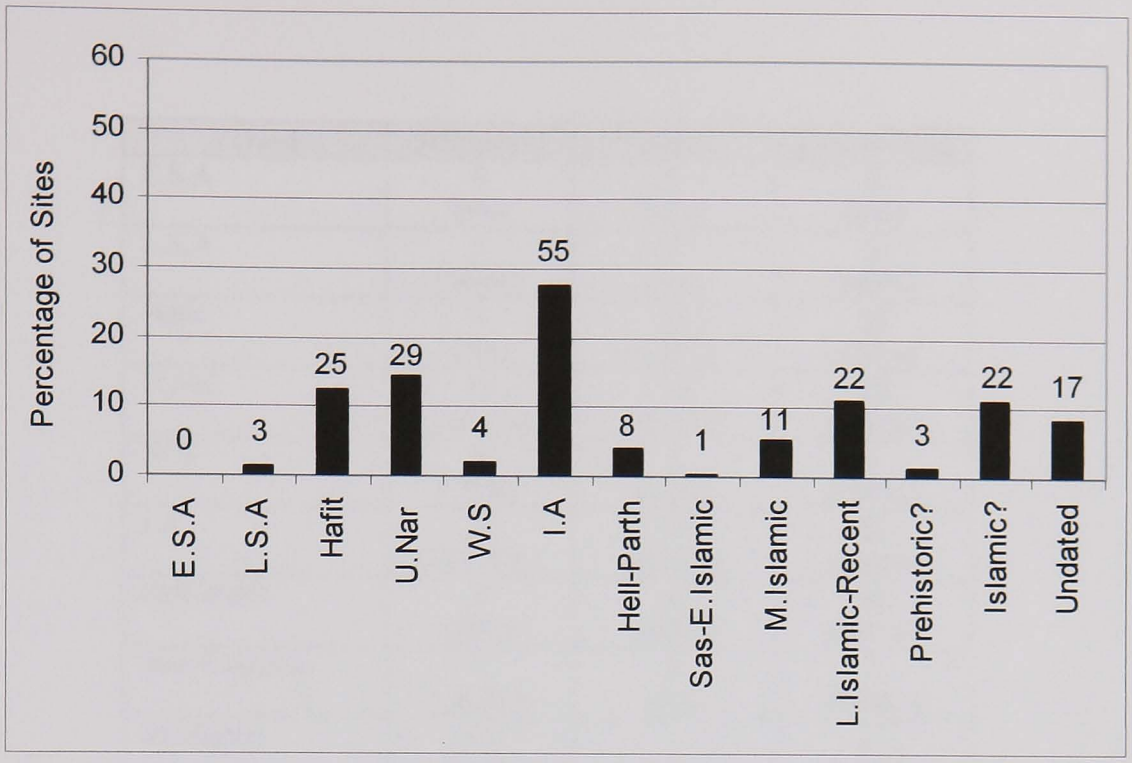



**Figure 33 Percentage of the total number of sites by period recorded by the Omani–German Project**

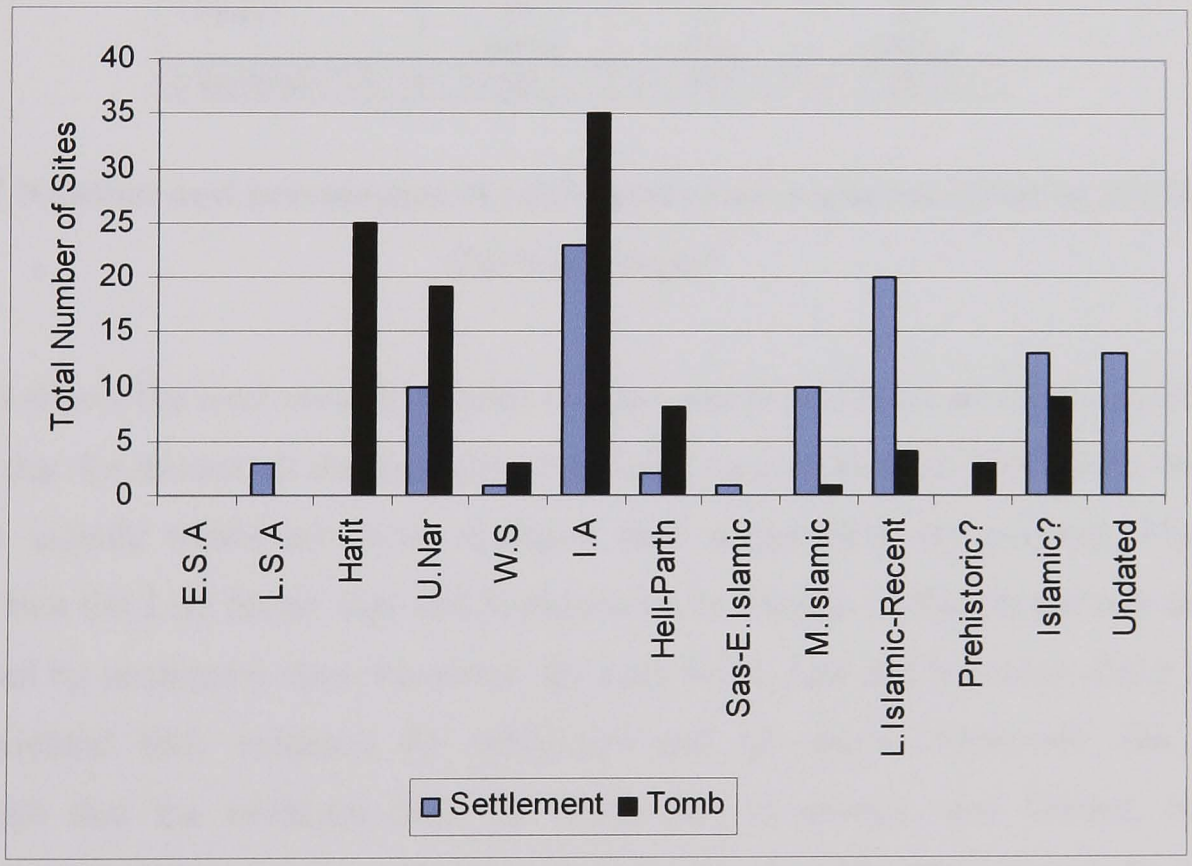



**Figure 34 Total number of settlements and tombs recorded by the Omani–German Project (based on Table 37)**

| Period | Settlement | Tomb | Total/Period |
|---|---|---|---|
| E.S.A | 0 (0%) | 0 (0%) | **0 (0%)** |
| L.S.A | 3 (100%) | 0 (0%) | **3 (100%)** |
| Hafit | 0 (0%) | 25 (100%) | **25 (100%)** |
| U.Nar | 10 (34.5%) | 19 (65.5%) | **29 (100%)** |
| W.S | 1 (25%) | 3 (75%) | **4 (100%)** |
| I.A | 23 (39.7%) | 35 (60.3%) | **58 (100%)** |
| Hell–Parth | 2 (20%) | 8 (80%) | **10 (100%)** |
| Sas–E.Islamic | 1 (100%) | 0 (0%) | **1 (100%)** |
| M.Islamic | 10 (90.9%) | 1 (9.1%) | **11 (100%)** |
| L.Islamic–Recent | 20 (83.3%) | 4 (16.7%) | **24 (100%)** |
| Prehistoric? | 0 (0%) | 3 (100%) | **3 (100%)** |
| Islamic? | 13 (59.1%) | 9 (40.9%) | **22 (100%)** |
| Undated | 13 (100%) | 0 (0%) | **13 (100%)** |
| **Total/type** | **96** | **107** | **203** |

**Table 37 Number and percentages of settlements and tombs recorded by the Omani–German Project**

Figure 34 shows the total number of sites by type and period from all the surveyed areas. It shows that for almost all the pre-Islamic periods, namely Hafit to Hellenistic–Parthian, sites that include tombs are more common than settlements. By contrast, Figure 34 indicates that the Late Stone Age and Sasanian–Early Islamic to Recent periods are more represented by settlement sites. However, the Late Stone Age and Sasanian–Early Islamic periods yielded little evidence for settlement and no tombs. Moreover, the figures demonstrate that the evidence from the Wadi Suq is always very limited, for both settlements and tombs, which is a similar pattern to that from the Wadi Andam Survey.

### 5.4.6.2.2- CHARACTERISTICS OF SETTLEMENT:

To understand the levels of activity, Table 38 summarizes the characteristics of the available evidence, by period, from all the areas surveyed by the Omani–German Project. The evidence from these areas will be presented here and will be briefly compared with

that from the Wadi Andam Survey. Table 38 shows clearly that the earliest evidence yielded by this project is dated to the Late Stone Age, which was yielded only by Ibra. This area yielded only three small sites with flint tools and flakes as well as stone structures located on small hills. By comparison, the Wadi Andam Survey did not yield any evidence of this period. The Hafit period is only represented by tombs, from all areas, and no settlement remains were found. These tombs appear to occupy the higher hills and their edges, slopes and flat areas. This evidence is the same as that from the Wadi Andam Survey. Additionally, it appears that only three of the four surveyed areas yielded evidence for Umm an-Nar settlements: Ibra, Izki and Nizwa. Nizwa yielded the largest number of sites of this period and they cover the whole area but mainly the southern and northern parts. These three areas yielded large circular buildings that were built of large boulders representing possible Umm an-Nar towers. They are located on a wadi edge (Ibra) and on a natural rocky outcrop and its slope (Izki and Nizwa). Other occupational structures were also found at Izki and Nizwa on wadi terraces and flat terrain. Comparison with the Wadi Andam Survey shows that none of these areas yielded a large Umm an-Nar settlement similar to that found at site CS.2.52, which was located on a wadi terrace. The layout of this site with its tower building in the centre surrounded by a burial ground and the remains of houses is completely different to anything recorded by the German project. Umm an-Nar tombs from all areas were also located by the German project on top of low hillocks, their slopes and feet or directly on the wadi terraces, while the tombs from the Wadi Andam are located on the wadi terraces with possible exceptions on the hills and their feet such as CS.2.55 and CS.5.10.

The Wadi Suq period is also thinly represented by two areas: al-Hamra and Ibra. In al-Hamra, it is represented by one re-used Hafit cairn on a hill, and in Ibra by a number of tombs associated with pottery sherds on a wadi terrace. Neither area yielded any evidence of occupation from this time. This evidence is slightly different to that from the Wadi Andam Survey which yielded evidence from tombs and, possibly, settlements. The evidence is very little from both types of site but there is more from tombs. The minimal amount of occupational evidence from Wadi Andam comes from the few pottery sherds picked up in the pottery collection areas (PCAs) as well as from other types of structure. With the exception of the re-used Hafit tomb at al-Hamra located on a hill, Wadi Suq tombs from both Wadi Andam Survey and the Omani–German survey are always located

on the wadi terrace. The re-use of older Hafit-type tombs during the Wadi Suq period was not attested during the Wadi Andam Survey.

The Early Iron Age is widely represented in the areas surveyed by the Omani–German Project which all yielded evidence of both settlements and tombs. Settlements are always small and are located on the hills and their slopes. In Ibra, Izki and Nizwa, the inhabitants of the Early Iron Age re-used the previous Umm an-Nar structures. They re-used the older Hafit cairns (Izki and Nizwa) and Umm an-Nar tombs (Ibra). Furthermore, new small sites, probably campsites, settlements and tombs were established. The settlement locations recorded by the Omani–German Project are on the hills and their slopes, while Early Iron Age sites found by the Wadi Andam Survey are located, with few exceptions, on wadi terraces and along the wadi banks (e.g. CS.2.60, CS.2.64 and CS.9.2) as well as on the hills. However, they are always small in size in both surveys. The practice of re-using older structures and tombs is also attested in the Wadi Andam, for example the re-used Hafit cairns (e.g. CS.2.69) and re-used Umm an-Nar settlements (e.g. CS.2.52, CS.2.67, CS.68 and CS.69).

All the areas surveyed by the Omani–German project yielded very little evidence of the Late Iron Age–Hellenistic–Parthian periods, indicating a possible decline in these areas. At Ibra, a settlement was located on a high hill and its ridge; at Izki one was located on flat terrain between the quarters of al-Yaman and al-Nizar, while Nizwa yielded very few sherds of this time and a badly disturbed structure on the western part of Wadi Kalbuh as well as a few tombs. Izki also yielded a large cemetery on the slopes of the surrounding hills and along the wadi edges. Al-Hamra yielded one possibly re-used Early Iron Age settlement. Tombs were also found at al-Hamra and Nizwa on low hills and wadi terraces. This evidence from the Late Iron Age–Hellenistic–Parthian is completely different to that found by the Wadi Andam Survey which yielded a lot of evidence of this period, both settlements and tombs. Large settlements were located on the wadi terraces close to the modern wadi villages while smaller ones were largely located along the wadi banks and their terraces, with some settlements close to the modern wadi villages. The location of these smaller settlements is similar to those recorded by the Omani–German survey.

| Period | al-Hamra | Ibra | Izki | Nizwa |
|---|---|---|---|---|
| E.S.A | **Settlement:** None<br>**Tombs:** None | **Settlement:** None<br>**Tombs:** None | **Settlement:** None<br>**Tombs:** None | **Settlement:** None<br>**Tombs:** None |
| L.S.A | **Settlement:** None<br>**Tombs:** None | **Settlement:** Few flint tools & structures; on small hills<br>**Tombs:** None | **Settlement:** None<br>**Tombs:** None | **Settlement:** None<br>**Tombs:** None |
| Hafit | **Settlement:** None<br>**Tombs:** on the surrounding hills | **Settlement:** None<br>**Tombs:** on the higher hills & wadi terraces | **Settlement:** None<br>**Tombs:** Hafit & Beehive tombs on low hills, their slopes & wadi edges | **Settlement:** None<br>**Tombs:** on flat mountain ridges, flanking small wadis |
| U.Nar | **Settlement:** None<br>**Tombs:** few on the wadi terraces | **Settlement:** Large circular building on a wadi edge; possible smelting site on the hills<br>**Tombs:** on top of low hillocks & their foot; or directly in the wadi plain & terrace | **Settlement:** Large boulder circular structures; on natural rocky outcrop & its slopes<br>**Tombs:** on the slopes of hills & flat plateau | **Settlement:** several at Nizwa area with large monumental structures, perhaps fortifications, campsites, on natural low outcrops & flat areas<br>**Tombs:** few at Nizwa area |
| W.S. | **Settlement:** None<br>**Tombs:** One possible re-used Hafit tomb on a hill | **Settlement:** None<br>**Tombs:** circular semi-oval underground tombs; funerary pottery; on a wadi terrace | **Settlement:** None<br>**Tombs:** None | **Settlement:** None<br>**Tombs:** None |
| E.I.A | **Settlement:** the earliest evidence; increase, two small main settlements & possible others on the hills & their slopes<br>**Tombs:** many on the hills | **Settlement:** two main small sites on flat hillocks; re-use of older Umm an-Nar structures on a hill<br>**Tombs:** on hills re-using the former Umm an-Nar tombs' stones; new tombs on the foot or lower of hill hills & wadi terraces | **Settlement:** re-use of Umm an-Nar structures on the slopes of rocky outcrop; campsite;<br>**Tombs:** large re-use of older Hafit tombs, new ones on low hillocks | **Settlement:** several at Nizwa area reusing the older Umm an-Nar large structures & new settlements, farmsteads, fortifications, on rocky outcrops, their slops & flat areas<br>**Tombs:** Hut-tombs at Jebel Akhdar reusing Hafit-tombs on the plateau's edges, flat ridges, flanking small wadis, & few from Nizwa area |
| L.I.A-Hell-Parth | **Settlement:** possible one re-used EIA<br>**Tombs:** few on a hill & on wadi terrace | **Settlement:** one on a high hill & stretches along a small ridge;<br>**Tombs:** None | **Settlement:** one on a flat terrain.<br>**Tombs:** many on hill slopes, wadi-edges | **Settlement:** decline, pottery scatter & one possible site<br>**Tombs:** one re-used Hafit-tomb on a low hill, few at Nizwa area |
| Sas-Early Islamic | **Settlement:** few scattered sherds<br>**Tombs:** unclear? | **Settlement:** possible small one<br>**Tombs:** unclear? | **Settlement:** None<br>**Tombs:** unclear? | **Settlement:** None<br>**Tombs:** unclear? |
| M. Islamic | **Settlement:** a small increase in the settlement activity; two main sites on hills & their slopes **Tombs:** unclear? | **Settlement:** a small increase in the settlement activity<br>**Tombs:** unclear? | **Settlement:** a small increase in the settlement activity<br>**Tombs:** unclear? | **Settlement:** large increase in wadi villages<br>**Tombs:** unclear? |
| Late Islamic-Recent | **Settlement:** A dramatic change in settlement pattern; large increase in wadi villages<br>**Tombs:** unclear? | **Settlement:** dense Wadi villages; occupations close to wadi<br>**Tombs:** unclear? | **Settlement:** A dramatic change in settlement pattern; large increase in wadi villages<br>**Tombs:** unclear? | **Settlement:** A dramatic change in settlement pattern; large increase in wadi villages<br>**Tombs:** unclear? |

**Table 38 Characteristics of levels of activity, by period, from the surveyed areas by the Omani-German Project**

The evidence for the later Sasanian and Early Islamic periods is very limited. It is represented by a few scattered sherds. Only at Ibra did the survey yield a possible small settlement with a cemetery located on low hill. This evidence is the same as that yielded by the Wadi Andam Survey. Moreover, almost all areas showed evidence for an increase in settlement activity during the period from the Middle Islamic to recent times. They are represented by dense occupation within and close to wadi villages, which is a similar pattern to that from the Wadi Andam Survey.

## 5.5- CONCLUSIONS:

### 5.5.1- REVIEW OF SURVEY METHODOLOGY:

The majority of the previous surveys appear to have used a rough and unsystematic survey methodology that might lead to neglecting some small but important sites. In other words, with such a methodology it is difficult to guarantee to have found the lowest level of the settlement hierarchy. If the survey missed small isolated settlements this may be a major problem when comparing periods because small settlements may have been more important in some periods than they were in others. Moreover, in several cases it is difficult to follow the exact location of sites as a result of the unsystematic recording methodology. During the Wadi Andam Survey an attempt was made to adopt a systematic and explicit methodology in order to be able to locate all archaeological features that might occur within the area under study (as discussed in Chapter Four, Section One).

It should also be kept in mind that these previous surveys did not set out with the intention of providing a reliable quantified picture, but rather to explore and locate sites of specific interest, or to deal with specific research questions and aims. The majority of these surveys were concentrating on locating sites that might be either under threat of development or those of interest to the particular project's members (see Map 26). The only surveys that have attempted to record all the represented levels of activity were those carried out by the Omani–German Project. This has clearly created a biased picture and made quantification difficult. Thus it is difficult to understand relative levels of activity over time and, therefore, it is impossible to make comparisons between settlement patterns either among these surveys or between them and the Wadi Andam Survey. This can be

noticed, particularly, in the work carried out by the Harvard and al-Hajar projects which were concentrating mainly on 3rd millennium BC settlement sites, and the German Mission which was focusing on the 'Samad period', and in particular on tombs. The quantification of the results of any of these surveys will show a dramatic increase in the number of sites recorded by the project in specific period(s). However, it should be stressed that the surveys were useful in recording some important sites, although many other sites were missed and not recorded that might be of great interest and might provide a more comprehensive framework of settlement history within the surveyed areas as well as the whole region. Additionally, the areas studied are not shown in detail so absences of sites cannot be taken into account when considering the results.

Several of these surveys did not survey the cultivated lands within wadi villages, and there is no clear statement about why they did not do so. The main concern was attempting to locate visible sites along the wadi banks, which were thought to be good places for settlement. Thus, the surveys, to some extent, were able to locate the larger sites. The Omani–German Project was the only project to focus on wadi villages and their surroundings along the wadi banks; an aim which, to some extent, is similar to that of the Wadi Andam Survey. It appears then that the previous surveys were avoiding the cultivated and populated areas, which might increase the possibility of missing important sites as these wadi villages are good candidates for occupation as has been evidenced by the results of the Wadi Andam Survey. These cultivated lands might yield good evidence of multi-period levels of activity that might have once been subject to burial by alluvium. Because these villages are subject to a continuous erosion or ground-disturbance and re-use, this should increase the possibility of uncovering traces of buried remains.

Another problem with the previous surveys is that they did not list what types of pottery were found during the survey and on which sites, so that, now that we have a more accurate understanding of the dating of this pottery, we cannot easily re-date the sites that were found. Moreover, many of the recorded finds and their dating were not well-understood by the people who carried out the surveys. There were few publications available to them and no well-defined pottery sequence which resulted in many gaps in the archaeological evidence. Some of the surveys carried out during the last decade show more developed and modified ideas and a better chronological sequence for the Oman

Peninsula. It should be noted here that to avoid such a problem, and for the purpose of this thesis, the present researcher created a database of all the pottery collected during the survey. This database includes all the information about the collected sherds which is presented in Chapter Four, Section Two. A classification and description of all types of pottery fabrics together with their dating, sites, parallels and origin have also been provided and can be found in Appendix C.

Additionally, there are problems with some of the $C^{14}$ results obtained from excavated archaeological contexts as many of these results are unreliable. Moreover, several of the parallels provided for the finds from these tombs show contradictions with the $C^{14}$ results. This indicates that it is difficult to take these results as a reliable indication of the levels of activity during these periods. This was the case, for instance, with the Wadi Suq to Hellenistic–Parthian tombs excavated and dated by the German Archaeological Mission (see Chapter Three 3.6.3).

It is also clear that the previous surveys did not apply any systematic sampling methodology and almost none of them tell us anything about their pottery collecting methodology. The only methodology that is described is the pottery sampling technique that was used by the Omani–German Project in the Early Iron Age settlement (I0039) at Ibra, which was divided into four areas based on its natural topography in order to collect pottery (Schreiber 2005: 261). However, due to the fact that the site was covered with a large quantity of pottery sherds, the project only focused on certain and/or new types. This might cause a 'bias' towards specific types of pottery of some periods, and, thus, might result in a misleading picture of other periods. Any sampling technique must be systematic, taking into account different factors such as the main objective of the sampling and the nature of the available evidence. In the case of wadi villages in Oman, and as a result of reoccupation of these villages and the extensive cultivated lands, a careful systematic sampling technique must be considered as was done during the Wadi Andam Survey (see Chapter Four, Section Two).

To conclude our review of previous surveys, it is worth stating that, although there are problems with methodology, dating and pottery sequence, the results of these surveys are still useful and provide important insights into the settlement history. The importance of

these surveys is that they were the first to be carried out in the region. Therefore they recorded new sites and protected other sites, although many other sites were missed and not recorded. They are a good contribution to the general settlement history of the peninsula, and covered areas that were not subject to any previous investigation. The problem with almost all of them is that they have certain biases that mean that it is impossible to gain a reliable impression of the different levels of activity over time.

### 5.5.2- THE QUANTIFIED LEVEL OF ACTIVITY:

The above discussion has focused on describing the evidence by reviewing the previous surveys within the areas surrounding Wadi Andam. Here, an attempt will be made to quantify the evidence from all the surveys in order to see if any general pattern emerges. This will start by showing the general picture from all surveys, and will be followed by an analysis of settlements and tombs.

To begin with, Figure 35 and Table 39 show the total number of sites, by period, recorded by each project. It appears that the German Mission recorded the largest number of sites, followed by the Omani–German project. Moreover, the earliest evidence of sites recorded by previous surveys is dated to the Stone Age of which 30 sites were yielded by most of the surveys. Only the al-Hajar Project yielded no evidence from this period. Comparison with the evidence from the Wadi Andam Survey indicates that no sites of this period were recorded and that the oldest evidence dates back to the Hafit period. The Hafit period is also represented in all previous surveys, making a total of 103 sites of which the German Mission and Omani–German project yielded the largest number.

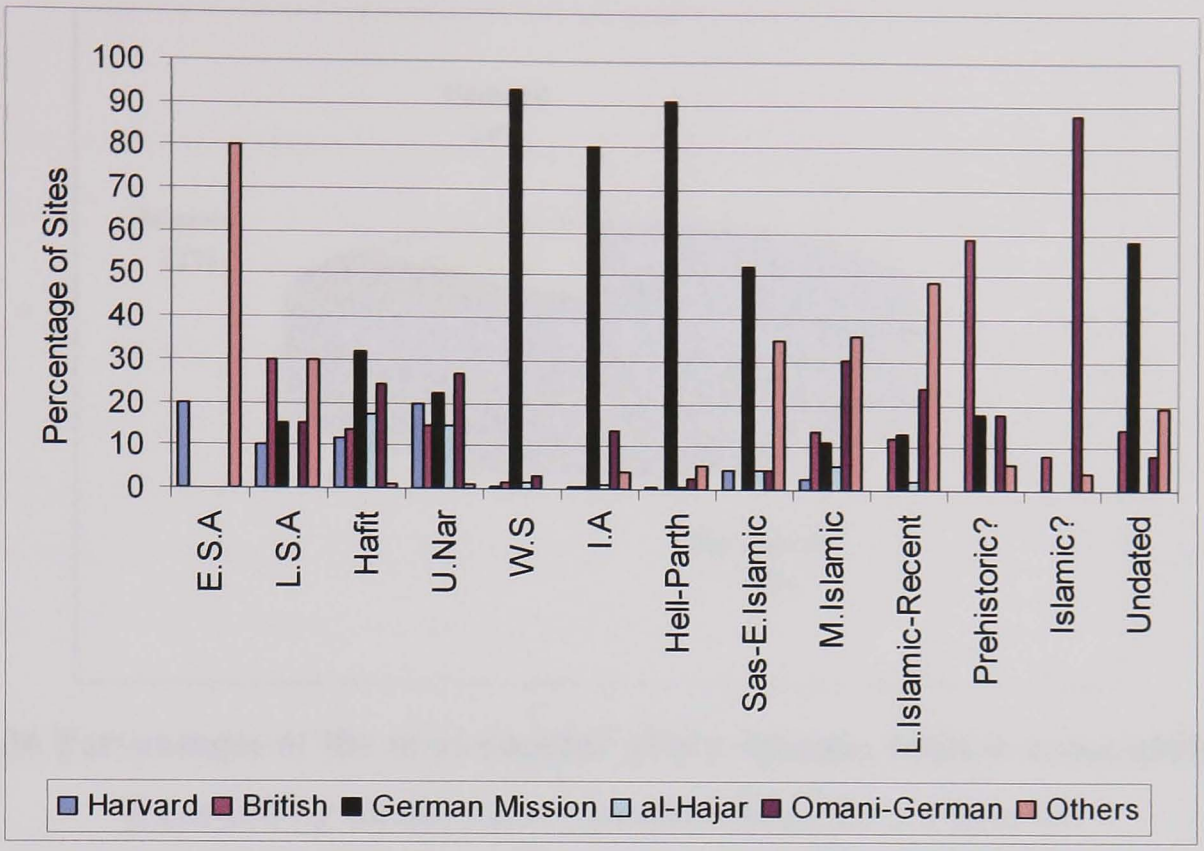



**Figure 35 Total number of sites recorded by each survey according to period (based on Table 39)**

| Period | Harvard | British | German Mission | Al-Hajar | Omani-German | Others | Total/ Period |
|---|---|---|---|---|---|---|---|
| E.S.A | 2 (20%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 8 (80%) | **10 (100%)** |
| L.S.A | 2 (10%) | 6 (30%) | 3 (15%) | 0 (0%) | 3 (15%) | 6 (30%) | **20 (100%)** |
| Hafit | 12 (11.7%) | 14 (13.6%) | 33 (32%) | 18 (17.5%) | 25 (24.3%) | 1 (1%) | **103 (100%)** |
| U.Nar | 21 (19.6%) | 16 (15%) | 24 (22.4%) | 16 (15%) | 29 (27.1%) | 1 (0.9%) | **107 (100%)** |
| W.S | 1 (0.7%) | 2 (1.5%) | 126 (93.3%) | 2 (1.5%) | 4 (3%) | 0 (0%) | **135 (100%)** |
| I.A | 2 (0.5%) | 3 (0.7%) | 326 (80.3%) | 4 (1%) | 55 (13.5%) | 16 (3.9%) | **406 (100%)** |
| Hell–Parth | 2 (0.7%) | 0 (0%) | 269 (90.9%) | 1 (0.3%) | 8 (2.7%) | 16 (5.4%) | **296 (100%)** |
| Sas–E.Islamic | 1 (4.3%) | 0 (0%) | 12 (52.2%) | 1 (4.3%) | 1 (4.3%) | 8 (34.8%) | **23 (100%)** |
| M.Islamic | 1 (2.8%) | 5 (13.9%) | 4 (11.1%) | 2 (5.6%) | 11 (30.6%) | 13 (36.1%) | **36 (100%)** |
| L.Islamic–Recent | 0 (0%) | 11 (12%) | 12 (13%) | 2 (2.2%) | 22 (23.9%) | 45 (48.9%) | **92 (100%)** |
| Prehistoric? | 0 (0%) | 10 (58.8%) | 3 (17.6%) | 0 (0%) | 3 (17.6%) | 1 (5.9%) | **17 (100%)** |
| Islamic? | 0 (0%) | 2 (8%) | 0 (0%) | 0 (0%) | 22 (88%) | 1 (4%) | **25 (100%)** |
| Undated | 0 (0%) | 29 (14.2%) | 119 (58.3%) | 0 (0%) | 17 (8.3%) | 39 (19.1%) | **204 (100%)** |
| **Total/Project** | **44** | **98** | **931** | **46** | **200** | **155** | **1,474** |

**Table 39 Total number and percentage of sites, by period, recorded by each project (% based on total numbers by period)**

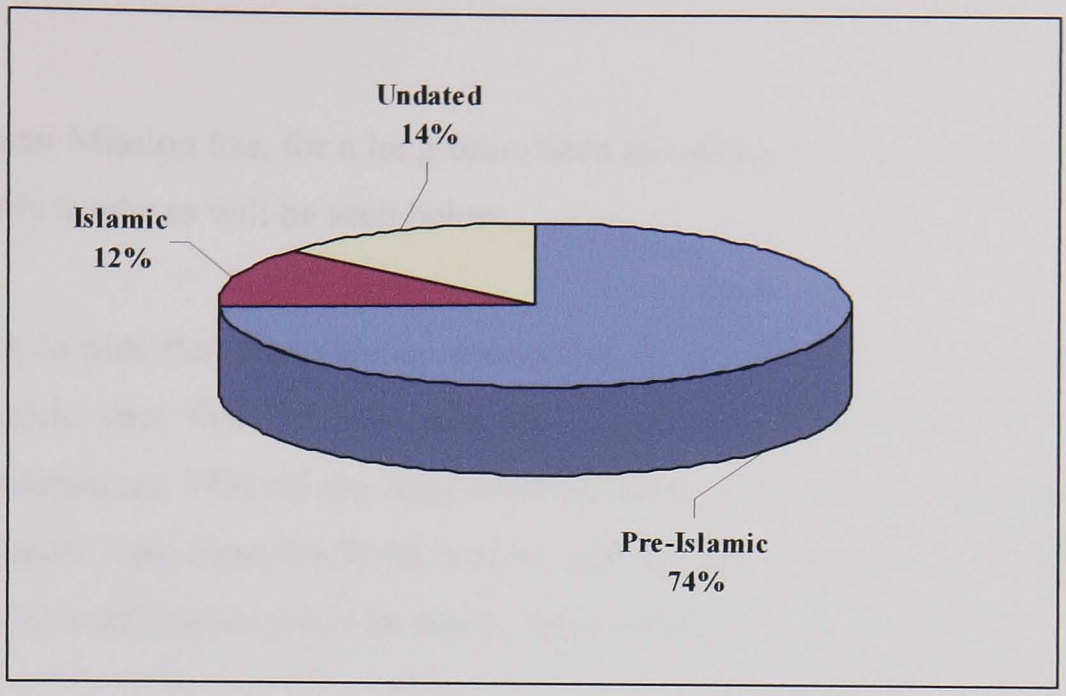



**Figure 36 Percentages of the total number of pre-Islamic, Islamic and undated sites recorded by all the survey projects (based on Table 40)**

| Period | Total Sites |
|---|---|
| Pre-Islamic | 1,094 |
| Islamic | 176 |
| Undated | 204 |
| **Total** | **1,474** |

**Table 40 Total number of pre-Islamic, Islamic and undated sites recorded by all the survey projects**

The evidence from the previous surveys indicates a considerable number of Umm an-Nar sites of which the Omani–German project yielded the largest number representing 27% of the total, followed by the German Mission (22%). In all, 135 sites of the Wadi Suq were recorded by these surveys, mainly by the German Mission in the Samad–Maysar area. This project recorded around 93% of the total Wadi Suq sites in which the majority are tombs (see below). Apart from this project, the other survey projects located very few sites of this period. It should, however, be indicated that many of the Wadi Suq tombs recorded by the German Mission yielded a variety of materials covering the Wadi Suq to Hellenistic–Parthian/Samad periods. This raises the question of the reliability of the chronology (see Chapter Three 3.6.3). The figures also indicate a large increase in the number of recorded sites from the Iron Age to the Parthian periods, which again were largely recorded by the German Mission. This large number of sites is related to the fact

that the German Mission has, for a long time, been recording and excavating sites of these periods, mainly tombs as will be seen below.

It is important to note that the evidence shows that all the previous surveys yielded larger more pre-Islamic sites than Islamic ones, as can be seen from Figure 36, where pre-Islamic sites represent 74% of the total recorded sites. The comparison shows that the number of Islamic sites from the Wadi Andam Survey, too, is larger than that for the pre-Islamic sites. This difference could be due to three reasons:

1- The fact that almost all the surveys, with the exception of the Omani–German project, concentrated on locating specific types of site of specific period(s), which has created biases toward these specific sites, and, therefore, increases the number of sites of that period(s).
2- The majority of these surveys did not attempt to survey the inhabited and cultivated wadi villages, where most of the remains to be found are most likely to be of the Islamic periods. Such types of villages were thoroughly investigated during the Wadi Andam Survey.
3- The methodology applied by the Wadi Andam Survey is different to those applied by previous surveys. None of these surveys used pottery collection areas within wadi villages, as was done by the Wadi Andam Survey. These pottery collection areas yielded larger numbers of Islamic sherds than pre-Islamic.

Figure 37 shows the total number of settlement and tomb sites by period from all the previous surveys[46]. It indicates that the evidence from the Stone Age comes only from occupational sites of possible settlements. The graph also demonstrates that the Hafit period and periods from the Wadi Suq to Hellenistic–Parthian are most commonly represented by sites that yielded tombs. The evidence is similar to that from the Wadi Andam Survey, which is mostly represented by tombs. However, the number of Wadi Suq tombs recorded by the previous surveys is much larger than that from the Wadi Andam Survey. All in all, around 93% of Wadi Suq tombs were recorded by the German Mission alone at Samad–Maysar area. Again, as indicated earlier, this is because the aim of this

[46] For the relationship between settlements and tombs by period, see Chapter Six 6.5.4

project was excavating the tombs located in this area, mostly those dating from the Wadi Suq to the Hellenistic–Parthian/Samad periods. Additionally, little Wadi Suq settlement evidence was located by these surveys as was the case during the Wadi Andam Survey (for the dating problem of these tombs see 5.5.1 above).

The evidence for the Iron Age to Parthian periods is almost the same as that from the Wadi Suq period in which a large number of sites, mainly tombs, were recorded from previous surveys. Again, the German Mission yielded the largest number of these sites. The comparison with the Wadi Andam Survey may be slightly complicated as the number of Early and Late Iron Age sites from previous surveys is unclear for the reasons indicated earlier. However, keeping in mind the large number of sites recorded by the German Mission, which is dominated by tombs from the Late Iron Age and Hellenistic–Parthian, it is possible to make a rough comparison with the Late Iron Age/Samad evidence from the Wadi Andam Survey. The evidence from Wadi Andam suggests that this period was dominated by settlements, while evidence from the previous surveys is dominated by tombs, suggesting important differences. Lastly, the evidence for the Sasanian–Early Islamic to Recent times is similar to that produced by the Wadi Andam Survey in that it is dominated by settlements.

Figure 37 does not show clearly the settlement and tomb evidence from each survey, which is presented in Figures 38 and 39. Figure 38 shows the total number of settlement sites by period recorded by each survey project. The figures presented in Figure 38 clearly show the bias, indicated earlier, towards recording settlement sites of a specific period. By comparison, Figure 39 shows the total number of sites that yielded tombs by period and survey project. This clearly shows the bias towards recording tombs from specific periods.

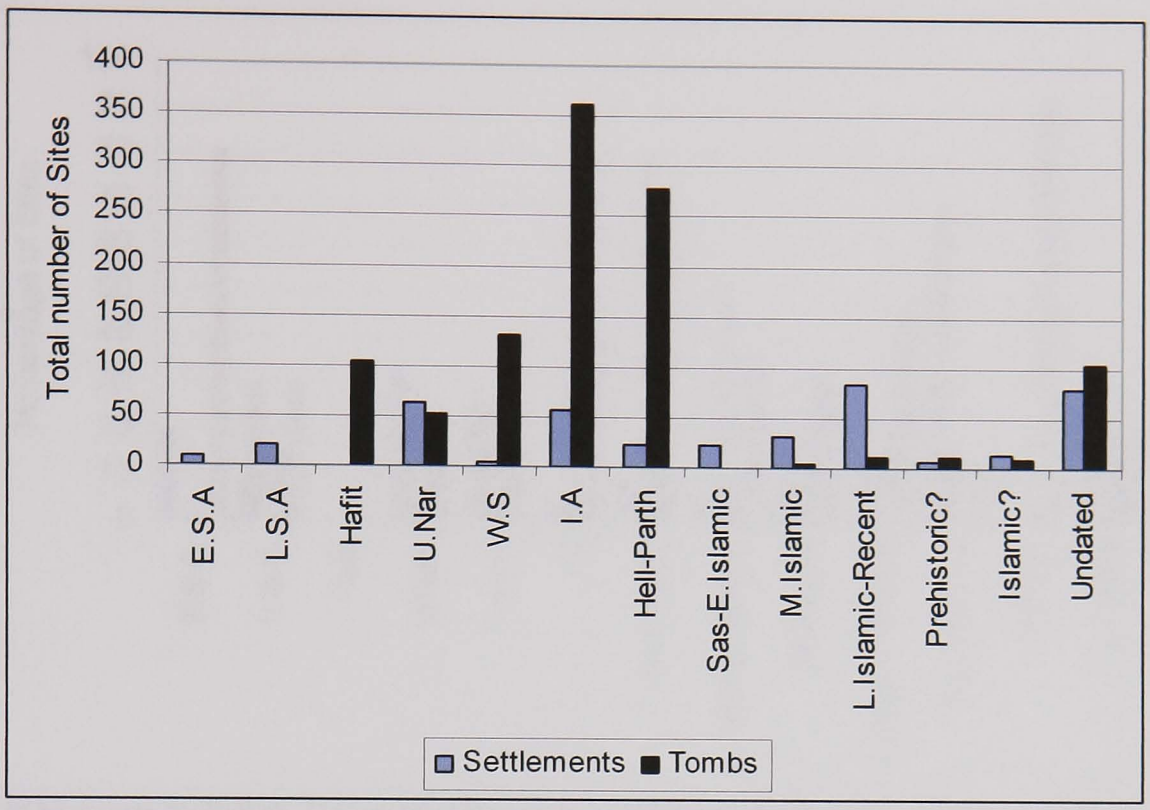



**Figure 37 Total recorded number of settlement and tomb sites by period from all the previous surveys(based on Table 41)**

| Period | Settlements | Tombs | Total/Period |
|---|---|---|---|
| E.S.A | 10 (100%) | 0 (0%) | **10 (100%)** |
| L.S.A | 20 (100%) | 0 (0%) | **20 (100%)** |
| Hafit | 0 (0%) | 103 (100%) | **103 (100%)** |
| U.Nar | 63 (54%) | 53 (46%) | **116 (100%)** |
| W.S | 4 (3%) | 132 (97%) | **136 (100%)** |
| I.A | 57 (14%) | 361 (86%) | **418 (100%)** |
| Hell–Parth | 23 (8%) | 279 (92%) | **302 (100%)** |
| Sas–E.Islamic | 23 (96%) | 1 (4%) | **24 (100%)** |
| M.Islamic | 31 (86%) | 5 (14%) | **36 (100%)** |
| L.Islamic–Recent | 84 (88%) | 11 (12%) | **95 (100%)** |
| Prehistoric? | 7 (39%) | 11 (61%) | **18 (100%)** |
| Islamic? | 14 (58%) | 10 (42%) | **24 (100%)** |
| Undated | 79 (43%) | 103 (57%) | **182 (100%)** |
| **Total/ Project** | **415** | **1,069** | **1,484** |

**Table 41 Total recorded number of settlement and tomb sites by period from all the previous surveys (% based on the total number by period)**

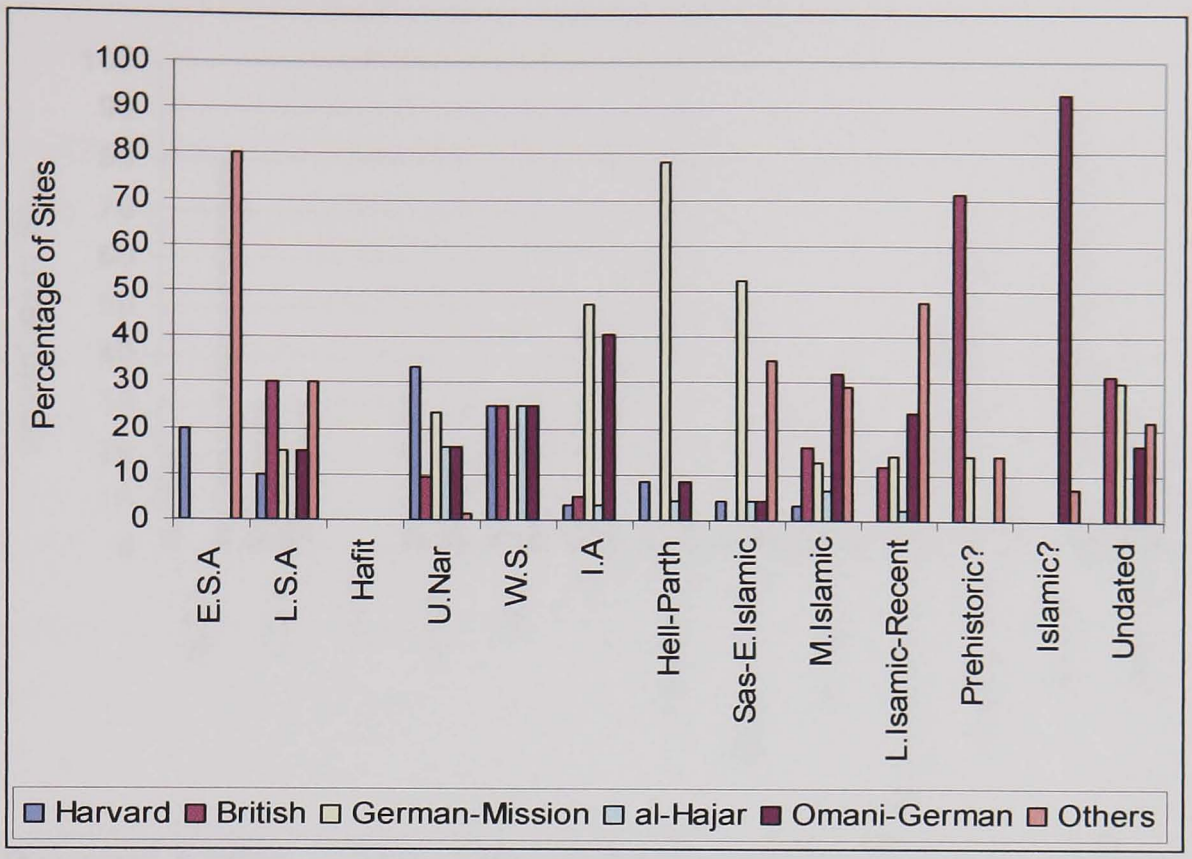



**Figure 38 Percentages of the total number of settlement sites by period recorded by each main project (based on Table 42)**

| Period | Harvard | British | German-Mission | Al-Hajar | Omani-German | Others | Total /Period |
|---|---|---|---|---|---|---|---|
| E.S.A | 2 | 0 | 0 | 0 | 0 | 8 | **10** |
| L.S.A | 2 | 6 | 3 | 0 | 3 | 6 | **20** |
| Hafit | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| U.Nar | 21 | 6 | 15 | 10 | 10 | 1 | **63** |
| W.S. | 1 | 1 | 0 | 1 | 1 | 0 | **4** |
| I.A | 2 | 3 | 27 | 2 | 23 | 0 | **57** |
| Hell–Parth | 2 | 0 | 18 | 1 | 2 | 0 | **23** |
| Sas–E.Islamic | 1 | 0 | 12 | 1 | 1 | 8 | **23** |
| M.Islamic | 1 | 5 | 4 | 2 | 10 | 9 | **31** |
| L.Isamic–Recent | 0 | 10 | 12 | 2 | 20 | 40 | **84** |
| Prehistoric? | 0 | 5 | 1 | 0 | 0 | 1 | **7** |
| Islamic? | 0 | 0 | 0 | 0 | 13 | 1 | **14** |
| Undated | 0 | 25 | 24 | 0 | 13 | 17 | **79** |
| **Total/Team** | **32** | **61** | **116** | **19** | **96** | **91** | **415** |

**Table 42 Total number of settlement sites by period recorded by each main project**

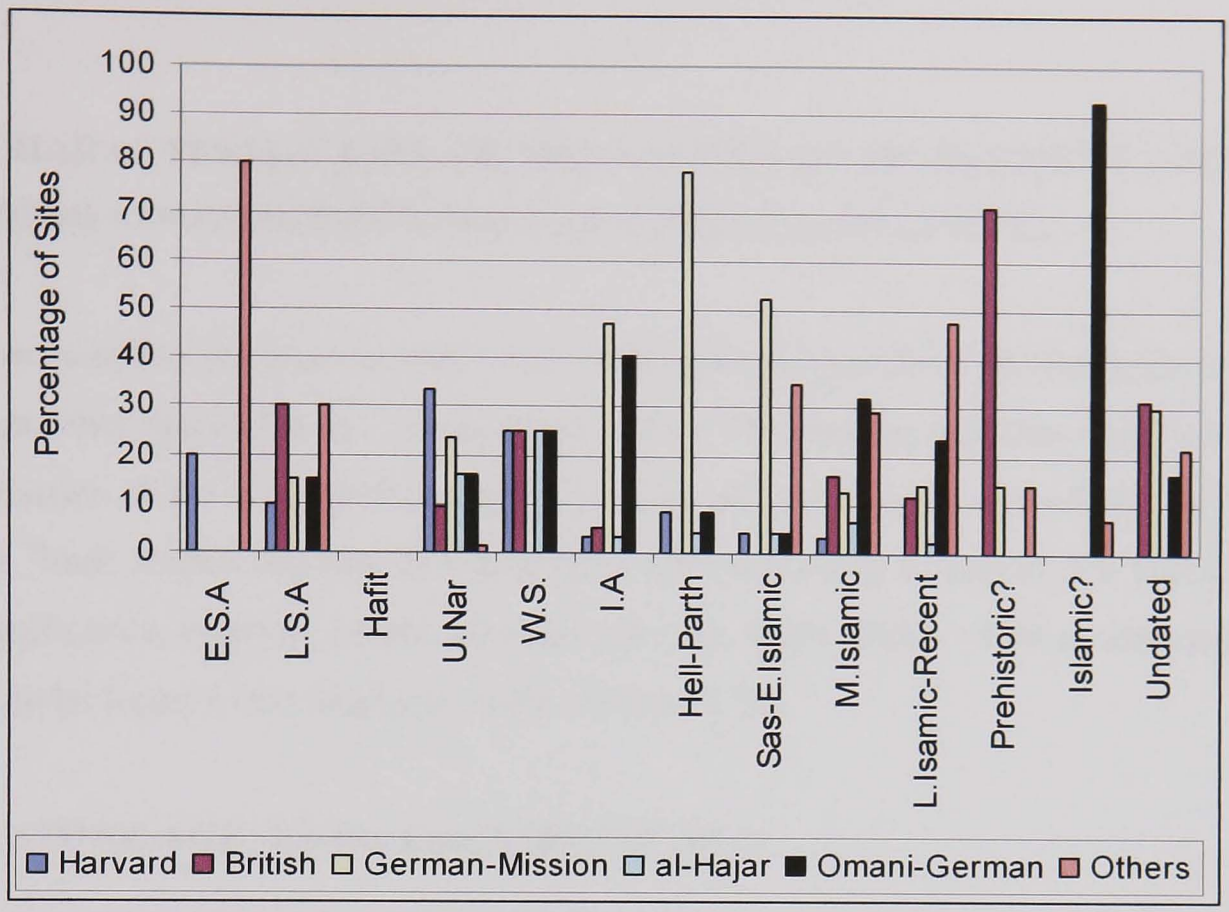



**Figure 39 Percentages of the total number of tomb sites by period recorded by each main project (% based on the total number by period) (based on Table 43)**

| Period | Harvard | British | German-Mission | al-Hajar | Omani-German | Others | Total /Period |
|---|---|---|---|---|---|---|---|
| E.S.A | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| L.S.A | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Hafit | 12 | 14 | 33 | 18 | 25 | 1 | **103** |
| U.Nar | 2 | 11 | 11 | 9 | 19 | 1 | **53** |
| W.S. | 0 | 2 | 126 | 1 | 3 | 0 | **132** |
| I.A | 0 | 2 | 304 | 4 | 35 | 16 | **361** |
| Hell–Parth | 0 | 0 | 255 | 0 | 8 | 16 | **279** |
| Sas–E.Islamic | 0 | 0 | 1 | 0 | 0 | 0 | **1** |
| M.Islamic | 0 | 0 | 0 | 0 | 1 | 4 | **5** |
| L.Isamic–Recent | 0 | 2 | 0 | 0 | 4 | 5 | **11** |
| Prehistoric? | 0 | 6 | 2 | 0 | 3 | 0 | **11** |
| Islamic? | 0 | 1 | 0 | 0 | 9 | 0 | **10** |
| Undated | 0 | 7 | 95 | 0 | 0 | 1 | **103** |
| **Total/Team** | **14** | **45** | **827** | **32** | **107** | **44** | **1,069** |

**Table 43 Total number of tomb sites by period recorded by each main project**

## 5.5.3- CHARACTERISATIONS OF THE NATURE OF SETTLEMENT - PERIOD BY PERIOD COMPARISON WITH THE WADI ANDAM SURVEY:

The above sections included a description of the sites defined from the literature by each survey and their quantification according to period. This section will describe the general characteristics of the settlement pattern yielded by all the surveys, and will be compared with the Wadi Andam Survey. It will present sites according to period and will discuss their significance, location, layout, size and type etc. More details of these sites and their names can be found in the database on the attached CD.

### 5.5.3.1- STONE AGE (Earlier than 3,500/3,400 BC):

The total number of Early and Late Stone Age settlement sites is 30 all of which yielded lithic material, but few of which also yielded stone structures, such as those found by the British Expedition at Bahla and the Omani–German Project at Ibra. These sites consist of lithic material associated with large boulder walls and structures of the Late Stone Age. All Stone Age sites were found to be situated on small hills, pebbly terraces, wadi edges or on flat terrain. No comparison with the Wadi Andam Survey can be made as no remains of this time were found. Although a few flint pieces were picked up from two or three sites during the survey, it was difficult to be certain that they belonged to the Stone Age. This is because they are only isolated samples, few in number, and their context is problematic (see Chapter Four, Section Three 4.3.2.1). The lack of evidence of this period from the Wadi Andam Survey might be related to erosion in the wadi.

### 5.5.3.2- HAFIT PERIOD (ca. 3,500/3,400–2,500 BC):

Almost all the reviewed surveys yielded Hafit and/or Beehive tombs and no occupational remains. It appears that both the Wadi Andam Survey and the previous surveys show a similar pattern during this time. The cairns show similar characteristics of location and shape. The location of the Hafit cairns is always away from wadi villages with the exception of few examples. They are found on both higher and low elevations on the hills and their ridges, slopes and foot of slopes as well as on the flat wadi terraces and on the plain. The Beehives are on hills/outcrops and their slopes parallel with the lower part of

the modern wadi villages or just beyond their lower boundary. Both the Wadi Andam Survey and the previous surveys yielded no evidence of settlements associated with these two types of tombs. However, the Wadi Andam Survey yielded some piled stones or stone alignments around these tombs, which it has been suggested, might be possible structures (see Chapter Four, Section Three 4.3.2.1).

**5.5.3.3- UMM AN-NAR PERIOD (ca. 2,500–2,000 BC):**

This period is recorded by almost all the surveys, mostly by the Omani–German project, the German Mission and the Harvard. They yielded large and small settlements of different functions such as fortifications, copper production/smelting sites or domestic/civic structures. The size of some of these occupational buildings is large, mainly the Umm an-Nar large buildings or towers, which are often associated with or surrounded by other domestic or workshop (e.g. copper production or smelting) stone structures of different sizes. The settlement remains of Umm an-Nar from all the previous surveys are located on top of rocky hills/outcrops or on their slopes and foot of slopes as well as on the wadi edges or terraces. Some of these settlements are associated with Umm an-Nar tombs such as those from Wadi Ibra 2 and Maysar 1 (Samad 50) by the Harvard, and Mullaq by the German Mission. By contrast, the Umm an-Nar tombs are situated on low hillocks, their slopes, the foot of slopes, and on the wadi edges or terraces.

Comparison with the Wadi Andam Survey shows similarities and differences with previous surveys. Both yielded a considerable amount of Umm an-Nar evidence. It should, however, be noted that none of the previous surveys made a quantified study based on pottery collection areas (PCAs) such as that carried out during the Wadi Andam Survey. Thus, no comparison can be made against this type of approach (see Chapters Four, Section Two and Seven, 7.1.3). Both the Wadi Andam Survey and the previous surveys yielded both large and small sites of which the larger sites are always fewer in number than the smaller ones. Additionally, none of the previous surveys yielded a site similar in layout to that found by the Wadi Andam Survey at al-Ghoryeen CS.2.52. Although al-Hajar and Harvard yielded large Umm an-Nar buildings with, possibly, other associated domestic buildings around them, none of them yielded a site with a large building (tower) in the centre surrounded by burial ground(s) where some parts of the site appear to have

been reserved for the dead and a large number of stone foundations of houses. The al-Hajar 'oasis plan' at Bisya (Figure 85) includes large buildings without any associated Umm an-Nar burial ground. However, the al-Hajar members associated these buildings with the Beehive tombs located on the surrounding outcrops, which probably belong to the Hafit period. The only site that might show a similar, though smaller plan is Bahla (BB19) (Figure 74) recorded by the Harvard survey. This site yielded a large building surrounded on the western side by house remains and from the north and south by a number of stone cairns. It is unclear whether or not these cairns are Hafit or Umm an-Nar tombs; however, as they are located on hills they are probably Hafit cairns.

Unlike the previous surveys, the Wadi Andam Survey did not yield any Umm an-Nar settlement with copper production/smelting remains. By contrast, a total of around 13 copper production/smelting sites were recorded by the other surveys. However, future excavations on some sites recorded by the Wadi Andam Survey might reveal such sites. Regarding the location of the Umm an-Nar settlements, it appears that large and small settlements found by the Wadi Andam Survey are more often located on the wadi terraces along its banks, with some exceptions on the hills and their slopes (e.g. CS.5.2, CS.9.2, CS.3.5, CS.2.55, CS.2.53 and CS.2.41). The larger settlements are always within or close to the modern wadi villages while the smaller ones are largely away from these villages. In contrast, the Umm an-Nar settlements recorded by the previous surveys are located on top of rocky hills/outcrops or at their slopes and foot of slopes (e.g. at Izki by the Omani–German Project, and Bisya by the al-Hajar) as well as on the wadi edges or terraces (e.g. Samad–Maysar area by the German Mission, and Ibra by the Omani–German Project). A possible resemblance between these sites and the Wadi Andam Survey sites of this period might be the location of some of the large buildings (towers) that are located on a raised mound or low outcrop.

### 5.5.3.4- WADI SUQ PERIOD (ca. 2,000–1,300 BC):

The previous surveys yielded only a few sites that showed possible evidence of Wadi Suq settlement remains. By contrast, Wadi Suq tombs were recorded mainly by the German Mission at Samad. Tomb sites represent around 97% of the total number of Wadi Suq sites

(Figure 37 and Table 41). The majority of them are located on the wadi terraces or plains with some exceptions on the hills (only one re-used Hafit tomb at al-Hamra).

The evidence of the Wadi Suq period from both the Wadi Andam Survey and the previous surveys is based largely on tombs, with very few possible occupational remains. This lack of settlement evidence and the occurrence of large numbers of tombs complicates our understanding of the levels of activity during this period. As indicated earlier, although there is a general lack of settlement evidence, there seems to be some evidence for the use of tombs, mostly located at or around the modern wadi villages. It has been suggested during the discussion of the Wadi Suq evidence from the Wadi Andam Survey that there are several hypotheses for the absence of Wadi Suq settlements (see Chapters Four, Section Three 4.3.4.3). Briefly speaking, the remains of this period could be of small sporadic perishable structures of a small nomadic or semi-nomadic population. But the evidence (tombs and pottery) clearly indicates that there was some continuity during this time but with a different intensity and nature (see Chapter Seven 7.1.4).

**5.5.3.5- IRON AGE (ca. 1,300–300 BC):**

As indicated earlier, apart from the Omani–German work and, to some extent, the German Mission, hardly any of the surveys clearly distinguished between the Early and Late Iron Age. Thus, these periods were combined under the Iron Age, which has also made the comparison complicated and the total number of sites from each of these two periods unclear. However, I shall indicate the Iron Age sites recorded by the different projects and their characteristics in general, and whenever possible, a distinction between the Early and Late Iron Age will be made, particularly with sites from the Omani–German and German projects.

Based on the available evidence from the sites recorded by the Omani–German Project at al-Hamara, Ibra, Izki and Nizwa, and the German Mission at Lizq and Samad, it appears that the Early Iron Age is well represented by settlements and tombs. Settlements are always small in size and usually consist of a few stone foundations of houses ranging between one and a maximum of six houses. They appear to occupy the surrounding flat low hills: al-Hamra, Ibra and Nizwa by the Omani–German project, and Lizq and Samad–

Maysar area by the German Mission. It has been mentioned earlier in this chapter and Chapter Three (3.6.1) that the term 'Lizq Period' was adopted by the German Mission project for the Early Iron Age pottery assemblage found at Lizq fortress that is located on a rocky hill and its edges and slopes (Weisgerber 1981: 226–231) (Plates 228–229). Moreover, other Early Iron Age settlements are situated on the wadi terraces such as the mudbrick settlement remains found by the German Mission at Maysar. Moreover, several of the Early Iron Age settlements re-used the previous Umm an-Nar structures such as the large monumental structures recorded by the Omani–German Project at Nizwa as well as the small settlements at Izki and Ibra. However, new small settlements were also established, probably campsites and/or farmsteads, such as those from al-Hamra and Nizwa by the Omani–German Project.

Tombs were also found in several areas and in different locations. They are located on low hillocks, their edges and feet as well as on flat ridges and small wadi terraces. Some of these were constructed during the Early Iron Age and several of them re-used the older Hafit tombs (Izki and Jebel Akhdar at Nizwa) and Umm an-Nar tombs (Ibra). The Ibra area yielded a settlement with structures and tombs both of which re-used the stones of the nearby older Umm an-Nar structures and tombs.

Comparison between the Wadi Andam Survey and the previous surveys shows that the size of the recorded settlements is almost the same in which a few small, possibly sporadic, structures were found within the settlements associated with Early Iron Age pottery sherds. The settlements' location, however, shows a slight difference: the majority of the Early Iron Age settlements from the previous surveys appear to occupy low hills and their slopes, with a few examples on the wadi terraces. By contrast, the majority of the Wadi Andam settlements are located on the wadi terraces and their edges, with few exceptions (e.g. CS.2.60, CS.2.64 and CS.9.2) in other areas like hills and their slopes. This pattern is similar to all periods within the Wadi Andam Survey and might be due to the methodology used by the Wadi Andam Survey (see Chapter Four, Section One). The comparison also shows that the Wadi Andam Survey yielded a large number of tombs on the hills, and their slopes, mostly re-used Hafit tombs (see below) such as CS.3.8, CS.4.4, CS.5.10 and CS.5.13 to CS.5.15. The evidence from this survey suggests that the areas

around wadi villages are more likely to be inhabited during the Early Iron Age than in the wadi villages themselves, which is a similar pattern to that found by the previous surveys.

The practice of re-using older settlements and tombs during the Early Iron Age noted by the previous surveys is also attested during the Wadi Andam Survey where the majority of the Early Iron Age settlements show evidence of earlier periods. These include, for instance, the Umm an-Nar settlements (e.g. CS.2.52, CS.2.67, CS.68 and CS.69), which could be prime locations for occupation due perhaps to some topographic factors (for more details on these prime locations see Chapter Four, Section Three 4.3.3.3). It is possible that they might have been re-used by the inhabitants of the Early Iron Age for only a short time and occasionally. Such a practice was also observed in the Early Iron Age settlements at Izki, Ibra and Nizwa. However, the results of the Wadi Andam Survey and the previous surveys also show that new settlements were also established during this period. By contrast, several possibly Hafit cairns (see the problem of dating these cairns at Chapter Three, Section 3.2) could have been re-used by the inhabitants of the Early Iron Age as they yielded many finds of this period as has been evidenced by the Wadi Andam Survey and by the previous surveys in Izki and Nizwa. This practice has also been attested by the re-use of the older Umm an-Nar tombs that was observed by the Omani–German Project at Ibra. It might also be true for the Umm an-Nar tombs located by the Wadi Andam Survey at site CS.2.52 where a large number of Iron Age tombs was built re-using the stones of the Umm an-Nar tombs. Few Early Iron Age sherds were collected from the surface of these tombs.

Regarding the Late Iron Age, it appears that this period, and the Hellenistic–Parthian period discussed below, is more represented by the German Expedition, as its aim was mainly concentrating on the period between the Late Iron Age and the 'Samad period[47]. The majority of tombs and settlements excavated by this project are located in the Samad/Maysar area where they can be found on the flat wadi plain and close to the modern villages. Several of these tombs yielded evidence of older periods such as the Wadi Suq, indicating that they might be re-used tombs. Other tombs of this period were also recorded by the Omani–German Project in which almost all the areas surveyed

[47] The length of this period has been criticized by many people (see Chapter Three 3.6.3).

yielded evidence of Late Iron Age tombs in different locations. They are found on low elevations, on flat terrain and wadi edges, and show different types such as the standard Late Iron Age–Samad tombs with underground cists and large rectangular structures with a double-face foundation wall of large undressed rocks of the so-called 'Izki-type'. At al-Hamra the survey yielded one cairn and a few subterranean tombs, while at Jebel Akhdar the Late Iron Age is represented by the practice of secondary burial within one of the disturbed Hafit-tombs above Saiq.

The evidence for settlements demonstrates that few settlement remains, compared with tombs, were located by these previous surveys. Those that were found are almost small in size but varied in function. Late Iron Age–Samad period settlements and fortified sites were located by the German Mission at different sites at Wadi Samad, Wadi Andam, Izki and al-Mudhaybi. They appear to be small with fortifications and/or copper production sites and are situated on the hills and their slopes and on the wadi terraces. A few other settlements of this period were also located by the Omani–German Project at Ibra and Izki and possibly Nizwa. Each of these areas yielded only one settlement: on a high hill along a small ridge at Ibra and on the flat area at Izki.

It appears, thus, that Late Iron Age settlement evidence from each of the previous surveys is thinly represented, and most evidence is represented by tombs. Settlements are few and small but show variety in their function such as fortifications and copper production/smelting sites. The layout of these Late Iron Age settlements recorded by the previous surveys is not open to a meaningful discussion because the settlements are small and there is not enough information about them in the published reports (e.g. no plans or detailed description of their structures). What is more, although some are located close to villages, the smaller sites are located on both high and low elevations. Tombs, by contrast, are located on low elevations on wadi edges and terraces and often close to modern wadi villages. They also offer proof of the practice of re-using the older period tombs such as those excavated by the German Mission at Samad, and by the Omani–German project at Jebel Akhdar.

### 5.5.3.6- HELLENISTIC–PARTHIAN PERIODS (ca.300 BC–200 AD):

This period, like the Late Iron Age, is more represented by the German Mission. Almost all the above mentioned Late Iron Age sites recorded by this project yielded evidence of the Hellenistic–Parthian period, which is, again, largely represented by tombs. Other tombs of this time were also located by the Omani–German project at al-Hamra, Izki and Nizwa. These tombs are located on the flat wadi terraces and on the plain close to the modern villages in which they are sometimes intermingled other later cemeteries, namely Islamic, as was noted at Izki. Some of these tombs re-used the older Wadi Suq and Iron Age tombs as was evidenced by the German Mission excavations at Samad–Maysar area. By contrast, few settlements of this period were located. They appear to continue using the earlier Late Iron Age settlements and fortifications in the same locations. Thus, settlements appear to be small with fortifications and/or copper production sites, and are situated on hills and/or their slopes as well as on the wadi terraces.

It should be mentioned that the Wadi Andam Survey yielded a large amount of Late Iron/Samad (Hellenistic–Parthian) evidence from both settlements and tombs. By contrast, settlement evidence from each of the previous surveys is thinly represented. Unlike the Wadi Andam Survey that yielded both large and small settlements of this period, the previous surveys yielded few small settlements. The layout of the settlements recorded by the previous surveys cannot be discussed and compared with those from the Wadi Andam Survey as they are too small and there is not enough information about them in the literature. The location of the large settlements from the Wadi Andam Survey is always concentrated within or close to modern villages. By contrast, although some are located close to villages, the majority of the smaller sites are located away from these modern villages. As the previous surveys did not yield large settlements, the comparison can only be made with the few smaller settlements that were located by the previous surveys on both high and low elevations (on hills and their slopes and on the wadi terraces), which is a similar pattern to that of the Wadi Andam Survey.

Both the Wadi Andam and previous surveys yielded a large amount of evidence of Hellenistic–Parthian tombs, particularly those excavated by the German Mission at Samad–Maysar area. Their location is almost the same. They are located on low elevations

on wadi edges and terraces and often close to modern wadi villages. Tombs recorded by the previous surveys show the practice of re-using older period tombs, such as those excavated by the German Mission at Samad which yielded finds ranging in date from the Wadi Suq to the Hellenistic–Parthian periods. This practice was also attested at Jebel Akhdar in which one of the disturbed Hafit-tombs above Saiq was re-used during the Hellenistic Parthian period. This practice might also be observed at Wadi Andam within some of the recorded Hafit cairns at site CS.2.69 that yielded, besides Early Iron Age material, several Late Iron Age/Samad pottery sherds. This practice may also be seen at site CS.2.52 that included a large number of Late Iron Age/Samad tombs, which were constructed on Umm an-Nar tombs, probably re-using some of their stones.

### 5.5.3.7- SASANIAN–EARLY ISLAMIC PERIODS (200–900/1,000 AD):

The review of the previous surveys indicates that the Sasanian–Early Islamic period is only represented by a few scattered pottery sherds. The Harvard Survey yielded only one site with settlement remains at Bahla (BB15) which is a small tell built on a low rock outcrop and possibly contains Early Islamic sherds. Another possible settlement of this period was recorded by the Omani–German Project at Ibra above the Wadi Garbi. However, there are only a few sites recorded by other surveys dated to this period such as the four settlement and fortified sites and one mining site in the al-Mudhaybi area. These are small sites that are located either on the hills and/or their slopes or on the flat wadi terraces. To sum up, as was the case during the Wadi Andam Survey, the evidence from the previous surveys of the Sasanian–Early Islamic periods is very limited. There is also the difficulty of using tombs as evidence of the level of activity due to the fact that it is not possible to identify early Islamic tombs as distinct from later Islamic tombs as they show the same characteristics and features.

It is also important to state that the remains of this period were not well-understood by the people who conducted these surveys at that time. Moreover, the lack of evidence from this period might indicate an archaeological reality in which it is possible that there was a decline in the level of activity during this period. Kennet (2007: 86) indicated that there was a decline in the number and size of settlements and tombs, which might be due to a decline in population size at that time (see Chapters Three 3.7 & Seven 7.1.7).

### 5.5.3.8- MIDDLE ISLAMIC (900/1,000–1,300 AD):

The Omani–German Project is the only survey that has yielded coherent evidence for the Islamic periods, including the Middle Islamic. All the areas surveyed by this project have yielded evidence of this period, mainly within the modern wadi villages and around them. The evidence from al-Hamra shows that there was a small increase in settlement activity during this period. Several sites yielded underglazed sgraffiato sherds, and two main settlements were located on hills and their slopes. The survey at Ibra also demonstrates that, during this time, there was a shift in the settlement to the oasis areas where the modern inhabitants lived. These sites are always within or close to wadi villages, and in several cases they include fortifications such as watchtowers. At Izki, the Middle Islamic period is represented by watchtowers, house ruins, walls and cemeteries as well as the main oasis. The survey at Jebel Akhdar yielded the remains of a possible campsite, while at Nizwa there is considerable evidence, including settlements and a potter's workshop. The evidence from all these areas, apart from Jebel Akhdar, show that there was an increase in settlement activity during the Middle Islamic period on the hills and their slopes as well as within and close to wadi villages. Several Islamic cemeteries were located during the surveys but it was difficult to distinguish between the various Islamic periods.

The Middle Islamic period is also represented at sites recorded by other projects such as those found by the Harvard survey including that at Bahla BB15 where a small tell was built on a low rock outcrop with occupational evidence from the $13^{th}$–$14^{th}$ centuries AD. The British Expedition also yielded five settlement and tombs sites at al-Qabil (Niba' 1 and 2), al-Hamra (Husn Khor Site 31) and Nizwa (Salut, Site 38). All these settlements are located on hills and/or their slopes. Furthermore, the al-Hajar Project yielded two possible sites from Bahla, while the German Mission recorded four copper mine sites at Khadra Bani Daffa', Maysar M16 and M49 and Washihi. There are other sites recorded by different other projects in several areas but not enough information about them is available. It is important to stress the fact that several of these sites yielded cemeteries but it is impossible to attribute them to a particular Islamic period.

To sum up, the evidence from the previous surveys indicates a slight increase in settlement activity in this period, in which older settlements were reoccupied and new small settlements were established on the low hills and their slopes in addition to the larger ones on the wadi terraces and within the wadi villages. This pattern is the same as that yielded by the Wadi Andam Survey.

### 5.5.3.9- LATE ISLAMIC–RECENT TIMES (1,300 AD onwards):

Late Islamic period sites are more represented by the Omani–German Project in which all the surveyed areas yielded a lot of evidence. The evidence from al-Hamra shows that this region witnessed a dramatic change in the settlement pattern. There appears to have been a large increase in wadi villages, mainly within al-Hamra village. Additionally, the evidence from Ibra shows that there was a shift in settlement to the areas of the current oasis, and sites are always associated with watchtowers, agricultural installations and house ruins. The evidence from Izki indicates that this period is represented by watchtowers, house ruins, walls and cemeteries as well as the main oasis. Lastly, this period at Nizwa is represented by the remains of a possible campsite with an Islamic cemetery at Jebel Akhdar and several settlements within the Nizwa area.

The Late Islamic period is also well represented by the British Expedition survey that recorded eleven sites. One settlement, possibly two, was found at al-Mudhaybi, which yielded occupational remains associated with an Islamic cemetery. There are also five sites at Nizwa, which are all settlements with and without cemeteries, and there are walled structures at Firq, Rawdah and al-Jinah. Finally, there are three settlements and two cemeteries located at Izki, as well as one settlement at al-Qabil (An Niba' 2). The settlements located by this project appear to be small and are located on hills, low slopes and flat wadi terraces. Late Islamic sites were also recorded by the German Mission at al-Mudhaybi of which three are settlements, including one copper mine site, and two abandoned villages as well as three fortifications and four copper mining/smelting sites. The al-Hajar Project yielded only two settlements of this period at Bahla. Lastly, other sites of different types were recorded by other projects in areas like al-Mudayrib, Nizwa and Bahla. Several of these sites continued to be used until recent times and some new mudbrick quarters were established many of which were inhabited until the late 1980s.

To conclude, the evidence from the previous surveys indicates a large increase in settlement activity during the Late Islamic to Recent times in which new settlements were established and previous settlements were reoccupied and many enlarged. Several of the currently inhabited wadi villages were established in earlier periods, perhaps as early as the Umm an-Nar period, and were then abandoned and reoccupied repeatedly. These settlements are associated with extensive use of the *falaj* irrigation system as well as fortifications. This evidence from the previous surveys is similar to that from the Wadi Andam Survey in which almost all Late Islamic sites were established during pre-Islamic times, possibly as early as the 3rd millennium BC, and continued to be used on and off until Late Islamic–Recent times.

In summary, this chapter has attempted to evaluate and review the literature from previous fieldwork carried out within the defined local area around Wadi Andam. None of the reviewed surveys has formally attempted to quantify settlement, and all of them present problems for such an approach. Thus, the aim of reviewing the literature was partly to provide a wider framework and comparative material for the Wadi Andam Survey. An attempt has been made to evaluate the evidence recorded by previous surveys, and to review their methodologies. It has clearly shown that the results of these surveys have bias towards specific periods or type of sites. This bias has complicated quantification and comparison of the levels of activity. It shows the need for a systematic methodology such as that used by the Wadi Andam Survey.

# CHAPTER SIX:

# QUANTIFIED REGIONAL AND SUB-REGIONAL ACTIVITY

# CHAPTER SIX: QUANTIFIED REGIONAL AND SUB-REGIONAL ACTIVITY

## 6.1- AIMS OF ANALYSIS:

As has been indicated in the introduction, the aim of this research is to collect data for a quantified analysis in order to define different levels of activity through time. Thus, one of the research aims was to create a database of sites (later referred to as the 'regional database') from the published literature of research carried out in the northern Oman Peninsula (Levels 1–2: see Chapter Four, Section One 4.1.2.1.1 and 4.1.2.1.2). The aim of reviewing the literature on such a broad scale is to provide a wider context for the Wadi Andam Survey, and to provide a comparative framework for the material collected during this survey.

The 'regional database' created included 4,520 sites, recorded by about 86 different archaeological surveys and excavations. For this reason it is not possible to evaluate each survey's methodology, area covered, team size and its strengths and weaknesses. The main aim of this 'regional database' is to define the general picture of the available evidence within the northern Oman Peninsula and to compare it with the researcher's own fieldwork. It should, however, be noted that some of these surveys have already been reviewed and evaluated in Chapter Five.

The current chapter will attempt to define the general trends in settlement history from the published archaeological evidence on the northern Oman Peninsula, by quantifying the evidence based on the 'regional database' created for this purpose. The analysis will start by defining the geographical extent of the area under study (Regional Area) and the sub-regions into which it has been divided. It will also outline the database structure, and describe and review the data and its reliability. It will then describe the general trends in the evidence by quantifying the number of recorded sites according to period, which, it is hoped, will give a crude but useful insight into levels of activity within the whole region. This will be followed by an analysis at the sub-regional level, to evaluate the reliability of the data and to investigate localised differences across the region. Some consideration will be given to the density of sites per square kilometre in each sub-region. Finally, the evidence will be broken down by type of site and period from each sub-region. The

intention is to compare evidence from sub-regions to that from the whole peninsula on one hand, and to other sub-regions on the other. This will allow an evaluation of the reliability of the evidence. A summary discussion of the general and regional evidence will be presented at the end, and this will be followed by a discussion of the previous projects' reliability.

It was noted in Chapter Five (5.5.1) that none of the survey projects carried out in the northern Oman Peninsula have attempted to quantify sites or settlement activity. In addition, many of these surveys presented their data in a way that is difficult to quantify. These surveys did not set out to provide a reliable quantified picture, but rather to explore and locate sites of specific interest, or to deal with specific research questions and aims. This has resulted in a biased picture and a misrepresentation of the actual levels of activity and the perceived settlement hierarchy. Consequently, it is impossible to rely on the results of these surveys in quantifying settlement activity over time.

It should also be noted that there are problems (see below) with dating some periods (e.g. Late Iron Age to Sasanian–Early Islamic). In addition, there is the problem of $C^{14}$ dates obtained from some sites, several of which are unreliable (see Chapter Three, 3.6.3). Thus, much of the published evidence regarding these periods is questionable and unreliable, and does not allow a precise understanding of the varying levels of activity within the northern Oman Peninsula over time.

Keeping these problems in mind, the only possible way to make this information reliable is to carry out a systematic survey and revisit every single site recorded within the database. However, this is impossible for the following reasons:

1- This is a long-term project that would extend for several years.
2- It is a team project that requires a group of trained people.
3- Several of these sites have been destroyed.
4- Several of these sites cannot be located due to the recording methodologies used by the previous surveys.
5- This work would require funding.

The above difficulties and problems with reliability, bias, dating, etc. (see also Chapter Five, 5.5.1), clearly raise the question of whether this type of evidence can be taken as representative of settlement patterns and trends in the past at all. Ultimately it was decided to attempt an analysis to see what sort of indications this information might give, bearing in mind that the data is problematic and incomplete. As indicated earlier, no quantified study has yet been attempted on such a scale[48]. At the very least the analysis will serve to characterise the information that is presently available.

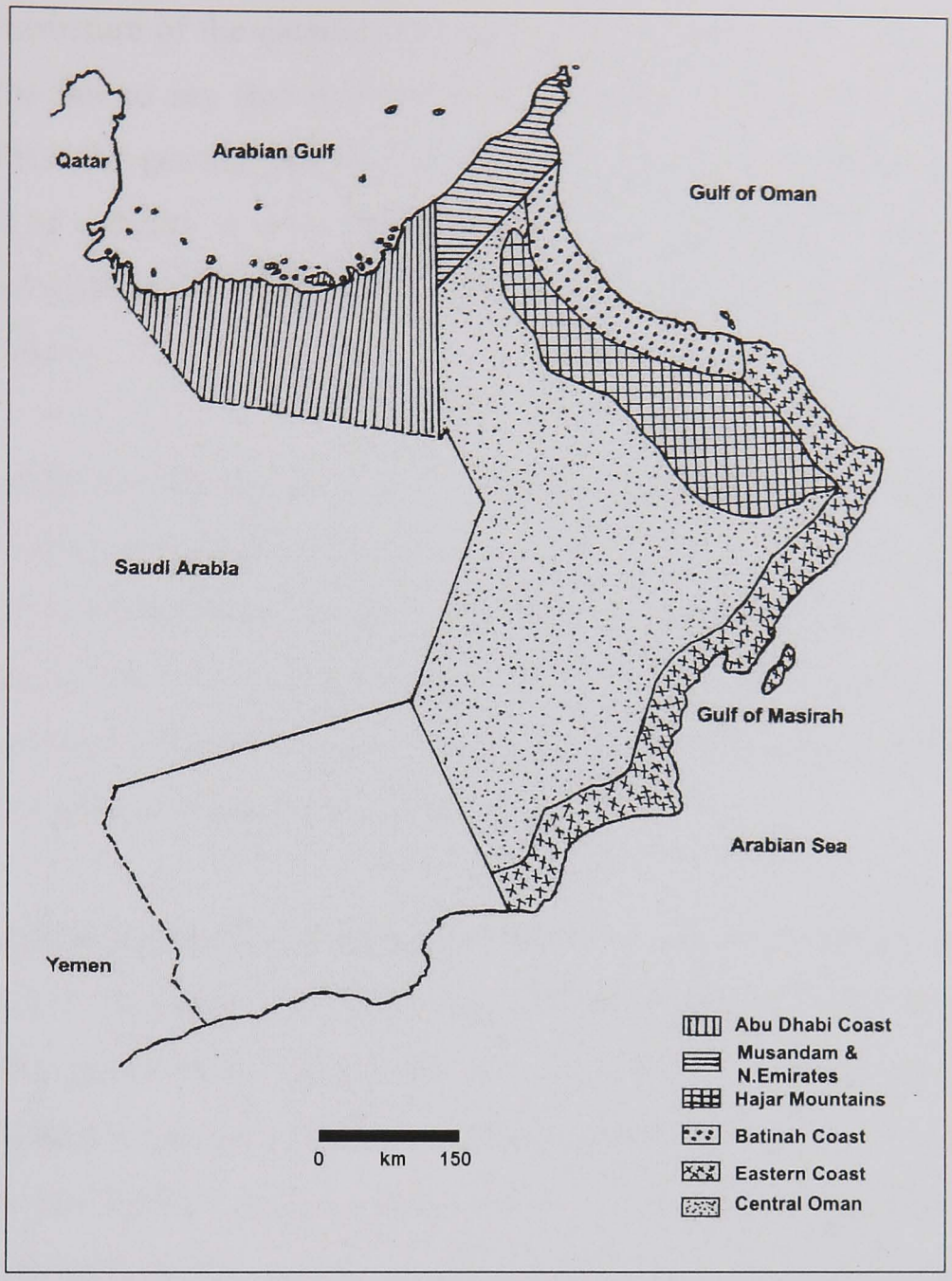
## 6.2- GEOGRAPHICAL EXTENT:

The geographical extent of the area under study is the whole northern Oman Peninsula, which has been sub-divided, for the purpose of this study, into six major sub-regions. These have been described in Chapter Two (2.9, Map 8). They are presented again here (Table 44, Map 28). It was difficult to assign some sites to any specific sub-region due to a lack of information, thus an additional category of 'Unknown sub-Region' has been added, which includes all sites that could not be assigned in this way.

| No | Main Sub-Region | Database Code | Area/km$^2$ |
|---|---|---|---|
| 1 | Musandam and Northern Emirates | MNE | 51,213 |
| 2 | Abu-Dhabi Coast | ABDC | 13,968 |
| 3 | The Hajar Mountains | HM | 133,434 |
| 4 | The Batinah Coast | BTNC | 36,698 |
| 5 | The Eastern Coast | ESC | 33,310 |
| 6 | Central Oman | CNO | 12,564 |
| 7 | Unknown sub-Region | UNKNOWN | 0 |
| **Total Area** | | | **281,187** |

**Table 44 Six defined sub-regions and their total area within the northern Oman Peninsula**

[48] Apart from a database (NADO-2004) created by my colleague M. Al-Belushi as part of his PhD thesis submitted to the University of Birmingham in 2004. However, this database was created to serve different aims to the database created for the analysis in this chapter. The aim of NADO-2004 was to evaluate and suggest policies about the heritage management in Oman, and it only includes archaeological sites from the Sultanate of Oman, both the northern and southern parts. The latter part is not included in the present study area.




**Map 28 Defined sub-regions for the purpose of the 'regional database' analysis**

## 6.3- METHODOLOGY AND DATABASE STRUCTURE:

The 'regional database' includes a large number of sites and their related data such as toponym, location and coordinates, survey project, chronology, type of site, recorded date, geographical zone, type of work carried out by the survey project and references where the site is mentioned. All this requires a well-organised database. Therefore, the 'regional database' used in the analysis in this chapter and the previous one was created and analysed using the Microsoft Access 2003 program. A number of graphs and tables were also created to show the major trends that can be discerned in the collected evidence. First, however, it is useful to present the methodology and structure of the database.

Although the structure of the database has been successful in achieving the main aims of this study, it is fair to say that it is far from complete. The aims of the database are, initially, to define the general picture of the available evidence within the northern Oman Peninsula and to compare it with the outcomes of the researcher's own fieldwork, and ultimately, to define levels and patterns of activity through time and help to interpretate the emerging trends.

Sites were recorded by examining most of the available literature for the required data (e.g. site's name, location, date, type, etc.). In Chapter Five (5.3), there was a brief explanation of how sites were identified and defined, however more details will be noted here. It is possible that some sites in the literature were missed because either they are not published by their survey projects or, for various reasons, I was unaware of such sites. A few other sites were added after this chapter was written.[49]

In order to organise the relational database information, three tables were created (Figure 40, Tables 45–51): Site table, Location table and Survey Project table. The first (Tables 45–47) includes information about each site, such as its number; name(s); location; latitude/longitude; the survey project(s); and chronology. Chronology was divided into fourteen fields, one for each period starting from the Early Stone Age and ending with the Late Islamic–Recent period. Each record includes data about the type of site or archaeological feature found within the site (e.g. settlement, tomb, midden/scatter, fortification, industrial place, rock art, religious place, harbour/port, earthwork, cave/rock shelter, etc.) (Table 46). Each chronological period within a single site might cover more than one type of site/feature (e.g. settlement and tombs) as presented in Table 46. The Site table also includes the date when the site was found; a description of the site and its contents; and an indication of where the site was published using two fields, labelled 'Reference 1', for the general site reference, and 'Reference 2', consisting of the reference and exact pages where the site is mentioned. It also specifies the type of work carried out at the site (survey, excavation or both); whether it is inland or coastal; and other notes (e.g. mentioned by other survey project(s) under a different name).

[49] The final version of this chapter was finished in February 2007. Therefore, any sites noted after this date are not included in the analysis.

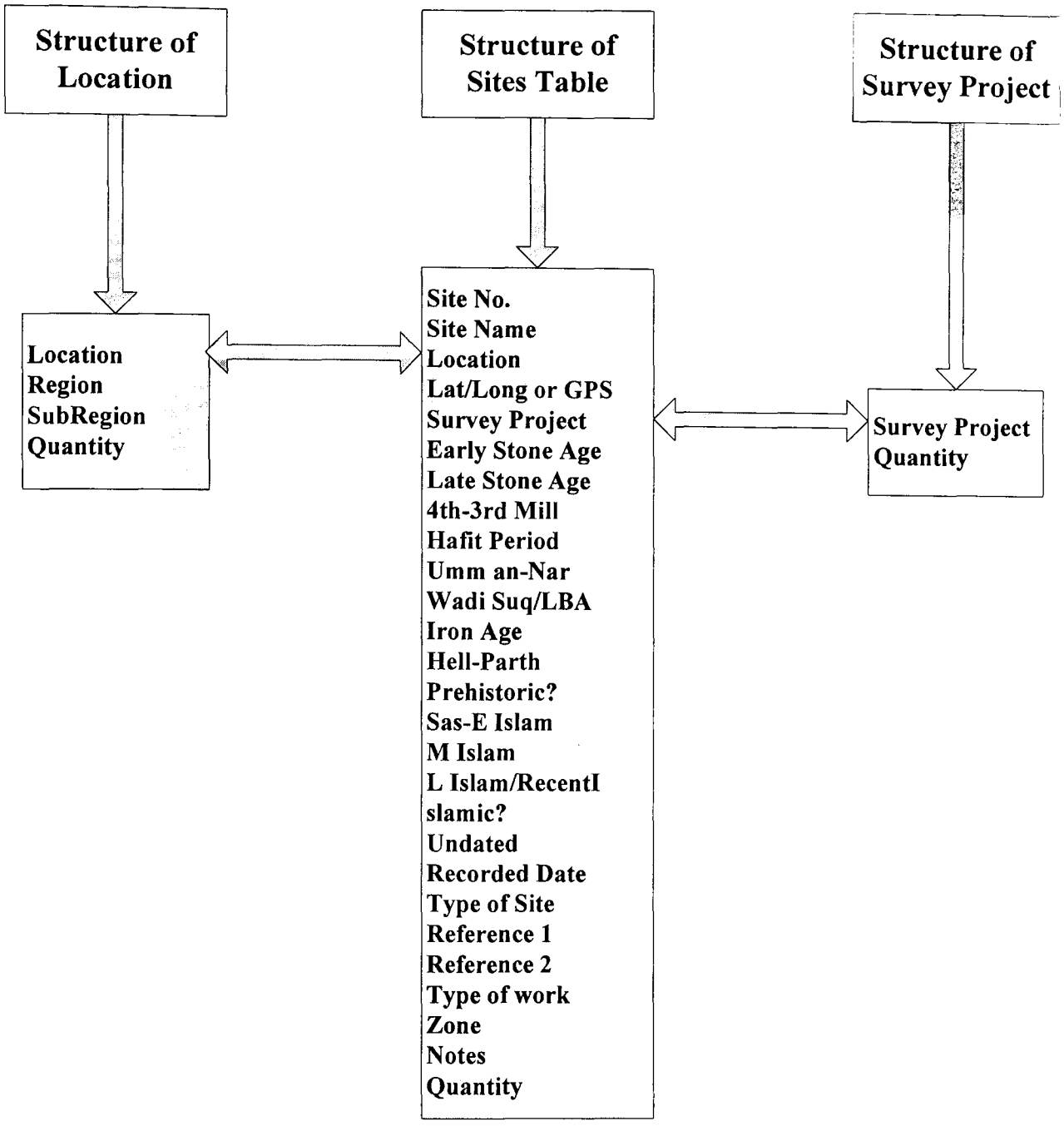



**Figure 40 Relationship between the three tables within the 'regional database'**

The second table (Tables 48–49), namely the 'Location table', consists of three fields: location, sub-region, and quantity of sites within each location/area. The 'Survey project table' (Tables 50–51) includes two fields; one for the name of the survey project and another field for the total number of sites recorded by this project.

| Field Name | Data Type | Description |
|---|---|---|
| Site No | AutoNumber | Computer-generated number of the site within the current database |
| Site Name | Text | Name and encoding of the site as it was called by the survey project |
| Location | Text | Area where the site was found (e.g. Sohar) |
| Lat/Long or GPS | Text | Map reference or GPS coordinates that show the exact location of the site |
| Survey Project | Text | Name of the survey project/team who carried out survey, excavation or both at the site |
| Early Stone Age | Text | Includes all types of archaeological sites/features dated to the period earlier than 7,000 BC |
| Late Stone Age | Text | Includes all types of archaeological sites/features dated to around 7,000-3,500/3,400 BC |
| 4th-3rd Mill | Text | This field was created for all types of archaeological sites/features recorded, mainly, by the Joint Hadd Project and dated to a broad timescale that includes three periods within the current database (e.g. Late Stone Age, Hafit, Umm an-Nar) |
| Hafit Period | Text | Includes all types of archaeological sites/features dated to around 3,500/3,400-2,500 BC |
| Umm an-Nar | Text | Includes all types of archaeological sites/features dated to around 2,500-2,000 BC |
| Wadi Suq/LBA | Text | Includes all types of archaeological sites/features dated to around 2,000-1,300 BC |
| Iron Age | Text | Includes all types of archaeological sites/features dated to around 1,300-300 BC |
| Hell-Parth | Text | Includes all types of archaeological sites/features dated to around 300 BC-200 AD |
| Prehistoric? | Text | Includes all types of archaeological sites/features that are possibly of prehistoric and pre-Islamic date |
| Sas-E Islam | Text | Includes all types of archaeological sites/features dated to around 100/200-900/1,000 AD |
| M Islam | Text | Includes all types of archaeological sites/features dated to around 900/1,000-1,300 AD |
| L Islam/Recent | Text | Includes all types of archaeological sites/features dated to around 1,300 AD onwards |
| Islamic? | Text | Includes all types of archaeological sites/features that are possibly of Islamic date |
| Undated | Text | Includes all recorded but undated types of archaeological sites/features |
| Recorded Date | Text | Date when the sites was found for the first time |
| Type of Site | Text | Description of the site and its components |
| Reference 1 | Text | General reference where the site was mentioned |
| Reference 2 | Text | Reference and exact pages where the site was mentioned |
| Type of work | Text | Survey, excavation or both |
| Zone | Text | Inland, coastal or unknown |
| Notes | Text | Any notes about the site such as other names of the site given by other survey projects |
| Quantity | Number | This field was given number 1 in order to quantify sites |

**Table 45 Physical structure of the Site table as it appears in its 'Design View'**

| Type of site | Database Code | Description |
|---|---|---|
| Settlement | S | Any site includes occupational structures (e.g. campsite, village, house, etc.) or is thought to have been occupied |
| Tomb/Cemetery | T | Includes both individual tombs or cemetery |
| Midden/Scatter | M | Any scatter of artefacts such as pottery, flints, lithics, stones, etc. |
| Fortification | F | Any fortified structure such as forts, towers, fortified walls and houses, etc. |
| Industrial Place | I | Any site with evidence of industrial activities such as mining process, flint or pottery workshops, etc. |
| Rock Art | R | Any site that includes drawings and inscriptions made by man on rocks (e.g. painted, engraved, in relief, etc.) |
| Religious Place | G | Any site that includes mosque, prayer area, church, monastery, cathedral or any other religious feature |
| Earthwork | E | Includes any feature resulted from human changes or modifications of the ground surface such as traces of earth-moving activities (clearance mounds, well-sections and land-soil movements), traces of fields or gardens and their installations such as irrigation systems, etc. |
| Cave/Rock Shelter | C | Any cave or natural rock-shelter that might be used by man for occupation or any other type of activity |
| Harbour/Port | H | Any site used as harbour or port |
| Unidentified feature | U | Any feature of unknown or undefined function/nature |

**Table 46 Types of sites recorded within the 'regional database' with their codes and description**

| Field Name | Description |
|---|---|
| Site No | 387 |
| Site Name | Amlah (Site 41, 4) |
| Location | Ibri/Al-Dhahira |
| Lat/Long or GPS | NF 40-029 (DA 898599/DA 905604) |
| Survey Project | British Archaeological Expedition (de Cardi) |
| Early Stone Age | |
| Late Stone Age | |
| $4^{th}$-3rd Mill | |
| Hafit Period | |
| Umm an-Nar | SF |
| Wadi Suq/LBA | |
| Iron Age | |
| Hell-Parth | |
| Prehistoric? | |
| Sas-E Islam | |
| M Islam | |
| L Islam/Recent | |
| Islamic? | |
| Undated | |
| Recorded Date | 1974-1975 |
| Type of Site | Umm an-Nar settlement of walled structure and circular enclosure |
| Reference 1 | de Cardi, B. Collier, S. & Doe, D. B. (1976), pp: 101-187 |
| Reference 2 | de Cardi, B. Collier, S. & Doe, D. B. (1976), pp: 111-114, 138, 166 |
| Type of work | Survey + Excavation |
| Zone | Inland |
| Notes | |
| Quantity | 1 |

**Table 47 Example of a recorded site within the Site table**

| Field Name | Data Type | Description |
|---|---|---|
| Location | Text | Area where the site was found (e.g. Sohar) |
| Sub-Region | Text | The sub-region where the site is located (e.g. Hajar Mountains) within the whole region of northern Oman Peninsula. |
| Quantity | Number | Total number of sites recorded within specific area |

**Table 48 Physical structure of the Location table as it appears in its 'Design View'**

| Field Name | Description |
|---|---|
| Location | As Suwaiq/Al-Batinah |
| Sub-Region | BTNC |
| Quantity | 34 |

**Table 49 Example of a recorded site within the Location table**

| Field Name | Data Type | Description |
|---|---|---|
| Survey Project | Text | Survey project who recorded the site |
| Quantity | Number | Total number of sites recorded by the project |

**Table 50 Physical structure of the Survey Project table as it appears in its 'Design View'**

| Field Name | Description |
|---|---|
| Survey Project | British Archaeological Expedition (de Cardi) |
| Quantity | 501 |

**Table 51 Example of a recorded site within the Survey Project table**

## 6.4- QUANTIFICATION OF SITES:

A total of 4,520 sites from the literature were recorded in the database, representing all of the different periods and types of archaeological features. The earliest is dated to the Early Stone Age and the latest to recent times (for chronology, see Chapter Three). Analysis using graphs and tables created from the database was intended to show the major trends that can be discerned. These will be discussed below.

## 6.4.1- GENERAL REGIONAL LEVELS OF ACTIVITY:

Figure 41 shows the total number of sites by period. It indicates that the largest number of sites is represented by the Late Islamic–Recent period followed, respectively, by the undated, Iron Age and Umm an-Nar.[50] This is a very similar picture to that from the Wadi Andam Survey (see Chapter Four, Section Two, 4.2.3, Figure 13). However, the large number of undated sites is surprising (see below). Although the Late Islamic–Recent period represents the largest number of sites, in total, pre-Islamic sites are more common than Islamic period ones, which is completely different to the results from the Wadi Andam Survey (see Chapter Four, Section Two, 4.2.3, Figure 11).

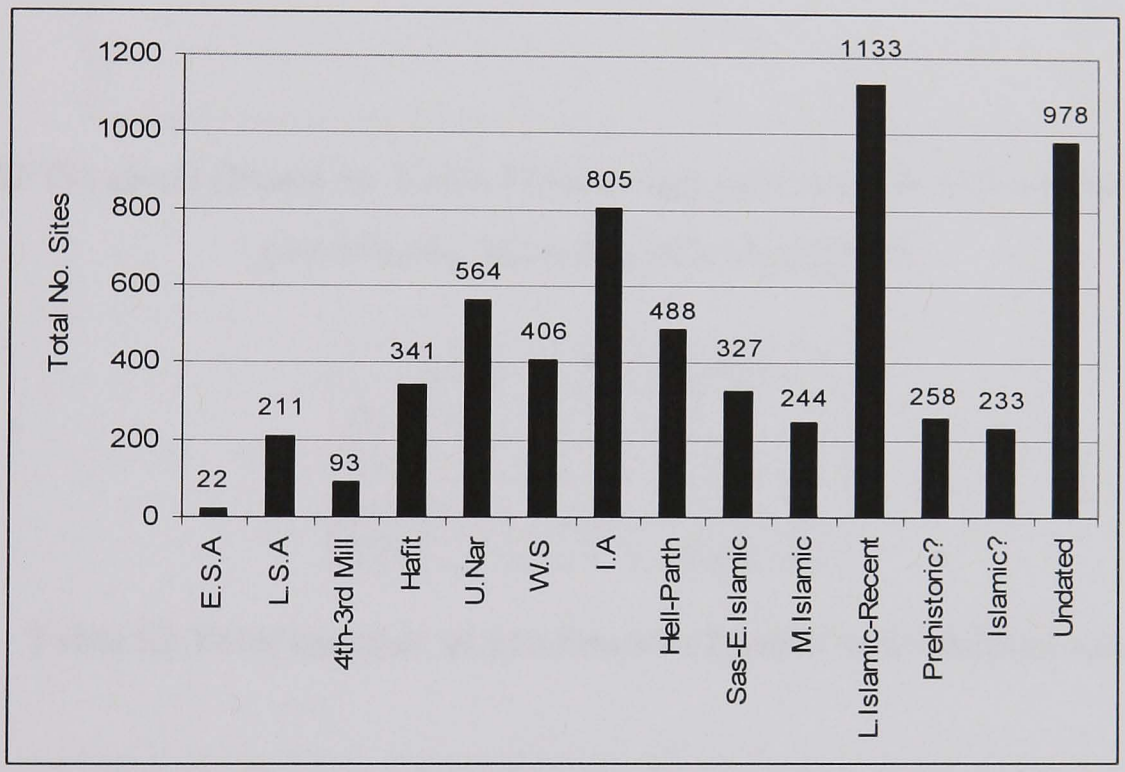



**Figure 41 Total percentage of sites recorded in the whole 'regional database' by period**

It appears from Figure 42 that the pre-Islamic sites represent almost half of the total number of sites (52%) recorded in the database. As has already been attested in Chapter Five, this might be due to the fact that more attention has been paid by archaeologists to pre-Islamic period sites than Islamic ones. It was noted in Chapter Five that there is a bias by several survey projects towards recording, for instance, the 3rd millennium BC sites and

[50] It is expected that any period which extends for long period of time (e.g. 1000 years) might potentially produce more tombs/settlements than a short period (e.g. 100 years). At the same time sites in some periods might be re-used, which complicates this issue.

Iron Age–Samad sites. Moreover, the large number of Islamic sites from the Wadi Andam Survey might be related to the fact that more attention was paid by the survey to the investigation of modern wadi villages which have not been subject to such intensive survey by previous projects. Recent periods are more likely to be represented in these environments.

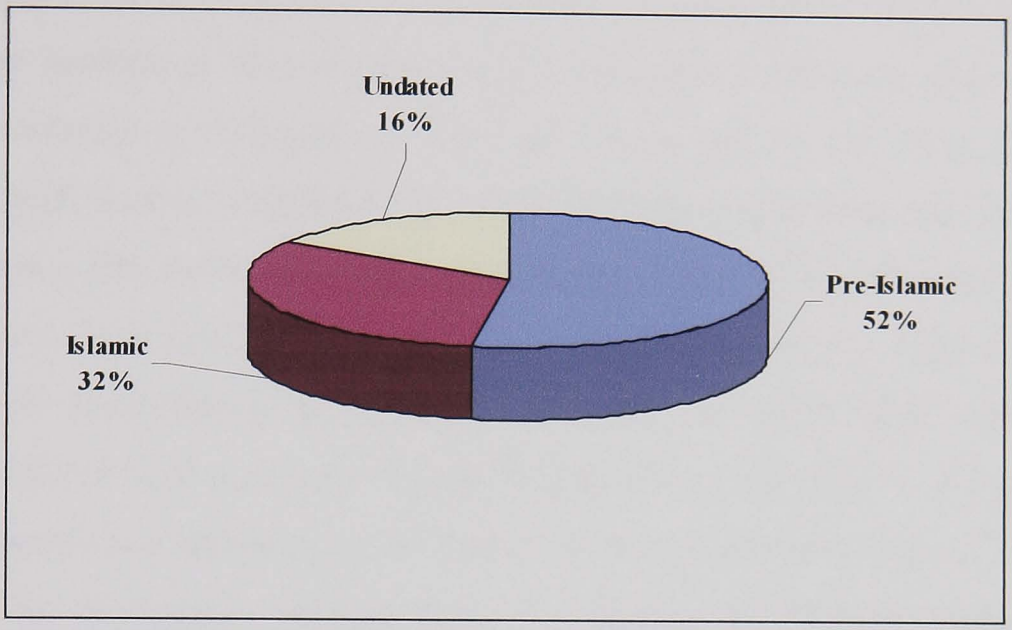



**Figure 42 Pie chart (based on Table 52) showing percentages of the total number of pre-Islamic, Islamic and undated sites**

| Period | Total Sites |
|---|---|
| Pre-Islamic | 3,188 |
| Islamic | 1,937 |
| Undated | 978 |
| **Total**[51] | **6,105** |

**Table 52 Total number of pre-Islamic, Islamic and undated sites**

The reasons behind the large number of undated sites are unclear, but it is possible that they might be due to the doubtful reliability of the surveys that were carried out within the area under study and their methodologies. Figure 43 shows that the largest group of the undated sites are tombs, representing around 23% of the total number of undated sites. Many of these sites were found by the German Mission, who recorded around 44%, and the British Expedition, who recorded around 27% of these undated tombs. All tombs

[51]It is important to clarify here that the total number of sites recorded within the database is 4,520, however the total number of sites (6,105) is higher because each of the 4,520 recorded sites might present the remains of different periods (e.g. pre-Islamic and Islamic). Thus, when counting sites by period, each site might be counted more than once (e.g. Site no. 1550 'Maqsad' is a copper mine dated to the Iron Age and Middle and Late Islamic periods so it was counted three times as an Iron Age site, a Middle Islamic site and a Late Islamic site).

recorded by the former project are located in al-Mudhaybi area in the Hajar Mountains sub-region (e.g. Yule 2001a) and the majority of tombs recorded by the latter are located in Ra's al-Khaimah in the Musandam and Northern Emirates sub-region (e.g. de Cardi, Kennet & Stocks 1994: 35–95). These tombs, recorded by survey or excavation, could not be dated, either because of their bad state of preservation; or because they did not yield any datable evidence; or because the ceramic chronology at the time was not very advanced and well defined. Additionally, many of these tombs look like stone cairns or clearance mounds, like those recorded by the British Expedition to Ras al-Khaimah (e.g. the al-Khatt area). It is possible that these cairns might not be tombs but rather piles of stones, but their resemblance, for example, to badly disturbed Hafit cairns led their recorders to consider them as tombs. Figure 43 also shows that there is a large number of undated settlement sites, representing around 17% of total undated sites, of which several were recorded by the Omani–German Project (43%) and the British Expedition (32%). Several of these settlements appear to be structural ruins either without associated datable finds or with some materials that are not well understood by the survey members who recorded them. Thus, they were recorded as undated settlement ruins, e.g. by the Omani–German Project in al-Rustaq at the Hajar Mountains sub-region (e.g. Ibrahim & Gaube 2000). There are also other undated sites such as earthworks (e.g. agricultural structures, irrigation and *falaj* systems, etc), middens and rock art sites, which are often difficult to date.

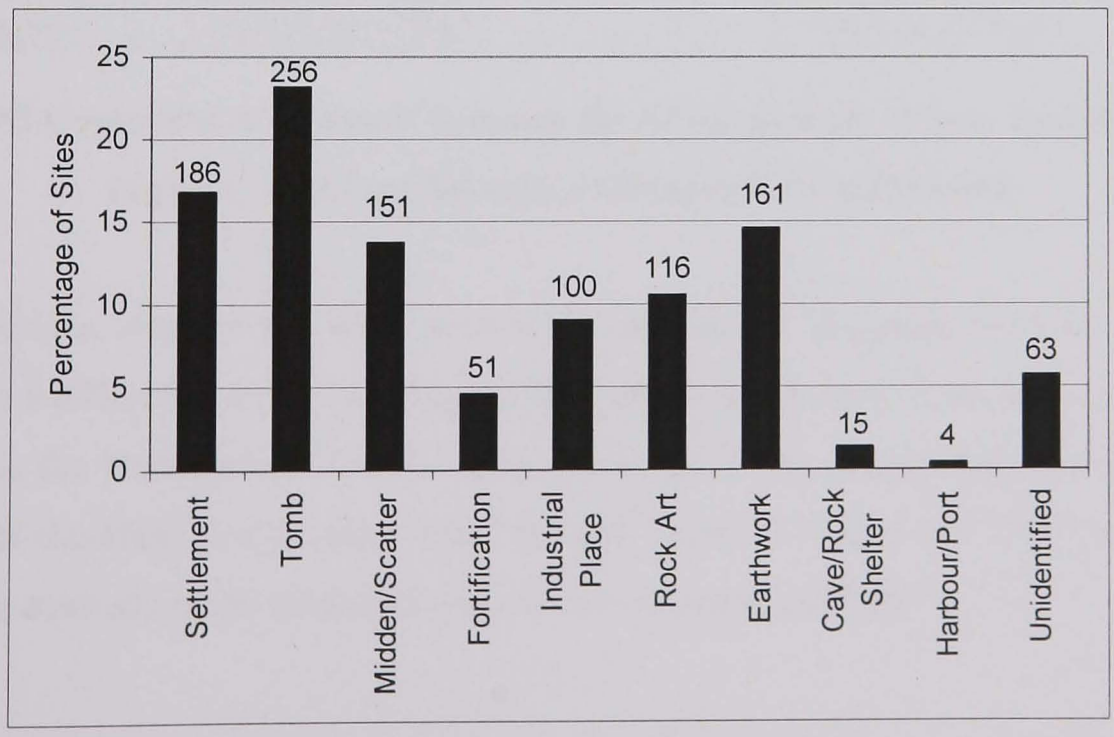



**Figure 43 Percentage of undated different types of sites recorded on the database**

Figure 41 shows that the least represented of the pre-Islamic periods is the Early Stone Age. This might be related to the fact that the remains of sites of this period are difficult to find and might have been subject to high drift and erosion over time, but it might also be due to low levels of population during this period. It is also remarkable that the Sasanian–Early Islamic periods yielded the second largest number of Islamic sites, which is slightly larger than the total number of Middle Islamic sites, since this is a completely different picture to that from the Wadi Andam Survey (see Chapter Four, Section Two, Figure 13), which in this period yielded the lowest evidence of both pre-Islamic and Islamic periods. The large number of sites of this period might be related to the fact indicated earlier in Chapter Three (3.7) that dating this period and its pottery was not well understood by the people who carried out these surveys (see below). There is also the problem of $C^{14}$ dates obtained from some sites, several of which have proved to be incorrect.

| Period | Wadi Andam Trends | Regional Trends |
|---|---|---|
| E.S.A | No evidence | Little evidence |
| L.S.A | No evidence | Abundant evidence, mostly settlements |
| Hafit | Tombs, no settlement | Abundant evidence, mostly tombs |
| U.Nar | Abundant evidence | Abundant evidence |
| W.S | Very little evidence | Abundant evidence, mostly tombs |
| I.A (W.Andam EIA) | Reasonable evidence, mostly from tombs | Abundant evidence |
| Hell-Parth (W.Andam LIA/Samd) | Abundant evidence | Abundant evidence |
| Sas-E.Islamic | Almost absent | Abundant evidence |
| M.Islamic | Abundant evidence | Abundant evidence |
| L.Islamic-Recent | Abundant evidence | Abundant evidence |

**Table 53 Comparison of trends between the Wadi Andam Survey and the wider regional area (see discussion of regional trends below)**

The comparison between the Wadi Andam Survey and the 'regional database' (Table 53) also shows a difference in the fact that the Wadi Andam Survey did not yield any evidence earlier than the Hafit period. On the other hand, the Wadi Andam Survey yielded more evidence of the Hafit (see Chapter Four, Section Three, 3.2) than the Wadi Suq, and this completely contradicts the findings shown in the 'regional database'.

The general pattern that can be noted from Figure 41 is that there are variations and changes in the level of activities within the northern Oman Peninsula. The data suggests that there is a gradual increase in the level of activity from the Early Stone Age until the Umm an-Nar period. It also appears that there are fluctuations in the level of activity between the Umm an-Nar and the Iron Age. The later period represents the highest level of activity among all the pre-Islamic periods, followed by the Umm an-Nar. The data suggests that, after an increase during the Umm an-Nar, there was a decline in the number of recorded sites during the Wadi Suq period, followed by a large growth during the Iron Age. After the Iron Age, there seems to be a gradual decline until the Middle Islamic period, followed by a dramatic growth during the Late Islamic–Recent periods. The last represents the highest level of activity among all periods, both pre-Islamic and Islamic.

Figure 41 also shows that some sites have been assigned to the category, $4^{th}$–$3^{rd}$ millennium BC. This new period name was created because there is large number of sites, mainly shell-and/or-flint middens, recorded by the French–Italian Hadd Project in the Eastern Coast sub-region, which were dated to the $4^{th}$–$3^{rd}$ millennium BC, and this broad timespan falls within three possible periods within the chronology used here: Late Stone Age, Hafit and Umm an-Nar.

This is the general pattern from the whole northern Oman Peninsula, with some comparisons made with the Wadi Andam Survey. The data is clearly interesting because it shows that there are some indications in the long-term trends over time that it might be to some degree reliable, but it presents us with some important questions. For example is this pattern likely to reflect reality or it is completely biased by the nature of the evidence? Is this pattern the same for all parts of the region, or are local variations discernible? The following discussion will attempt to show the regional levels of activity within the six sub-regions in order to test and evaluate the reliability of the analysis above. It is hoped that this will help in understanding the activity within each sub-region and in comparing it with that from the other sub-regions, as well as with the interpretation of patterns and trends.

### 6.4.2- SUB-REGIONAL LEVELS OF ACTIVITY:

As indicated earlier, the northern Oman Peninsula was, for the purpose of this 'regional database', defined into six sub-regions, which are listed together with their codes and total areas at the beginning of this chapter. The aim is to look at the overall number of recorded sites within each sub-region. This will help in attempting to understand the relationship between the location of archaeological sites, their density and the environmental conditions in which they are located, and thus perhaps, to explain trends of growth or decline in the number of recorded sites within each sub-region. Consequently, the following tables and graphs will present the total number and percentages of sites by sub-region and period, and will suggest explanations for similarities or variations in the data from each sub-region or period. Because not all the data is available, particularly the survey area coverage, it was not possible to look at the number of sites per square kilometre, which would have given a better idea of the true densities of activity in different periods.

Tables 54–55 and Figure 44 give a clear idea of the level of activity over time within each sub-region. Generally speaking, the comparison indicates that the Early Stone Age is the least represented period, as it is represented by less than 2% of the total sites in all sub-regions. Furthermore, the inhabitants of this period, perhaps, were nomads or semi-nomads and their settlements were possibly of perishable structures such as huts, *barasti* structures, etc.

| Period | AbuDhabi | Batinah | Central Oman | Eastern Coast | Hajar Mountains | Musandam & N.Emirates | Unknown |
|---|---|---|---|---|---|---|---|
| E.S.A | 0 (0%) | 0 (0%) | 4 (1.2%) | 7 (0.7%) | 9 (0.4%) | 1 (0.1%) | 1 (0.6%) |
| L.S.A | 52 (10.4%) | 4 (0.5%) | 13 (4.0%) | 60 (6.2%) | 16 (0.8%) | 65 (5.0%) | 1 (0.6%) |
| 4th–3rd Mill | 0 (0%) | 0 (0%) | 0 (0%) | 82 (8.4%) | 0 (0%) | 0 (0%) | 11 (7.0%) |
| Hafit | 5 (1.0%) | 12 (1.6%) | 35 (10.8%) | 75 (7.7%) | 174 (8.4%) | 36 (2.8%) | 4 (2.5%) |
| U.Nar | 79 (15.7%) | 32 (4.2%) | 96 (29.6%) | 126 (12.9%) | 149 (7.2%) | 81 (6.2%) | 1 (0.6%) |
| W.S | 13 (2.6%) | 40 (5.3%) | 7 (2.2%) | 41 (4.2%) | 153 (7.3%) | 149 (11.4%) | 3 (1.9%) |
| I.A | 17 (3.4%) | 21 (2.8%) | 27 (8.3%) | 144 (14.8%) | 471 (22.6%) | 115 (8.8%) | 10 (6.3%) |
| Hell–Parth | 18 (3.6%) | 14 (1.8%) | 12 (3.7%) | 57 (5.9%) | 316 (15.2%) | 71 (5.4%) | 0 (0%) |
| Sas–E.Islamic | 47 (9.4%) | 62 (8.2%) | 10 (3.1%) | 14 (1.4%) | 48 (2.3%) | 116 (8.9%) | 30 (19.0%) |
| M.Islamic | 11 (2.2%) | 72 (9.5%) | 5 (1.5%) | 15 (1.5%) | 60 (2.9%) | 50 (3.8%) | 31 (19.6%) |
| L.Islamic–Recent | 172 (34.3%) | 207 (27.2%) | 19 (5.9%) | 114 (11.7%) | 162 (7.8%) | 426 (32.7%) | 33 (20.9%) |
| Prehistoric? | 20 (4.0%) | 26 (3.4%) | 62 (19.1%) | 52 (5.3%) | 85 (4.1%) | 13 (1%) | 0 (0%) |
| Islamic? | 29 (5.8%) | 112 (14.7%) | 0 (0%) | 24 (2.5%) | 57 (2.7%) | 8 (0.65%) | 3 (1.9%) |
| Undated | 39 (7.8%) | 158 (20.8%) | 34 (10.5%) | 163 (16.7%) | 382 (18.3%) | 172 (13.2%) | 30 (19%) |
| **Total/Sub-Region** | **502 (100%)** | **760 (100%)** | **324 (100%)** | **974 (100%)** | **2084 (100%)** | **1303 (100%)** | **158 (100%)** |

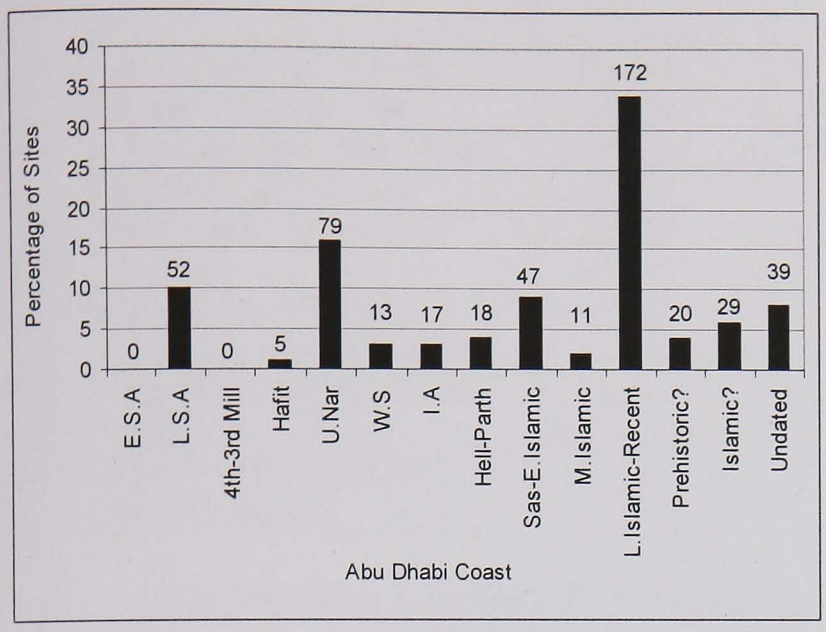
**Table 54 Total number and percentage of sites by period and sub-region (percentages are of the total number of sites within each sub-region)**

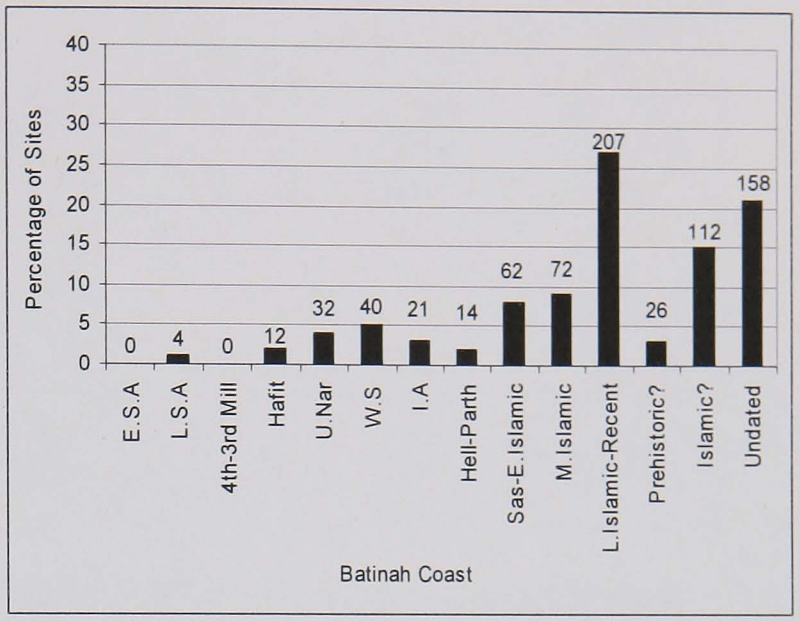
The number of recorded Late Stone Age sites is slightly higher than that from the Early Stone Age. The largest number of these sites is yielded by the Abu-Dhabi Coast (ca. 11%) followed by the Eastern Coast (ca. 6%). The high percentage of Late Stone Age sites within the Abu-Dhabi Coast sub-region is perhaps the result of the intensive work carried out by the Abu-Dhabi Islands Archaeological Survey (ADIAS). This survey alone recorded around 94% of the total Late Stone Age sites found within this sub-region.[52] The high percentage of sites of this period on the Eastern Coast is, perhaps, due to the

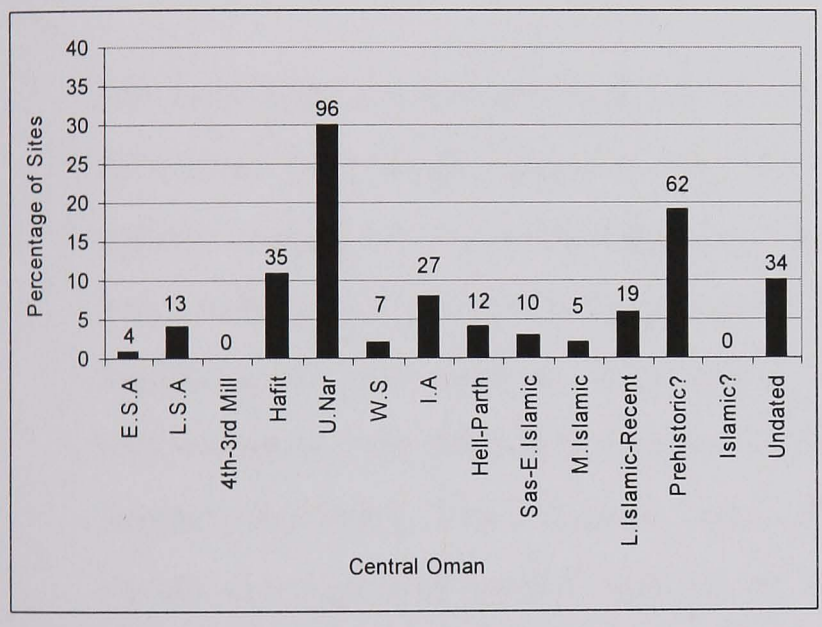
[52] Late Stone Age sites in this region recorded by this project can be found in different publications: see King & Tonghini 1998; King 1998 & 2001; Beech 1998 & 2002; Hellyer 2000 & 2002b; Beech, Elders & Shepherd 2000; Hellyer & Hull 2002; Beech, Kallweit & Hellyer 2004; Kallweit 2004; Kallweit, Beech & al-Tikriti 2005; Beech et al. 2006).

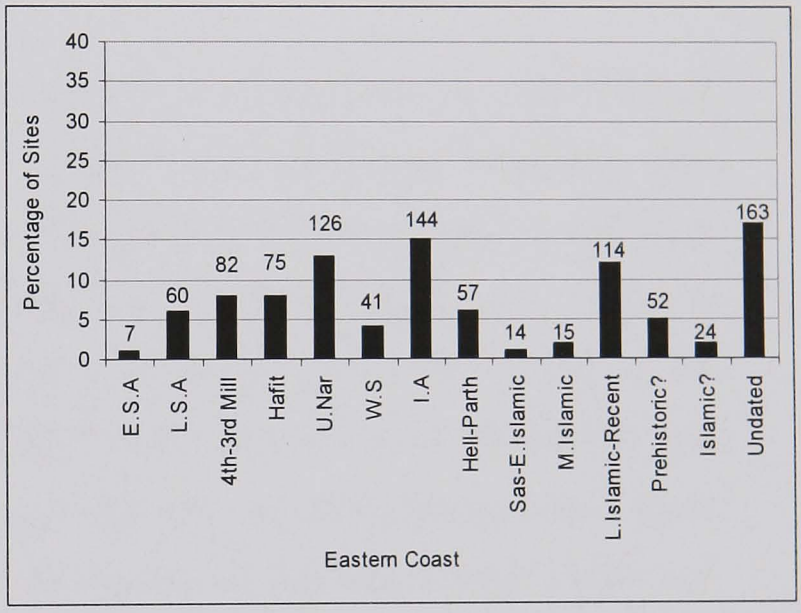
intensive work carried out since 1970s by the Joint (French–Italian) Hadd Project,[53] which recorded a large number of Late Stone Age sites, particularly along the coastal strip from Sur down to Mahout, as well as inland in the area of Ja'alan. According to the 'regional database', this project recorded 75% of the total sites of this period and sub-region. However, these two sub-regions represent long coastal strips, which might have provided rich marine resources that were exploited by the inhabitants of this period, and thus these two sub-regions may in fact have harboured much larger concentrations of Stone Age populations than other parts of the region. This fact can possibly be evidenced by the large number of midden sites (see also Table 59 below) along the coastal strips, such as at Ras al-Hadd (e.g. Biagi 1985; 1988a-b; Reade 1990; Cleuziou & Tosi 1996; Cleuziou & Steimer 1998; Usai 2000), Ras al-Jinz (e.g. Cleuziou & Tosi 1990b, 1994 & 2000; Cleuziou et al. 1994; Cattani & Tosi 1997; Monti & Usai 1998; Costantini & Audisio 2000; Usai 2000; Martin & Cleuziou 2003; Martin 2005), Ras al-Hamra (e.g. Biagi et al 1984; Durante & Tosi 1977; Santini 1987; Gnoli 1981; Biagi 1994a), Sir Bani Yas and Marawah Islands (King 1998; Beech et al. 2005) and Dalma Island (King 1998; Beech 1998 & 2002; Beech & Glover 2005). The archaeological evidence confirms that the occupants of these sites exploited marine mammals (e.g. fish, turtles, dolphin, oyster, shells and shellfish, etc.). Obviously midden sites are very visible on the surface as coastal mounds, while sites of this period in the interior might be surface scatters that have been subject to drift and erosion over time, making their survival problematic. This raises the question of the nature of occupation of this period in the interior part of the peninsula and the reasons behind the lower numbers of such sites. Was the nature of occupation in the interior different from that in the coast? Was there any contact or were there seasonal shifts between the coast and inland? These questions will be further discussed in Chapter Seven, 7.1.1.

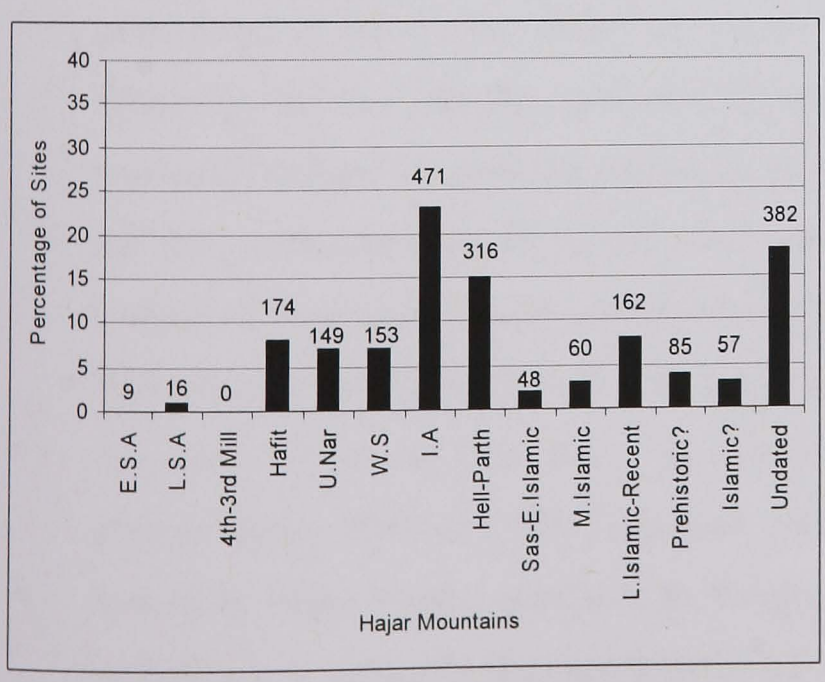
[53] Late Stone Age sites in this region recorded by this project can be found in different publications: see Biagi 1985, 1988b & 2004; Biagi et al. 1984; Durante & Tosi 1977; Cleuziou & Tosi 1990a-b, 1994, 2000; Cleuziou & Steimer 1998; Méry & Charpentier 2002; Monti & Usai 1998; Tosi & Usai 2003; Gaultier et al. 2005).



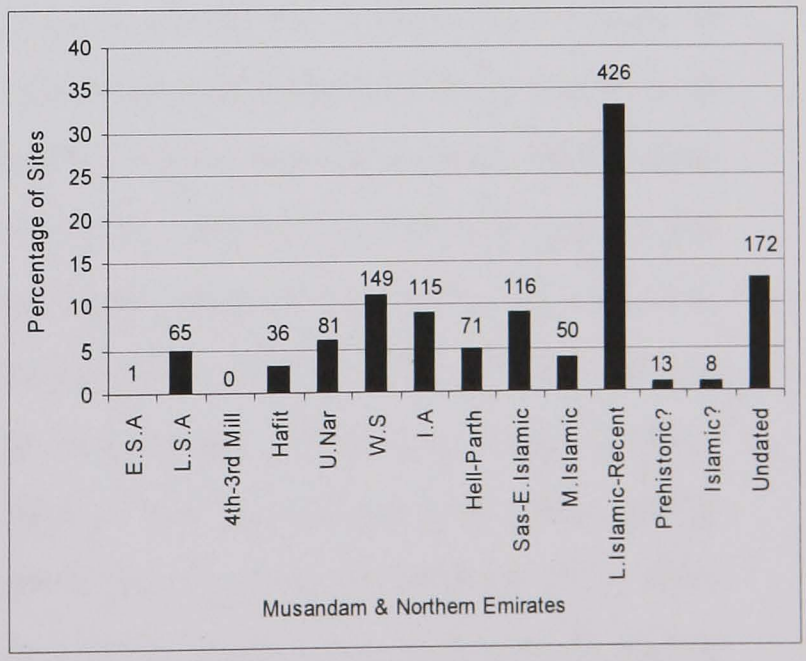



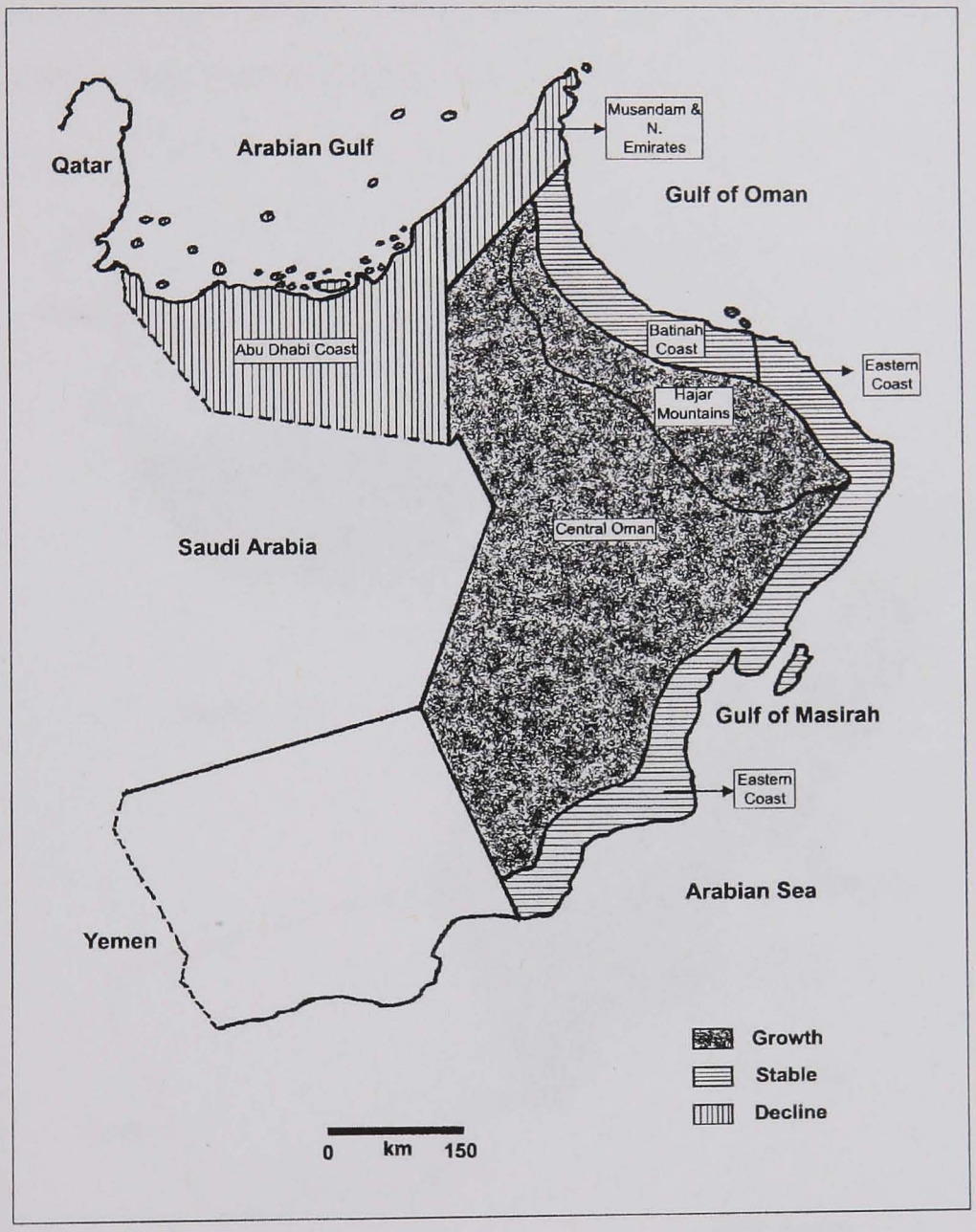

**Figure 44 Total percentage and numbers of sites of each sub-region by period**

| Period | AbuDhabi | Batinah | Central Oman | Eastern Coast | Hajar Mountains | Musandam & N.Emirates |
|---|---|---|---|---|---|---|
| Late Stone Age to Hafit | Decline | Stable | Growth | Stable | Growth | Decline |
| Hafit to Umm an-Nar | Growth | Stable | Growth | Growth | Stable | Growth |
| Umm an-Nar to Wadi Suq | Decline | Stable | Decline | Decline | Stable | Growth |
| Wadi Suq to Iron Age | Stable | Decline | Growth | Growth | Growth | Decline |
| Iron Age to Hellenistic–Parthian | Stable | Stable | Decline | Decline | Decline | Decline |
| Hellenistic–Parthian to Sasanian–Early Islamic | Growth | Growth | Stable | Decline | Decline | Growth |
| Sasanian–Early Islamic to Middle Islamic | Decline | Stable | Stable | Stable | Stable | Decline |
| Middle Islamic to Late Islamic–Recent | Growth | Growth | Growth | Growth | Growth | Growth |

**Table 55 (based on Figure 44) Summary of the trends in site numbers within each sub-region by period**

The data (Map 29) demonstrates that there was a growth in the number of recorded sites in the central part of the peninsula, namely, the Central Oman and Hajar Mountains sub-regions, during the period between Late Stone Age and Hafit. It also indicates that there was a stable level of activity in the eastern sub-regions, namely on the Batinah Coast and Eastern Coast. By contrast, there was a decline in the level during this period in the northern part of the peninsula, namely, on the Abu-Dhabi Coast and in the Musandam and Northern Emirates. The statistics (Table 54) show that the only sub-regions where Hafit period sites represent greater than 5% of the total number of sites are Central Oman (ca. 11%); followed by the Hajar Mountains (ca. 8%) and the Eastern Coast (ca. 8%). The high percentage of Hafit sites within the Hajar Mountains and on the Eastern Coast might be related to the fact that this period is almost completely represented by large numbers of tombs distributed all over the peninsula, particularly in these two sub-regions. Hafit cairns are very commonly found on the rock and gravel hills within these two sub-regions and several of these tombs were recorded by different survey projects such as the Harvard (e.g. Humphries 1974; Humphries 1974), the Danish (e.g. Frifelt 1968 & 1970), the British (e.g. de Cardi, Collier & Doe 1976; de Cardi, Doe & Roskams 1977), the Omani–German Project (Häser 2000 & 2003; Schreiber 2004, 2005 & 2007a-b; Schreiber & Häser 2004), and the al-Hajar Project (Orchard & Stanger 1994 & 1999; Orchard & Orchard 1985, 1997 & 2002). It is probably the case that the inhabitants of the Hafit period buried their dead in areas with high elevation in order to protect their tombs from sedimentation and erosion.

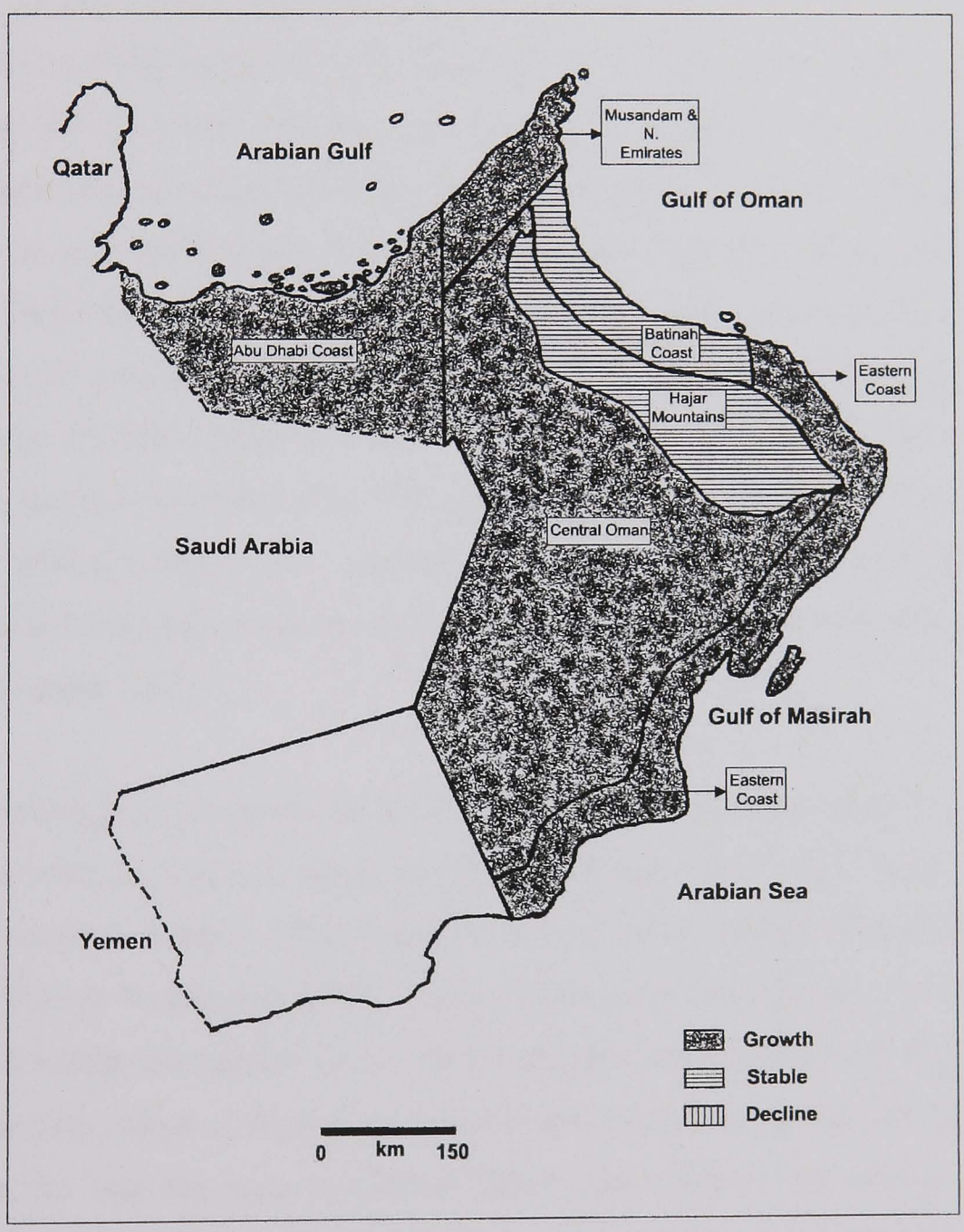
On the other hand, Hafit occupational sites are very difficult to recognise and, therefore, there is very little evidence for them. If these sites were found and counted, they might change the picture somewhat. It is also possible that there is a core 'Hafit' area within the centre of the area, where the Hafit period is better represented than it is in other sub-regions.




**Map 29 Level of activity between the Late Stone Age and Hafit periods**

It is difficult to compare the level of activity between the Late Stone Age and the Hafit Period, because Late Stone Age sites are mostly middens while Hafit sites are mostly burial cairns, and few settlements remain from the Hafit period. This is also true for the level of activity between the Hafit period and succeeding Umm an-Nar period (in which sites are mostly represented by large number of settlements and tombs).

The figures for the period between the Hafit and Umm an-Nar indicate that there was a growth in the number of recorded sites throughout the northern Oman Peninsula, with the exception of the Batinah and Hajar Mountains sub-regions, which witnessed a stable level of activity (Map 30). The reasons behind this might be due to the fact that Hafit cairns are very commonly found in mountainous areas. Thus, it is possible that there was more occupation during the Umm an-Nar period than the previous Hafit, and perhaps than the Early and Late Stone Age (see also Chapter Seven, 7.1.3).

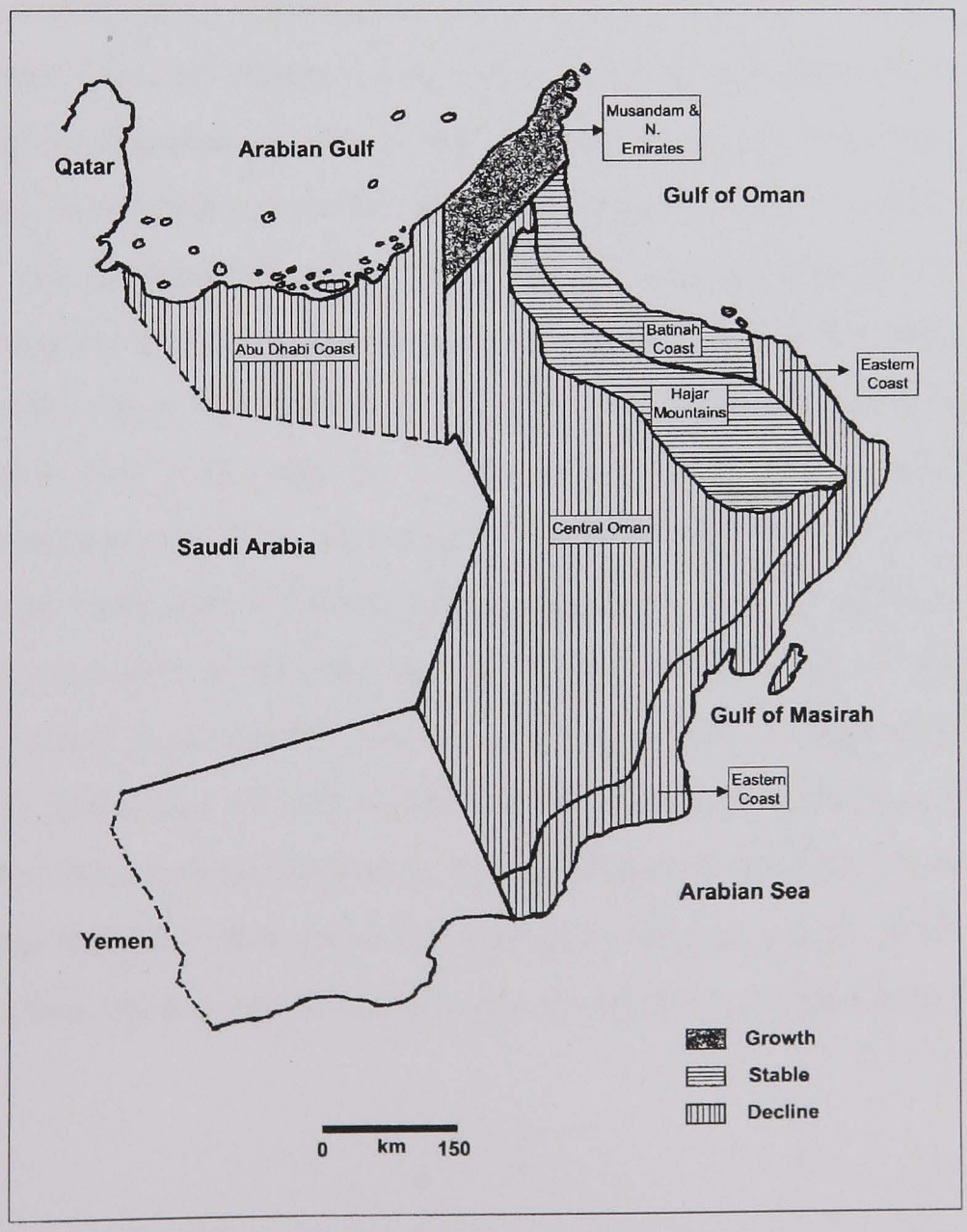



**Map 30 Level of activity between the Hafit and Umm an-Nar periods**

The intensity of fieldwork and the bias towards recording the 3rd millennium BC sites might be another possible reason for the large number of sites from this period. The statistics (Table 54) indicate that there is much higher percentage of Umm an-Nar sites in the Central Oman (ca. 29%), the Abu-Dhabi Coast (ca. 16%) and on the Eastern Coast (ca. 13%), while this period represents less than 8% of the sites in other sub-regions. This high percentage within Central Oman can be attributed to the fact that intensive fieldwork was carried out during the early and mid 1970s in this sub-region, particularly in the area around Ibri, by the Danish Expedition (e.g. Frifelt 1973a; 1973d; 1974; 1975b, 1976b, 1980a-b, 1985 & 2002) and the British Expedition (e.g. de Cardi, Collier & Doe 1976; de Cardi, Bell & Starling 1979). These two projects alone recorded 95% of the total Umm an-Nar sites within this sub-region. The majority of the recorded sites are Umm an-Nar tombs, representing around 74% of the total. Furthermore, the high percentage of Umm an-Nar sites on the Abu-Dhabi Coast is due to the fact that the remains of this period were first found within this sub-region, namely on Umm an-Nar Island, from which this period has taken its name (Frifelt 1975b, 1979a-b, 1991 & 1995) and a great deal of work was subsequently carried out in this area. This island yielded a large settlement and tombs and its evidence indicates that it was a central point of trade between the coast and inland of the peninsula as well as the neighbouring regions (e.g. Mesopotamia and the Indus Valley) (see Chapter Seven 7.1.3).

The high percentage of Umm an-Nar sites on the Eastern Coast can possibly be related to the intensive work carried out, again, by the Joint Hadd Project (e.g. Biagi 1985; Biagi &1988b; Cleuziou & Steimer 1998; Cleuziou & Tosi 2000) and the German Mission (e.g. Yule 1996; Yule & Weisgerber 1998). These two projects recorded large numbers of sites of this period within the Eastern Coast, which together represent around 87% of the total Umm an-Nar sites. Most of these recorded sites are located in the Sur (69%) and Ja'alan (24%) areas. As was the case in Central Oman, the majority are tombs, representing around 83% of the total recorded Umm an-Nar sites within this sub-region. This sub-region also yielded a large number of sites from all other periods. Thus, it is possible that we are dealing with a number of sites from the 3rd millennium BC, which might be related, for example, to the availability of natural resources such as marine mammals and shells, as well as fish, along the coastal strip of this sub-region.

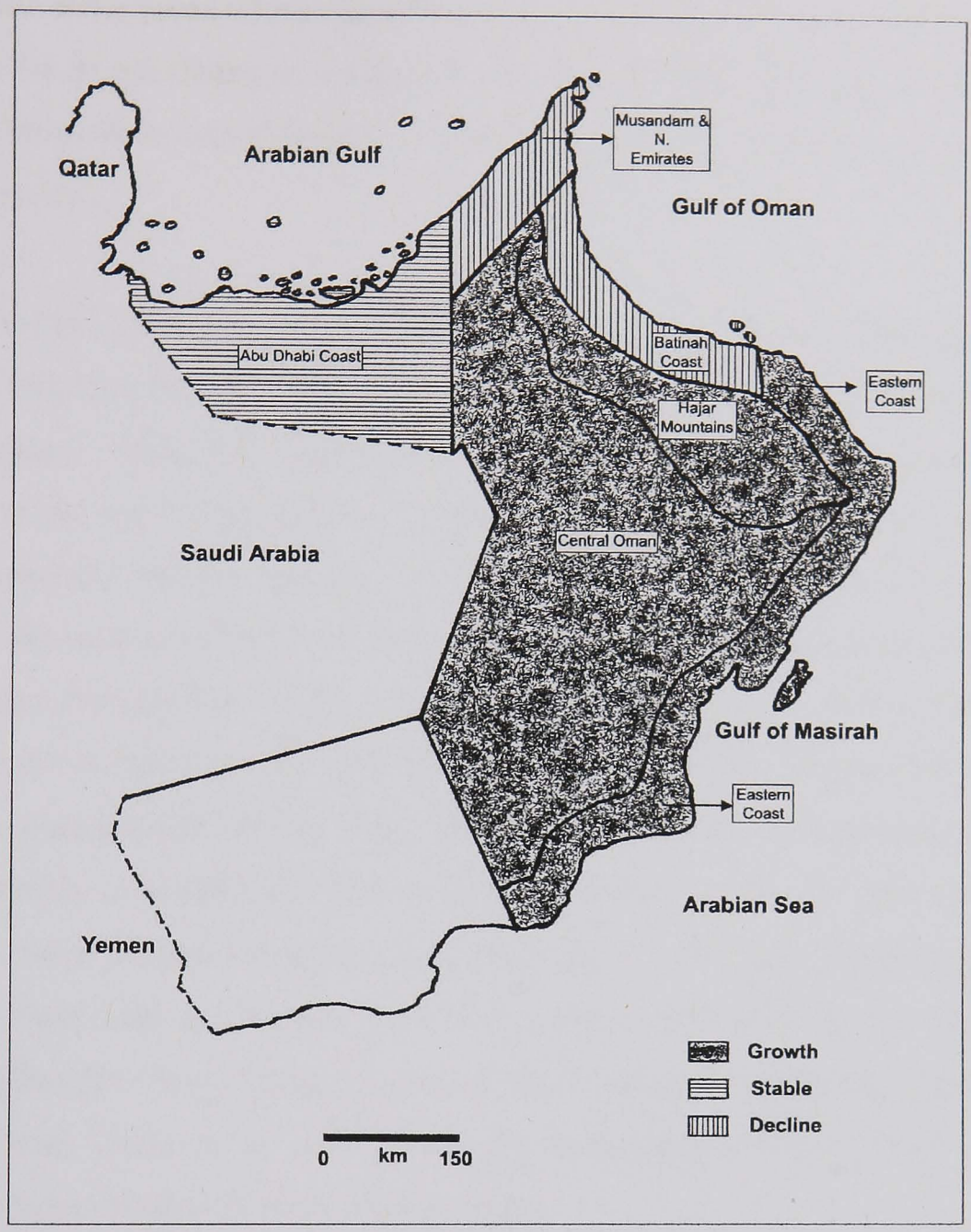
It should, however, be noted that the reasons behind the large recorded number of Umm an-Nar tombs in these sub-regions is related to the fact, already discussed in Chapter Five (5.3), that these surveys recorded or excavated individual tombs and gave them unique recording numbers. Thus, when entering sites within the 'regional database', each individual tomb was entered as one site, which has increased the percentage of tombs against settlements. This fact makes our quantification difficult and complicates the general pattern, but there is no alternative way to deal with such data unless these sites are revisited, and this leaves open the question of whether or not there was a growth in the number of sites in the Umm al-Nar period. In fact, for the reasons indicated above, it is not possible to answer this question, as no comparison between the occupation sites of the Umm an-Nar and Hafit periods can be made due to the scarcity of known Hafit occupation sites.




**Map 31 Level of activity during the Umm an-Nar and Wadi Suq periods**

The period between the Umm an-Nar and Wadi Suq shows a growth in the number of recorded sites within only one sub-region, namely the Musandam and Northern Emirates. This sub-region includes a total of Wadi Suq sites that is almost double that of Umm an-Nar sites, representing around 11% of the total number in the whole sub-region. By contrast, three sub-regions witnessed a decline during this period: the Abu-Dhabi Coast, Central Oman and the Eastern Coast, while the level remained stable on the Batinah Coast and in the Hajar Mountains. See Map 31 for an examination of the distribution of the sites.

The high percentage of Wadi Suq sites within the Musandam and Northern Emirates might be due to the intensive work carried out by the British Expedition in Ras al-Khaimah (e.g. de Cardi, Kennet & Stocks 1994), and the Joint French/Sharjah Mission in Sharjah (e.g. Jasim 1997; Benoist, Cordoba & Mouton 1997). These two projects represent around 80% of the total Wadi Suq sites recorded within this sub-region. The vast majority of these sites are located within the Ras al-Khaimah area, representing around 70%, and Sharjah, representing around 28%. It should also be noted that 76% of these sites are tombs. The reason behind this might be due to the issue of tomb visibility; Wadi Suq tombs in the far northern part of the peninsula are overground structures, making them easy to spot by the survey members. By contrast, tombs in the southern part of the peninsula (e.g. the Hajar Mountains) are subterranean and are, therefore, difficult to spot during the survey and might also be subject to burial and erosion. Additionally, these subterranean tombs are to some extent similar to those tombs of the later periods such as the Iron Age and Hellenistic–Parthian, which, again, makes them difficult to distinguish. This raises the question of whether or not we are dealing with an actual number of archaeological sites? It is possible that we are dealing with an archaeological reality in which the high percentage of sites within the Musandam and Northern Emirates might suggest that that there was possibly more activity during the Wadi Suq period in this part of the peninsula than the other parts. The idea that this area was a 'Wadi Suq Enclave', will be further discussed in the discussion and interpretation chapter (see Chapter Seven, 7.1.4).




**Map 32 Level of activity between Wadi Suq and Iron Age**

The data (Map 32) for the period between the Wadi Suq and Iron Age reveals that there was growth in the number of recorded sites in the central, eastern and south-eastern parts of the peninsula, namely the Central Oman, Eastern Coast and Hajar Mountains sub-regions. It also shows that there was a stable level in the north-western part, namely, the Abu-Dhabi Coast, while there was decline in the northern and north-eastern parts, namely, the Batinah Coast and Musandam and Northern Emirates. However, almost all periods, mainly pre-Islamic ones, within the Batinah Coast yielded small numbers of sites and it is, therefore, difficult to take these figures as reliable indicators of the level of activity within this sub-region. Moreover, it is notable that the areas where there was decline in this

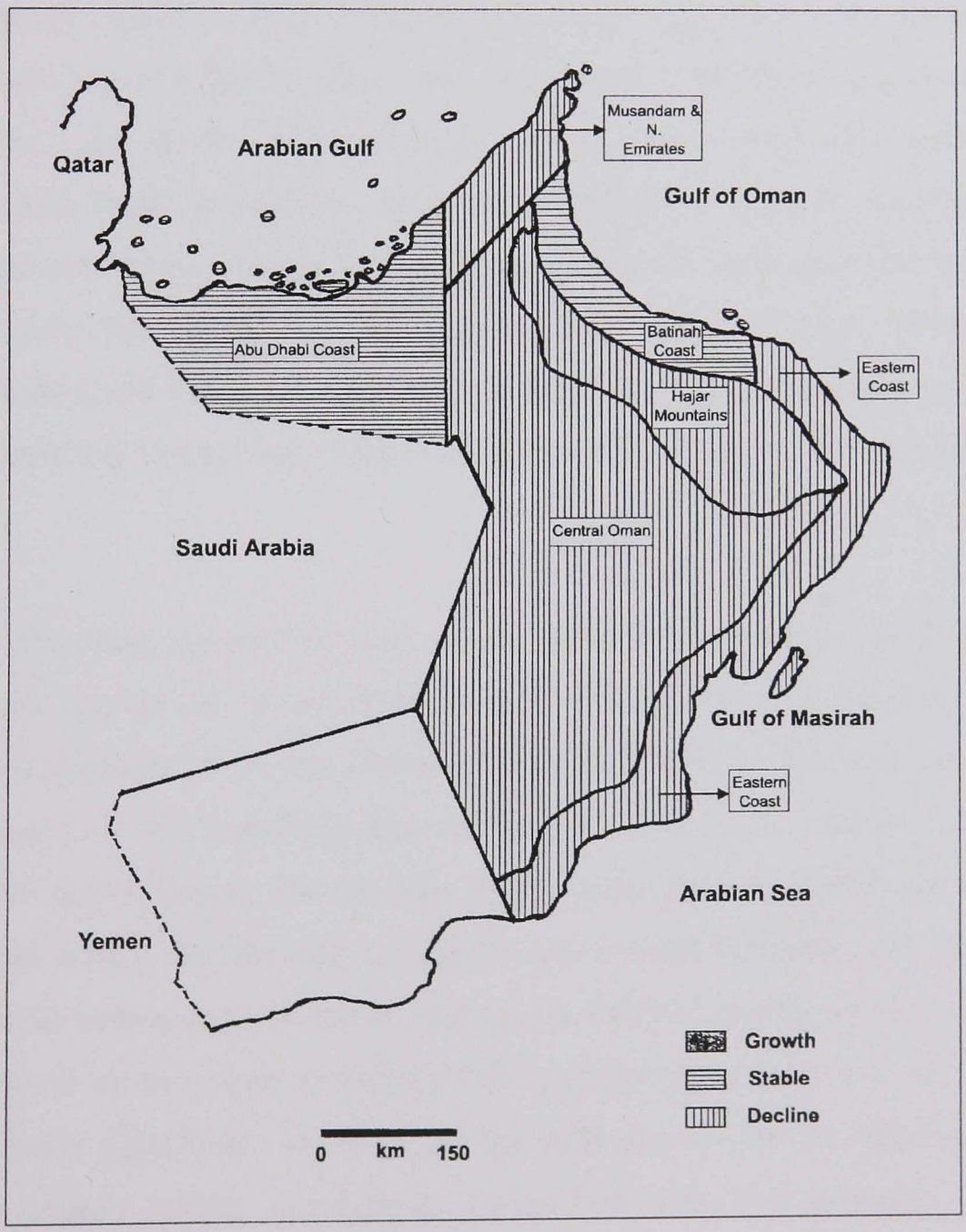
period are the same areas where there was a high level of Wadi Suq activity, so in fact it may simply be an equalising of a situation where population had been concentrated in the north (e.g. Musandam and Northern Emirates and possibly the Batinah coast) during the Wadi Suq period.

The analysis shows that the only sub-regions where Iron Age sites represent greater than 10% of the totals are the Hajar Mountains (ca. 22%) and the Eastern Coast (ca. 15%). The high percentage within the Hajar Mountains could be related to the huge amount of fieldwork carried out by the German Mission in the al-Mudhaybi area (see Chapter Five, 5.4.3). This project recorded around 73% of the Iron Age sites within this sub-region, of which 83% are located in the al-Mudhaybi area and around 92% are tombs. This raises the question about the problem of bias in recording specific types of sites within a particular area of interest. It must also be remembered, as was argued in Chapter Five (5.5.1), that many of the excavated Wadi Suq and Late Iron Age–Samad tombs located by this project yielded materials from different periods and that several of the $C^{14}$ dates obtained from these tombs have proved unreliable (cf. Kennet 2007). This is an important point which has already dealt with in Chapter Three (3.6.3) and is also valid for the large number of sites on the Eastern Coast during this period, in which the same survey project (e.g. Yule 1993 & 2001a; Costa et al. 1999; Yule & Weisgerber 1998 & 2001) recorded and excavated a large number of sites, mainly tombs.

It should be stressed that the large number of tombs is due to the fact that the German Mission concentrated on recording or excavating individual tombs within specific cemeteries, and this has increased the number of Iron Age sites recorded within the 'regional database'. This is also true for the following period, namely the Hellenistic–Parthian (part of the 'Samad period') (see Chapter Three, 3.6.3). Again, each of these tombs was entered and counted as one site within the database, and this has increased the percentage of the recorded sites from the Iron Age and Hellenistic–Parthian periods. This results in unreliable representations of the real levels of activity.

The evidence for the period between the Iron Age and the Hellenistic–Parthian period demonstrates that the number of recorded sites remained stable on the Abu-Dhabi and Batinah Coasts. By contrast, the rest of the Oman Peninsula witnessed a decline during

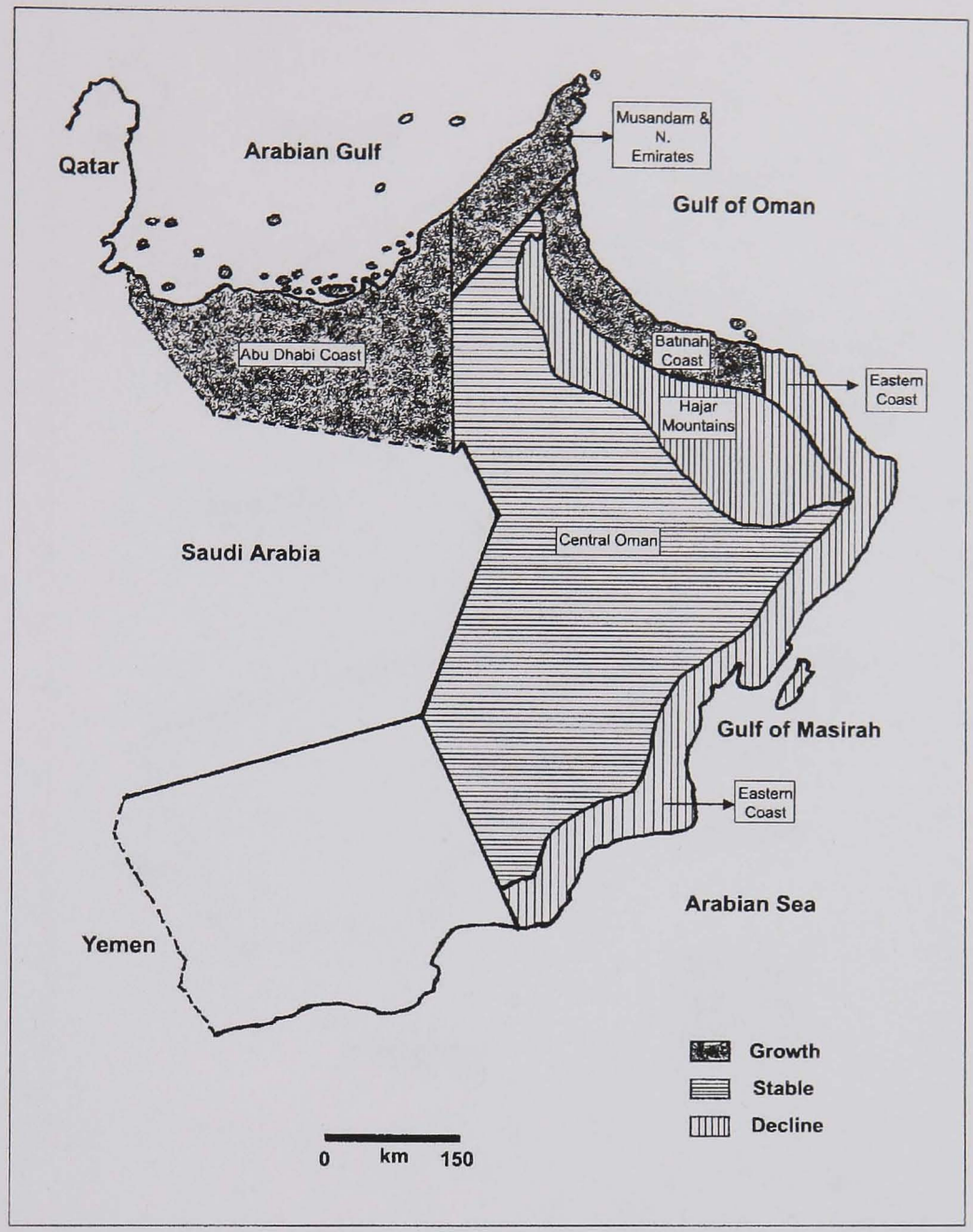
this period (Map 33). Looking at the evidence from another angle, it appears that the only sub-region where Hellenistic–Parthian sites represent a percentage greater than 6% is the Hajar Mountains, where around 15% of the total number of sites from this sub-region date to this period. Again, as was the case with the Iron Age, the high percentage of sites of this period within the Hajar Mountains is probably due to the fact that the German Mission carried out several surveys and excavations in the al-Mudhaybi area with the aim of attempting to explore the distribution and chronology of 'Samad Period', which was dated by the German Mission project to 300 BC–900/1000 AD (for the dating problem of this period, see Chapter Three, 3.6.3).




**Map 33 Level of activity during the Iron Age and Hellenistic–Parthian periods**

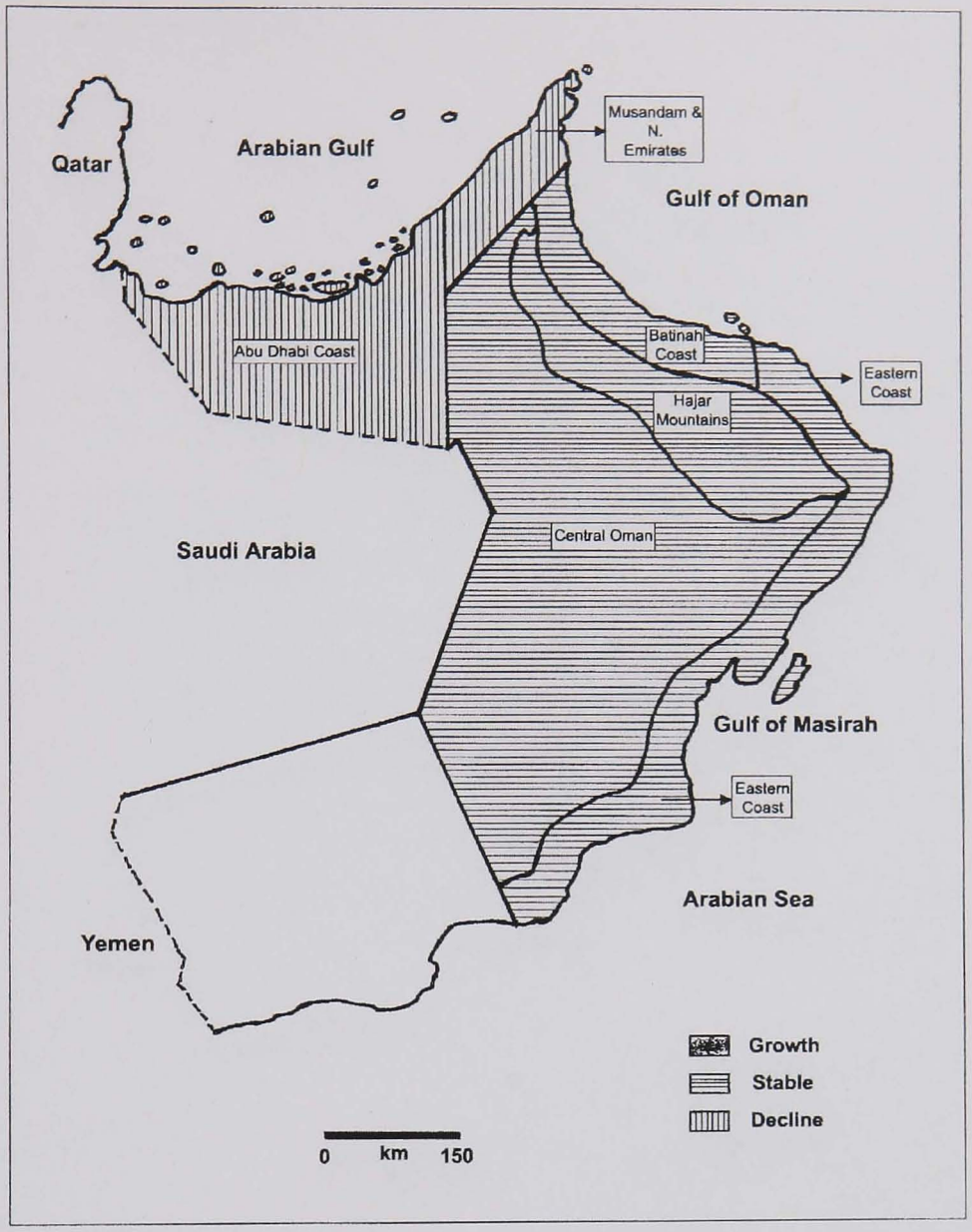
The pattern in the period between the Hellenistic–Parthian and Sasanian–Early Islamic periods indicates that there was a growth in the number of recorded sites on the Abu-Dhabi Coast and Batinah Coast as well as the Musandam and Northern Emirates sub-regions, while the level remained stable in Central Oman. By contrast, there was a decline in the Eastern Coast and Hajar Mountain sub-regions. The distribution pattern on Map 34 demonstrates that there was a growth in the number of recorded sites in the northern, north-eastern and north-western parts of the peninsula. The statistics show that the only sub-regions where Sasanian–Early Islamic sites represent greater than 5% of the sub-regional totals are the Abu-Dhabi Coast (ca. 9%), Musandam and Northern Emirates (ca. 9%) and Batinah Coast (ca. 8%). The high percentage of sites from this period within the Abu-Dhabi sub-region might be due to the large amount of fieldwork carried out by the ADIAS project, as all the Sasanian–Early Islamic sites within this sub-region were recorded by this team. In addition, the high percentage of sites in the Musandam and Northern Emirates could be due to the large number of sites recorded by the British Expedition in the Ras al-Khaimah area (e.g. de Cardi 1985; de Cardi, Kennet & Stocks 1994; Doe & de Cardi 1983; Stocks 1996). This survey project yielded around 86% of the total Sasanian–Early Islamic sites within this sub-region, of which 92% are located in Ras al-Khaimah.

By contrast, the large number of sites on the Batinah Coast might be attributed to the intensive work carried out on the Batinah coast: this work was initiated by the Harvard expedition (Humphries 1974) and continued by the Ministry of National Heritage (Costa and Wilkinson TJ 1987) and Prospection (Oman) Limited (e.g. Goettler, Firth & Huston 1976) at Wadi Jizzi in Sohar. The database demonstrates that around 69% of the total sites of this period within the Batinah sub-region are located in Sohar. All these sites are settlements and mining sites. However, dating the remains, mainly pottery, of this period was problematic at that time as many of the pottery types were not well understood. Recently, Kennet (2007) has reviewed all the evidence for the Sasanian–Early Islamic period from Eastern Arabia, including the Oman Peninsula, and concluded that many of these sites cannot be dated to this period (see Chapter Three, 3.6.3 & 3.7). Moreover all periods within the Batinah Coast sub-region yielded small numbers of sites, making them unreliable indicators of the level of activity within this part of the peninsula.



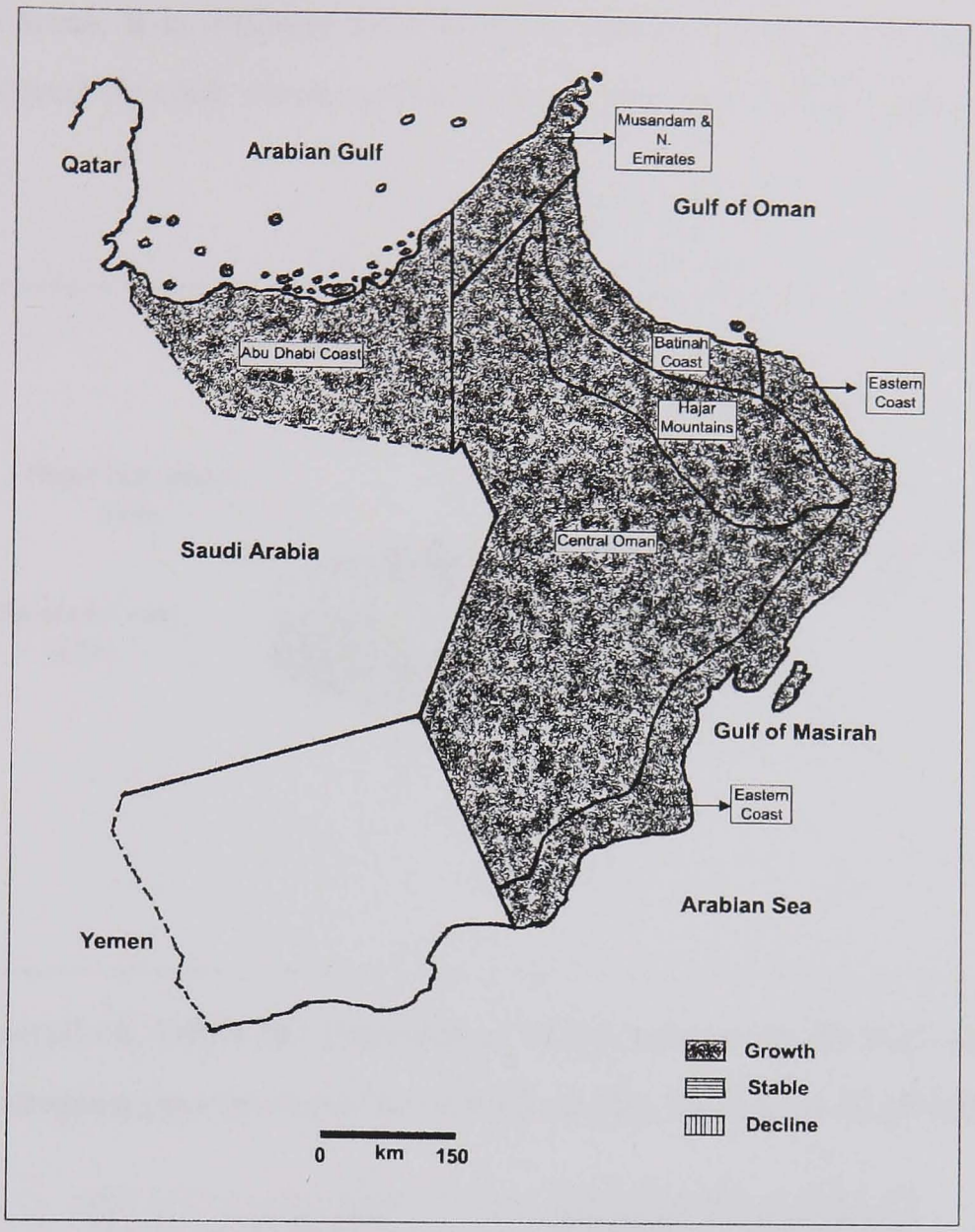

**Map 34 Level of activity during the between the Hellenistic–Parthian and Sasanian–Early Islamic periods**

The statistics (Map 35) for the period between the Sasanian–Early Islamic and Middle Islamic period shows that the number of recorded sites is stable throughout the whole peninsula, with the exception of the Abu-Dhabi Coast and the Musandam and Northern Emirates sub-regions, which witnessed a decline. By comparison, the data (Map 36) for the period between the Middle Islamic and Late Islamic–Recent shows that there was a growth in the whole Oman Peninsula. This could be related to the fact that the most recent period will normally be well represented because it is recent in date, thus, its remains are more likely to survive.




**Map 35 Level of activity between Sasanian–Early Islamic and Middle Islamic periods**

To sum up, it appears from the above discussion that a number of possible trends have been identified at the regional and sub-regional levels, but being certain of these trends and interpreting and explaining them is difficult and complicated. Different hypotheses might be suggested but none of them can yet be shown to be correct.




**Map 36 Level of activity between the Middle and Late Islamic–Recent**

### 6.4.3- SITE DENSITY:

Figure 45 shows the total area of each sub-region within the whole northern Oman Peninsula. Central Oman represents almost half of the peninsula but, numerically speaking (Figure 46), it yielded the lowest number of archaeological sites, representing only 6% of the total number of sites recorded within the database. Moreover, the Hajar Mountains yielded the largest number of sites, representing 32% of the total number of sites within the whole northern peninsula. Looking at the figures from another angle, namely the site density at a sub-regional level (Figure 47 & Table 58), almost all sub-regions can be seen to have yielded very low densities of sites per square km compared to their total area. Although low site densities might be expected in this fairly arid region, the reason(s)

behind such low figures is unclear, but might be related to the fact that there are many parts of the sub-regions that have not yet been subject to survey, such as the large desert and mountain areas. It is difficult to look at the number of sites reported in terms of the total area surveyed by each survey project, due to the lack of data regarding total survey area coverage.

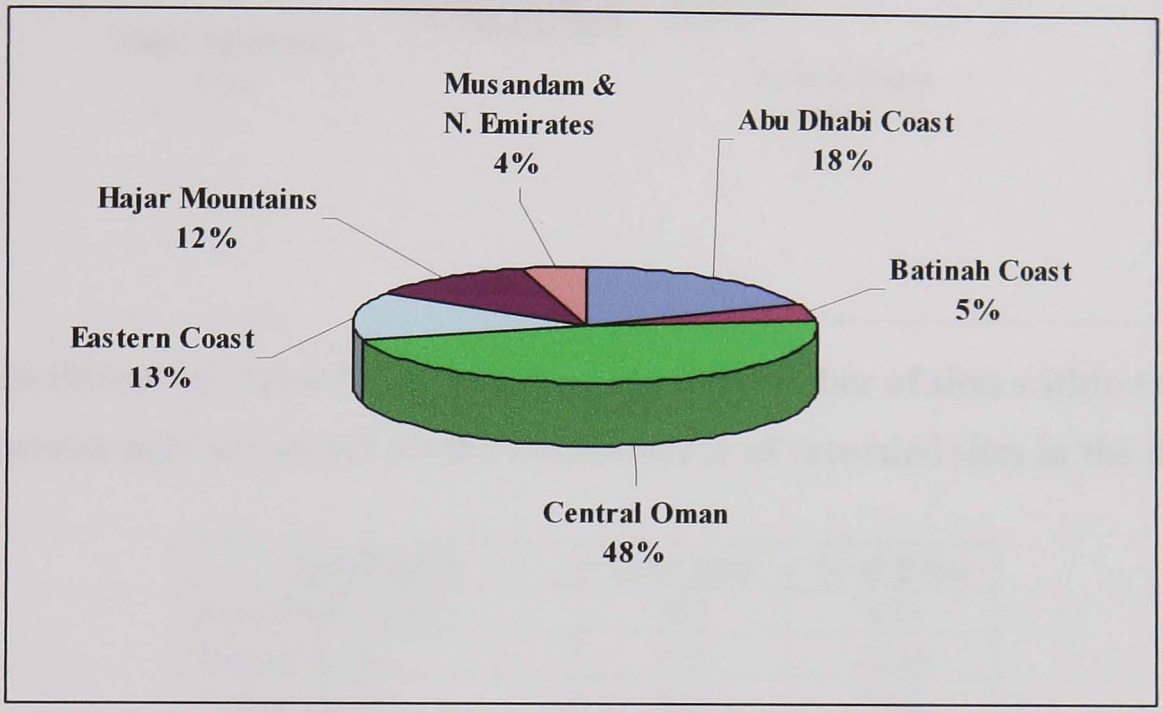



**Figure 45 (based on Table 56) Percentage of the total area (in km$^2$) contributed by each sub-region (percentages are based on the total area of all sub-regions)**

| Sub-Region | Area/km$^2$ | % of Total |
|---|---|---|
| Abu-Dhabi Coast | 51,213 | 18.21 |
| Batinah Coast | 13,968 | 4.97 |
| Central Oman | 133,434 | 47.45 |
| Eastern Coast | 36,698 | 13.05 |
| Hajar Mountains | 33,310 | 11.85 |
| Musandam & N.Emirates | 12,564 | 4.47 |
| **Total** | **281,187** | **100** |

**Table 56 Total area (in km$^2$) of each sub-region**

The figures show that the Musandam and Northern Emirates yielded the highest density of sites, representing 0.0766 sites per square km, while Central Oman yielded the lowest density, representing 0.0019 sites per square km. Looking at their total area, it appears that there is a large difference between both sub-regions; Central Oman is the largest sub-region, representing 48% of the peninsula, while the Musandam and Northern Emirates is the smallest sub-region, representing only 4% of the whole peninsula.

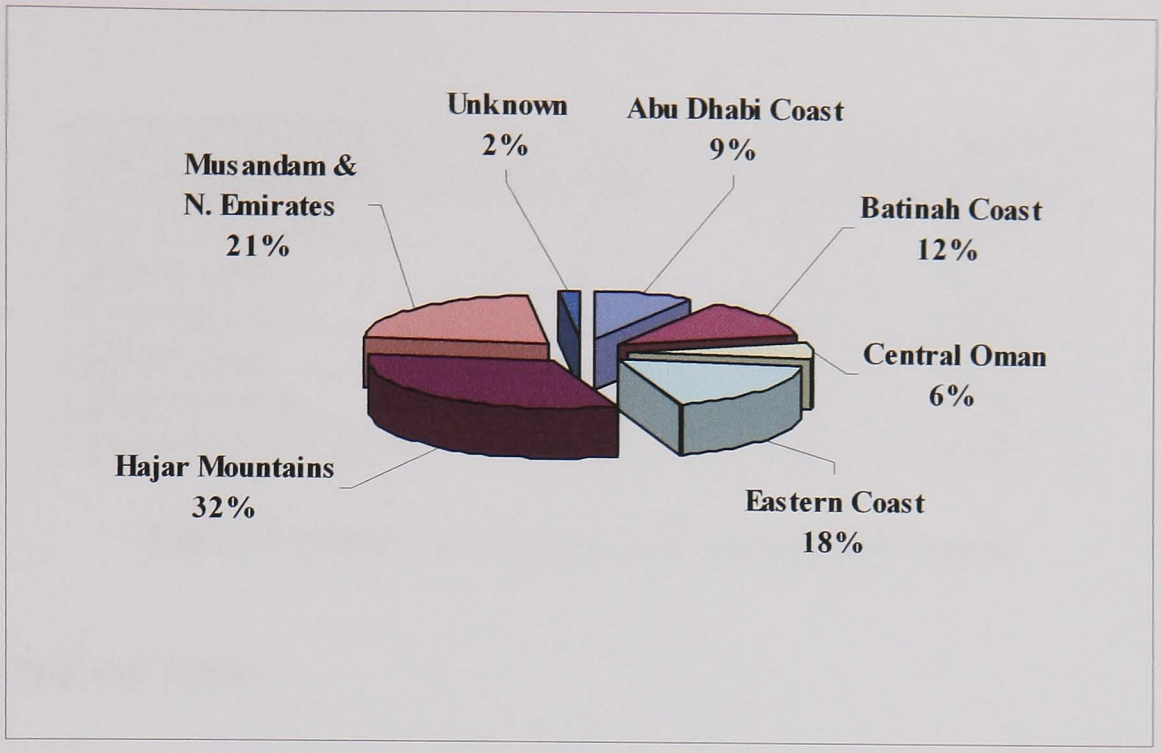



**Figure 46 (based on Table 57) Percentage of total number of sites within each sub-region (percentages are based on the total number of recorded sites in the database)**

| Sub-Region | Total Sites | % of Total |
|---|---|---|
| Abu-Dhabi Coast | 395 | 8.74 |
| Batinah Coast | 555 | 12.28 |
| Central Oman | 254 | 5.62 |
| Eastern Coast | 807 | 17.85 |
| Hajar Mountains | 1,460 | 32.30 |
| Musandam & N.Emirates | 963 | 21.31 |
| Unknown | 86 | 1.90 |
| **Total** | **4,520** | **100** |

**Table 57 Total number of sites within each sub-region**

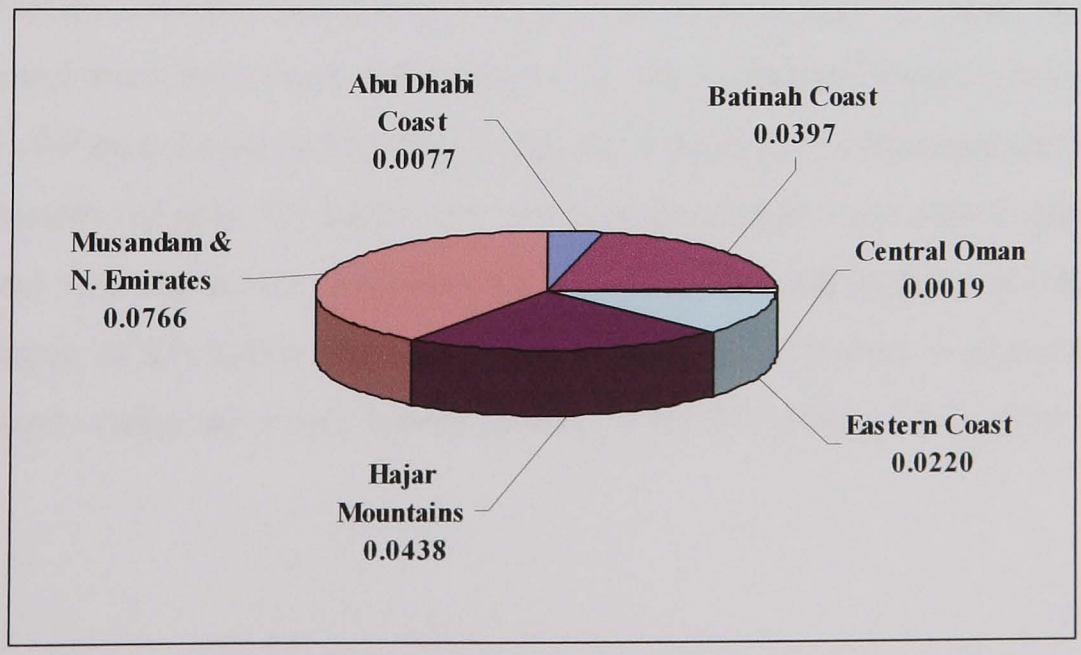



**Figure 47 (based on Table 58) Density of sites per km$^2$ in each sub-region**

| Sub-Region | Total Sites | Area/km$^2$ | Sites Density/km$^2$ |
|---|---|---|---|
| Abu-Dhabi Coast | 395 | 51,213 | 0.0077 |
| Batinah Coast | 555 | 13,968 | 0.0397 |
| Central Oman | 254 | 133,434 | 0.0019 |
| Eastern Coast | 807 | 36,698 | 0.0220 |
| Hajar Mountains | 1,460 | 33,310 | 0.0438 |
| Musandam & N.Emirates | 963 | 12,564 | 0.0766 |

**Table 58 Density of sites per km$^2$ in each sub-region**

### 6.4.4- TYPES OF SITE:

To demonstrate the levels of activity during each period, Table 59 shows the total number of sites by type and period. It shows that the majority of pre-Islamic sites, particularly Hafit to Hellenistic–Parthian, were tombs, while periods earlier than the Hafit period are more commonly represented by midden/scatter sites. It also indicates that the Sasanian to Recent periods are more commonly represented by settlement sites. Table 59 gives a clear idea of the types of activities that were going on at the recorded sites. However, it complicates the picture of the real number of sites. In other words, several of the recorded sites yielded evidence of different types of activities such as settlements, fortifications, industrial places, middens/scatters, tombs, etc. For the purpose of the current 'regional database', each of these types was entered as it was described by its survey project (Tables 46–47). Therefore, in quantifying each type of site, as presented in Table 59, many sites will be counted more than once. For example, if one location includes two types of site, then the site will be counted as two sites. Thus, the figures give a misrepresentative picture of the total number of sites. To tackle this problem, an attempt was made to count any type of site/feature that represents occupational activity (e.g. settlements, middens/scatters, industrial places, fortifications, etc.) as a settlement. This is in order to show the different pattern between settlements and tombs, which is clearly shown in Figures 48–49 and Table 60.

| Period | Settlements | | | | | | | Tomb | Rock Art | Harbour /Port | Unidentified |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Settlement | Midden/ Scatter | Fortification | Industrial Place | Religious Place | Earthwork | Cave/Rock Shelter | | | | |
| E.S.A | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| L.S.A | 54 | 199 | 0 | 6 | 0 | 1 | 3 | 18 | 0 | 0 | 1 |
| $4^{th}$–$3^{rd}$ Mill | 11 | 90 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Hafit | 15 | 14 | 0 | 0 | 0 | 0 | 3 | 328 | 0 | 0 | 0 |
| U.Nar | 159 | 57 | 53 | 21 | 0 | 6 | 0 | 397 | 0 | 0 | 0 |
| W.S | 46 | 53 | 7 | 13 | 0 | 5 | 0 | 325 | 0 | 0 | 0 |
| I.A | 147 | 81 | 30 | 23 | 0 | 18 | 1 | 601 | 0 | 0 | 0 |
| Hell–Parth | 69 | 29 | 10 | 6 | 4 | 5 | 0 | 413 | 0 | 0 | 1 |
| Prehistoric? | 12 | 71 | 7 | 5 | 0 | 3 | 1 | 176 | 0 | 0 | 0 |
| Sas–E.Islamic | 163 | 123 | 18 | 77 | 5 | 33 | 1 | 40 | 0 | 1 | 2 |
| M.Islamic | 111 | 76 | 23 | 98 | 5 | 13 | 0 | 22 | 2 | 0 | 1 |
| L.Islamic–Recent | 482 | 389 | 280 | 145 | 26 | 80 | 7 | 140 | 4 | 4 | 3 |
| Islamic? | 12 | 10 | 108 | 2 | 26 | 11 | 0 | 73 | 1 | 0 | 0 |
| Undated | 186 | 151 | 51 | 100 | 0 | 161 | 15 | 256 | 116 | 4 | 63 |

**Table 59 Total number of sites by type and period**

Figure 48 and Table 60 show the total numbers and percentages of settlements against tombs by period. It appears that the Late Stone Age and 4th–3rd millennium BC periods are more commonly represented by settlement sites. Settlements make up 100% of the sites during the Early Stone Age and more than 90% in the following two periods. This pattern is exactly the same as that on the sub-regional level presented in Figure 49[54]. This might be due to the fact that the majority of sites from these periods are shell-middens and/or flint scatters that are very visible on the surface, while no evidence of tombs, with few exceptions, has yet been found, probably due to erosion or deposition. By contrast, periods from Hafit to Hellenistic–Parthian are more commonly represented by tomb sites, which is, again, a similar pattern to that at the sub-regional level (Figure 49), with slight differences during the Iron Age and Hellenistic–Parthian periods. This large number of tombs from the Hafit period is related to the fact that few or no settlements (see Chapter Seven, 7.1.2), have yet been found. This period is more commonly represented by Hafit cairns, which are distributed all over the peninsula, particularly in mountainous areas, making them subject to a high degree of survival and easy to spot by surveyors. The same is true for the large number of Wadi Suq tombs and the fact that few occupational structures have been found from this period. It is possible that these tombs belong to a small nomadic or semi-nomadic population. Their occupational remains might have been built of perishable material, which does not leave any traces (see Chapter Seven, 7.1.4).

By contrast, the large number of tombs from the Umm an-Nar and Iron Age to Hellenistic–Parthian periods might be related to the bias (noted in Chapter Five) of several survey projects towards recording tombs from specific periods. This is the case with the German Mission, which concentrated on excavating tombs of the Late Iron Age and 'Samad period'. Also, several surveys have concentrated on recording or excavating individual tombs within specific cemeteries (e.g. Umm an-Nar tombs on Umm an-Nar Island and in the Ibri area, and Iron Age–Samad period tombs at Samad and Izki area). Each of these tombs was entered and counted as one site within the database, which has increased the percentage of tombs against other types of sites, and, thus, gives unreliable representations of the real level of activity.

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[54] In areas with very low numbers of sites of particular periods one or two sites may comprise 100% of the total. In other words, percentages work well with absolute numbers that are in the same ballpark for all areas, but are less effective when there are really big differences.

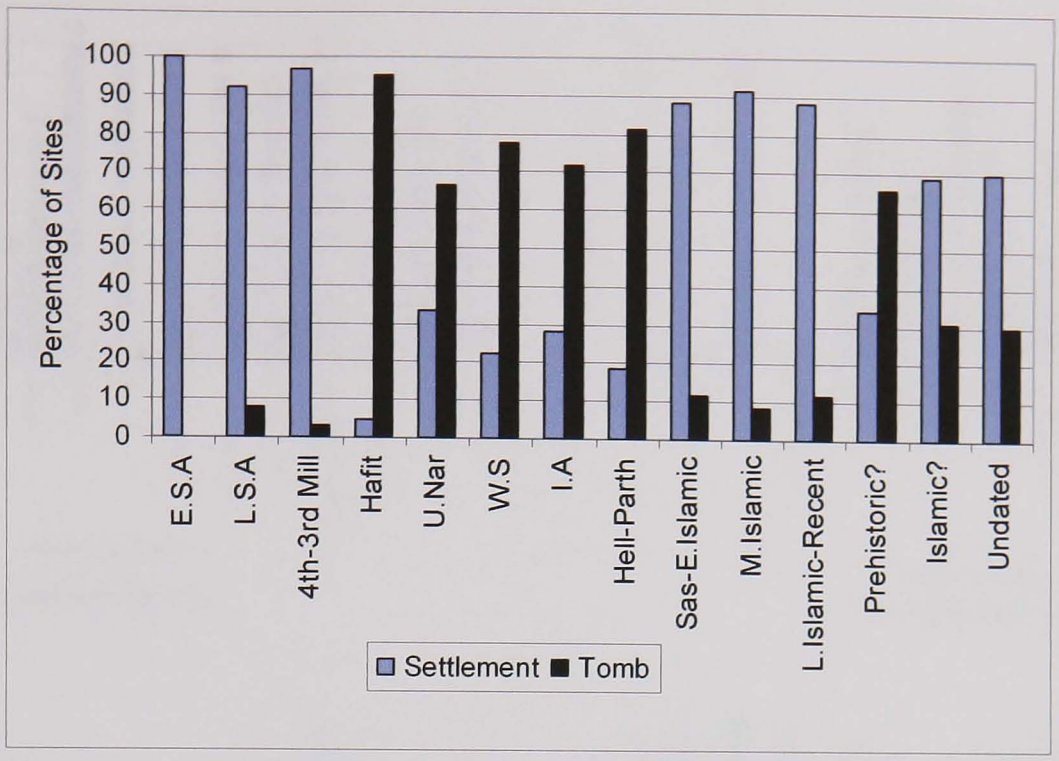
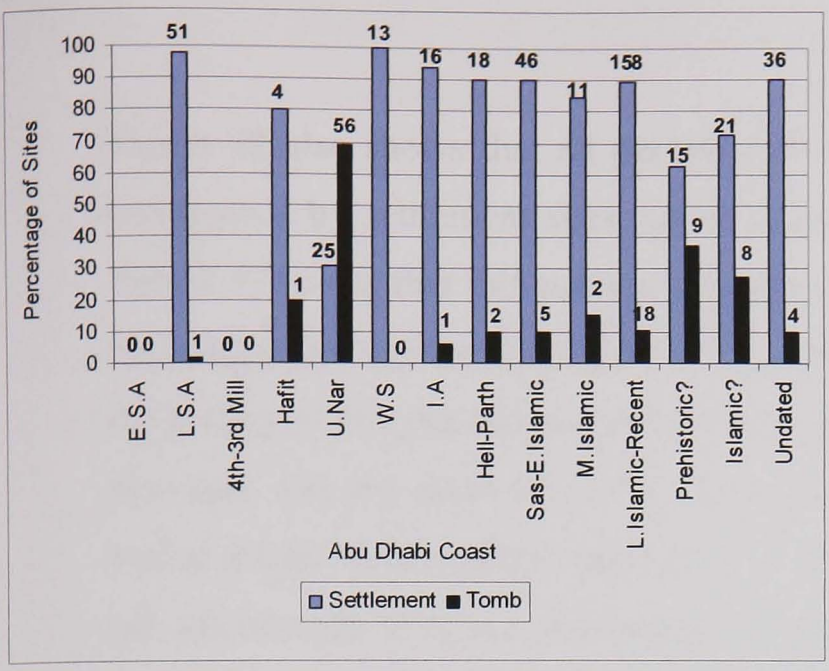
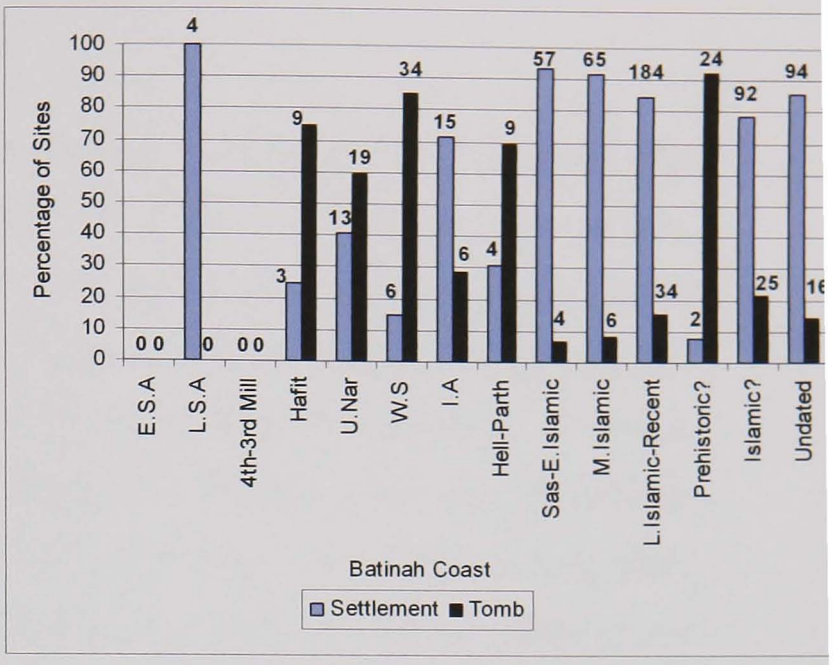


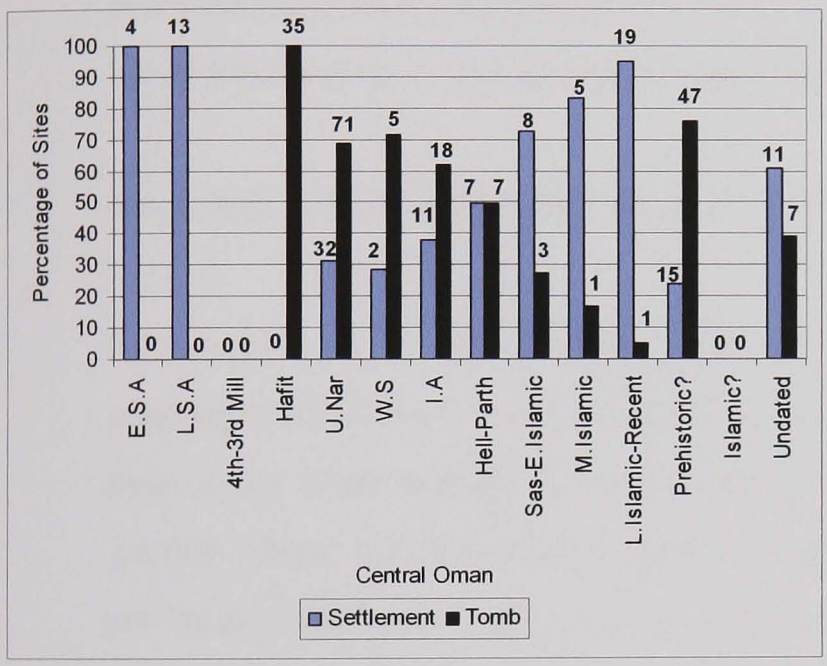

**Figure 48 (based on Table 60) Total percentage of settlement and tomb sites by period (percentages based on the total number of sites by period)**

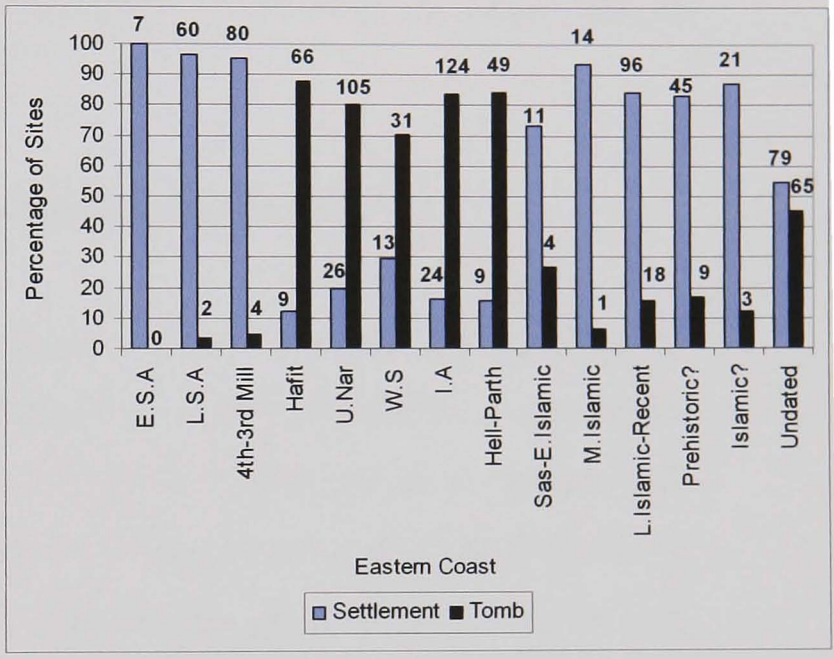
| Period | Settlement | Tomb | Total/Period |
|---|---|---|---|
| E.S.A | 22 (100%) | 0 (0%) | 22 (100%) |
| L.S.A | 210 (92%) | 18 (8%) | 228 (100%) |
| 4th–3rd Mill | 91 (97%) | 3 (3%) | 94 (100%) |
| Hafit | 17 (5%) | 328 (95%) | 345 (100%) |
| U.Nar | 199 (33%) | 397 (67%) | 596 (100%) |
| W.S | 93 (22%) | 325 (78%) | 418 (100%) |
| I.A | 233 (28%) | 601 (72%) | 834 (100%) |
| Hell–Parth | 94 (19%) | 413 (81%) | 507 (100%) |
| Sas–E.Islamic | 301 (88%) | 40 (12%) | 341 (100%) |
| M.Islamic | 230 (91%) | 22 (9%) | 252 (100%) |
| L.Islamic–Recent | 1038 (88%) | 140 (12%) | 1180 (100%) |
| Prehistoric? | 91 (34%) | 176 (66%) | 267 (100%) |
| Islamic? | 164 (69%) | 73 (31%) | 237 (100%) |
| Undated | 610 (70%) | 256 (30%) | 866 (100%) |
| **Total/Type** | **3395** | **2792** | **6187** |

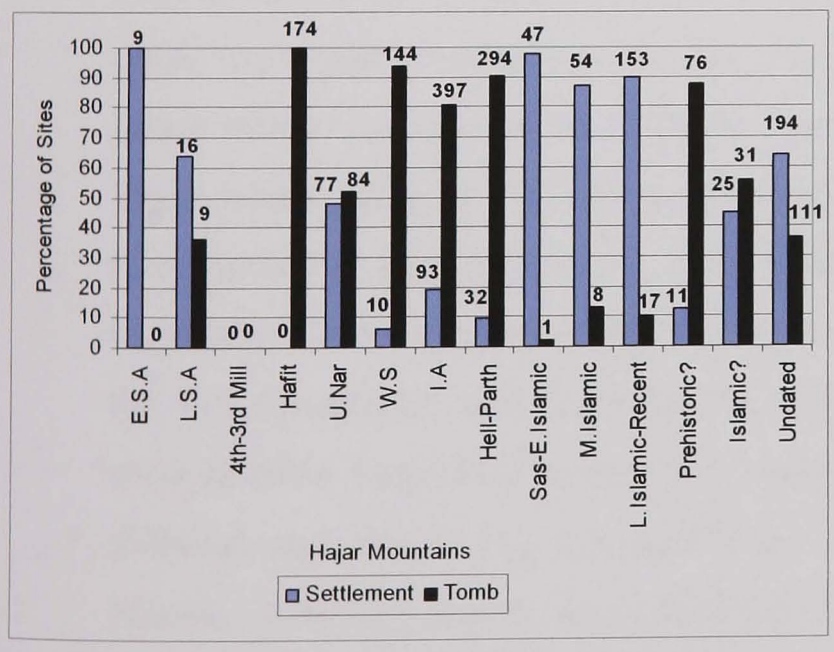
**Table 60 Total number and percentage of settlement and tomb sites by period (percentages based on the total number of sites by period)**



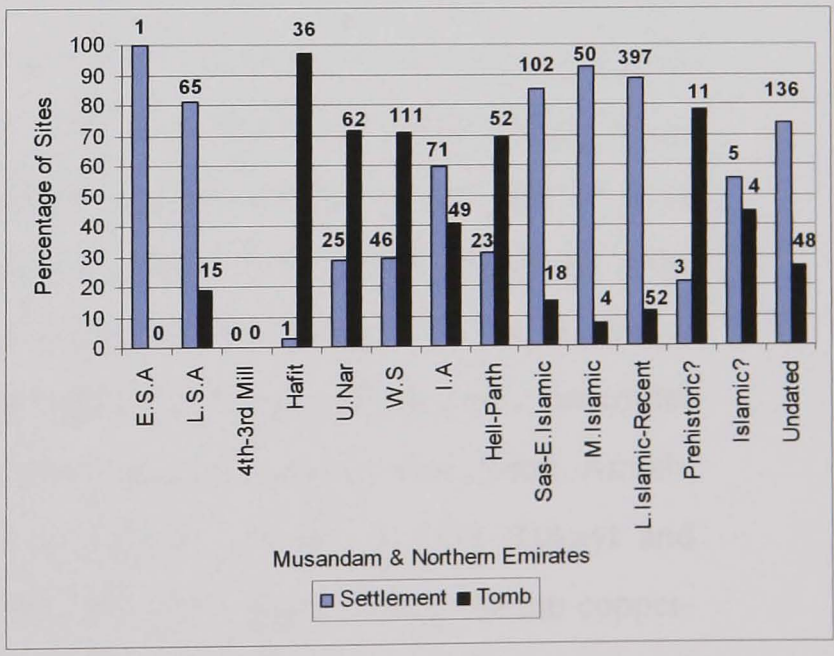



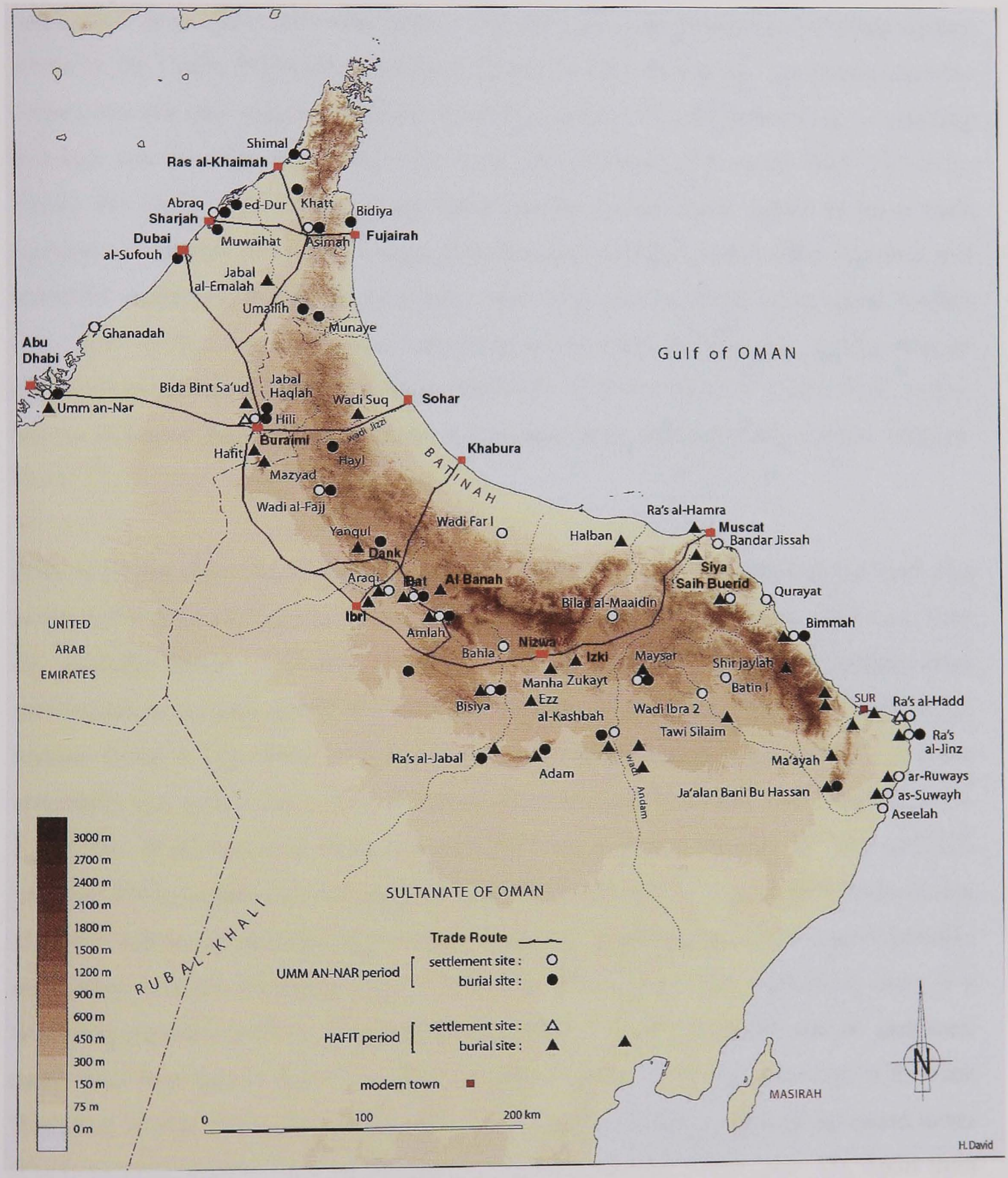

**Figure 49 Percentage of settlements compared with tombs from each sub-region by period (actual numbers of sites are indicated within the graph)**

Figure 48 also shows that all periods from the Sasanian to Recent are more commonly represented by settlement sites, which represent over 88% of the sites of these periods. Figure 49 shows that this pattern is exactly the same as that from each sub-region. It has been suggested earlier that the Sasanian–Early Islamic evidence is unreliable as much of the pottery of this period was not well understood by the people who carried out surveys at that time. On the other hand, the large percentage of settlement sites from the Islamic period might be due to the fact that it is difficult to use tombs as evidence during these periods because it is not possible to distinguish between them. In addition, Islamic law prohibits the disturbance of Islamic tombs, increasing their survival and making it difficult for archaeologists to distinguish between them.

### 6.4.5- RELATIONSHIP BETWEEN SETTLEMENTS AND TOMBS:

It is important to examine the relationship between tomb location and positions of contemporary settlement during different periods, especially the pre-Islamic. It has already been noted when presenting the evidence from the Wadi Andam Survey (Chapter Four, Section Three, 4.3.2) and other surveys (Chapter Five), that tombs during the Hafit period are located on top of hills and outcrops, with a few on the plain. Several scholars (e.g. Potts 1978: 35–37; Frifelt 1991: 127; Crawford 1998: 105 &110) have argued that these tombs are found in strategic locations, where they tend to follow the trade and transport routes which cross-cut the mineral-rich interior of Oman, close to the major mining areas. These routes (Map 37) include those south and east of the Buraimi oasis where tombs were located at Bida Bint Sa'ud, Jebel Hafit and Mazyad. They can be found along the route from Buraimi to Dubai-Sharjah [north-east] like those at Jebel al-Emalah; the routes that link Buraimi by Abu-Dhabi [north-west] and Ras al-Khaimah in the north; the routes south Buraimi from Jebel Hafit to Ibri where tombs cluster around Bat-Ibri, Dank, Amlah, al-Banah and Araqi; and the route from Ibri to Nizwa (e.g. Bisya, Izki, Zukayt and Manah). They can also be found along the route links the Buraimi oasis via the copper-rich Wadi Jizzi-Wadi Suq with the east coast of Sohar; at Saih Buerid and Siya almost 30 km from the coast south of Muscat; as well as around mining sites such as Maysar 2 and the mining area of Wadi Asimah. It is, however, important to indicate that no settlements can be associated with Hafit tombs. Although the excavators of the Hili 8 settlement suggested that the earliest phase is contemporary with the Hafit period, they only refer to

the tombs located on the Jebel Haqlah as the cemetery during this time (Cleuziou 1984: 377). Additionally, although some tombs have been found along the routes where mining areas possibly exist, there is no single site within these areas that can certainly be dated to the Hafit period.




**Map 37 The main Hafit and Umm an-Nar sites and the trade routes (Modified after Cleuziou & Tosi 2007: fig.92, p. 107)**

A large number of Umm an-Nar settlements have been recovered all over the peninsula, encompassing different geographical zones and sharing a large number of features (cf. Potts 1990a: 95; Blau 2001: 557–560): they are found in the coasts, piedmonts and deserts (oases) (cf. Blau 2001: 558–559, Table 1, for summary and distribution of Umm an-Nar tombs in the Oman Peninsula). Several of Umm an-Nar settlements are located close to copper sources (the majority of them yielded evidence for copper-working or smelting activity), and are often associated with tower-like buildings (Crawford 1998: 111–112). Unlike the Hafit period, during the Umm an-Nar period there seems to be a clear association between settlements (large, fort-like tower buildings and other domestic and industrial structures) and tombs of similar date which can be found in the same location (e.g. Umm an-Nar, Ras al-Jinz and Tell Abraq on the coast and Hili, Bat, Amlah, Maysar and al-Ghoryeen inland). This can be attested both by the evidence from the Wadi Andam Survey (Chapter Four, Section Three, 4.3.3) and other surveys in the region (Chapter Five).

Little is known about the relationship between settlements and tombs during the Wadi Suq as few settlements of this time have so far been recovered in the peninsula. However, from the available patchy evidence, tombs seem to be located in areas surrounding these settlements, as is suggested by the evidence from the Wadi Andam Survey (Chapter Four, Section Three, 4.3.4). When tombs are found, they can appear to be completely isolated, suggesting that people came from different places to bury their dead (see Chapter Seven, 7.1.4). The Wadi Suq cemeteries at Samad (S21, as well as tombs at S10, S20 and S22) (cf. Yule 2001a) appear not to have been associated with any settlement as there is no sign of such a settlement close to any cemetery. There is, however, some evidence of possible association between settlements and tombs from Shimal and Bat. At Shimal, there is a Wadi Suq cemetery in close proximity to the settlement, but it is argued that the tombs are dated from first half of the 2$^{nd}$ millennium BC while the settlement belongs to the Late Wadi Suq (Carter 1997a: 60–61). At Bat, it is suggested that the ruins of the round tower (1145) building were re-used as a burial cairn during the Wadi Suq (*ibid*: 42). Apart from this unsatisfactory evidence, none of the Wadi Suq settlements are associated with tombs, as is the case at sites like Bida'a, Nud Ziba, Tell Abraq and Kalba 4, as well as the evidence from the Wadi Andam Survey (see Chapter Four, Section Three 4.3.4).

A greater number of Iron Age settlements and tombs have been found and excavated within the peninsula than for any other earlier period. Although many Iron Age settlements did not yield any evidence for associated cemeteries, some showed a degree of association. At Samad (Sites S10, S19, S20–30; Yule 2001a), for example, there is no sign of close association between the excavated tombs and a settlement. Other Iron Age settlements showed some possible association with tombs such as those found at Qarn Bint Sa'ud (Cleuziou 1976/7); Maysar M25 and al-Amqat (Yule 2001a) and Raki 2 (Weisgerber & Yule 1999: 97–117). This appears to be a similar trend to that attested during the Wadi Andam Survey, where some Iron Age settlements yielded associated tombs such as Mahleya (Sites CS.2.43, CS.2.50 and CS.2.51), while other settlements (e.g. CS.2.11, CS.2.20, CS.2.23 and CS.2.29) and tombs (e.g. CS.4.13, CS.5.14; CS.7.2 and CS.3.4) were located in isolation.

## 6.5- CONCLUSION:

In conclusion, this chapter has attempted to evaluate the available literature from the northern Oman Peninsula. It has already been said that none of the survey projects carried out in this peninsula have attempted to quantify settlement levels or activity over time, and their results present difficulties in gaining a reliable representation of such levels or activity. In this chapter, an evaluation of the results has been carried out in order to understand and overcome such difficulties. A database (the 'regional database') was created with all the recorded sites within the northern Oman Peninsula, in order to find a reliable and robust way of establishing the different levels of activities between periods and to gain a clearer idea of the amount of available evidence for each period and its possible patterns. In addition, it provides a broader context or framework for the Wadi Andam Survey material and its final conclusions as well as providing comparative material.

Although the data set presented here is unusual and is also undeniably problematic, the hope is that the sheer quantity of available evidence will have ironed out at least some of the localised problems that have been identified, and given a broad indication of general trends. It is clear from conversations and published comments that unsystematic and implicit reviews of exactly this same data set were being carried out by many scholars in

impressionistic and non-rigorous ways based on their own reading. General opinions about the relative density of activity and occupation in different periods are commonplace and they are all based on this same data set. The chance was therefore seized here to put such comparisons on to a firmer footing and to make them explicit and testable. The robustness of the data can be debated, but the stability of some of the longer-term trends suggests that it probably is worth taking this data seriously when used for low-grade analysis such as that presented here. Nonetheless, caution must obviously still be applied until the conclusions can be more rigorously tested.

The quantified data does show important changes in the number and type of sites through the archaeological sequence that may correspond to population levels and/or economic activity. It has also been possible to demonstrate sub-regional variations in the numbers of sites in different periods. However, interpreting these trends and explaining them is complicated and more work needs to be done before they can be fully accepted or explained. It is also important to keep in mind that the differences in the level of activity (growth, stability and decline) have been identified based on comparisons with the patterns from the earlier and later periods. Different hypotheses (e.g. environmental conditions, natural resources, reliability and intensity of fieldwork, archaeological reality, etc.) might be suggested, but with the data currently at hand, it is perhaps too soon to speculate on the reasons behind such sub-regional differences.

Some of the trends presented above might reflect an archaeological reality during specific times and in certain sub-regions. This has, for example, been suggested for the levels of activity during the Hafit period, which is most commonly represented by tombs distributed all over the peninsula, with only very little evidence for settlements. The same can be said for the evidence from the Umm an-Nar period, which clearly witnessed more occupation than the earlier periods. This, perhaps, is due to attractive topography and natural resources within specific sub-regions. The data also suggest that during the Wadi Suq, the Musandam and Northern Emirates is the only sub-region that witnessed an increase in the number of sites. This might be related to the visibility of tombs as tombs of this period are overground structures in the Musandam and Northern Emirates, while they are subterranean structures in the other parts of the peninsula. The latter are more difficult to spot and might be subject to higher degrees of erosion and deposition. Moreover, the

Wadi Suq subterranean tombs are similar to those of later periods, which also increases the difficulty in distinguishing them.

In Chapter Five (Section 5.5.1), it has already been indicated that many of the survey projects carried out in the northern Oman Peninsula employed unsystematic survey methodologies, which might have resulted in neglecting some small - but important - sites, and recording sites of specific types and/or periods within specific selected areas. This might influence the chance of finding the lowest level of settlement activity which might, in turn, influence our knowledge and understanding of the real level of such activity. Therefore, it is difficult to take the results of these surveys as a reliable and comprehensive representation of occupation in those areas.

One general point that has been noted throughout the discussion in this chapter is that several of these surveys have paid more attention to locating sites of specific interest (specific area, period and type of sites) that contribute to answering certain research questions. Such a tendency has created a biased picture of results and made quantifications problematic. It has also been argued that there are problems in dating some of the finds from specific periods such as those attributed to the Iron Age, Hellenistic–Parthian and Sasanian–Early Islamic. Many finds, mainly pottery, from some of these periods (e.g. Sasanian–Early Islamic) were not well understood by the people who carried out the surveys. This may perhaps be the case with the earlier periods, such as the 3rd–2nd millennium BC, particularly in the surveys carried out in the early 1970s. This lack of awareness of pottery types resulted in higher levels of undated sites, as has been shown in this chapter.

In fact, the data presented in this chapter raises several questions and problems regarding the level of activities within the northern Oman Peninsula. The main question raised is whether we are dealing with an actual number of archaeological sites or a completely unreliable and biased picture. Several of the problems regarding the intensity of fieldwork, unsystematic survey methodologies, bias towards recording specific types of sites, periods or areas and dating problems, have led to the conclusion that it is always difficult to deal with such unreliable data. Accordingly, it should always be remembered that the information within this current 'regional database' is in many ways unreliable and far

from complete. In spite of these problems, the aim has been to bring together all the archaeological evidence that can offer an insight into the levels of activity and development of settlement as well as landscape exploitation over time within the northern Oman Peninsula, as no attempt of such a study has previously been made. It is important because it attempts to understand the different assumptions already set out by many people and to test the reliability of these assumptions and to what extent the conclusions of the present study support or contradict such assumptions. It is important to re-evaluate assumptions and conclusions that are not based on any quantified study of the archaeological evidence. It is this that has been attempted in this chapter. This study is supported by evidence from the Wadi Andam Survey. It allows us to examine whether or not a similar pattern of development is suggested across the whole study area and to what extent any such pattern might resemble the pattern from the Wadi Andam survey.

Quantification of the published archaeological evidence from the whole northern Oman Peninsula offers some preliminary developments and patterns that could help to develop hypotheses and interpretations for the changing levels of activity. It also provides a much more detailed picture of the development of the region than previously possible. Some of the former conclusions about the region's development appear to be correct and coherent, while others need to be revised. It has, therefore, been useful to carry out such a study in order to present the limitations of the evidence and the attempts of scholars to interpret the published archaeological evidence. It is hoped that this attempt will form the basis for more deliberate and comprehensive future work by researchers who are concerned with Omani archaeology. It is also hoped that this study might provide a clearer understanding of settlement development over time within the northern Oman Peninsula.

While fully aware of its limitations, an attempt has been made to make the best use of the available data and to test it as far as reasonably possible. There is no doubt that this data is not good enough for highly detailed analysis, but an exploration of how far it can be taken was thought to be worthwhile. In fact, despite any possible problems and unreliability that might exist, there is no doubt that this study has contributed to our understanding of the region's archaeology.

# CHAPTER SEVEN:

# DISCUSSION AND INTERPRETATION

# CHAPTER SEVEN: DISCUSSION AND INTERPRETATION

As it has been indicated in the introduction, the key issue and main argument of this thesis is that no attempt has previously been made to quantify the level of activity within the northern Oman Peninsula. Such an attempt has been carried out by the current researcher and its results have been presented in Chapters Four, Five and Six. Two levels of quantification have been carried out: the first is based on the researcher's own fieldwork and the second based on quantifying data from the literature. In the first instance, levels of activities were quantified based on pottery collection areas (PCAs) (Chapter Four, Section Two), while in the second instance quantification of the levels of activity was based on reviewing all the available data on the northern Oman Peninsula (Chapters Five and Six).

This chapter summaries the most important ideas and conclusions that can be defined from three levels (see Chapter Four, Section One 4.1.2.1) of survey and data presented here: the first is based on previously published and known ideas or conclusions (Level 1); the second is based on the Wadi Andam Survey conclusions (Levels 4–6); the third is based on the quantified data from the local area within and around Wadi Andam (Level 3) and the quantified data from the whole northern Oman Peninsula (Levels 1–2). The lower two levels are the results of the present researcher's own fieldwork and quantified analysis. The key conclusions will be presented briefly and a comparison will be made between them. Following this, some possible speculative interpretations will be discussed in an attempt to understand the patterns and trends that have emerged from the evidence.

Generally speaking, although the Wadi Andam Survey was a multi-period survey, there is more to say about some periods than others. For example, a considerable amount has been learned about the Hafit, Umm an-Nar, Wadi Suq and Iron Age periods whilst relatively little has been added to our understanding of the Stone Age.

## 7.1- ARCHAEOLOGICAL CONCLUSIONS:

### 7.1.1- THE STONE AGE:

#### 7.1.1.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

The archaeological record indicates human occupation in the Oman Peninsula since the Early Stone Age, increasing during the Late Stone Age (Neolithic). The earliest human activity in the area is represented by few surface lithic scatters of the so-called 'Qatar B' group of artefacts, characterised by the blade-arrowhead industry (Potts 1990a: 32–35 & 1993d; Uerpmann 1989 & 1992). The later part of the Stone Age (Neolithic) is represented by a larger number of inland and mostly coastal sites with lithic artefacts of the so-called 'Arabian Bifacial Tradition' and 'Ubaid pottery, that is found mostly on the coast. However, few of these sites have yielded preserved building structures or archaeological layers. Along the coast, sites with such structures have so far been identified from Dalma and Marawah Islands (Kallweit, Beech & al-Tikriti 2005: 104) and Suwayh (Suwayh-1, 2 and 11) (Charpentier 1998; Méry & Charpentier 2002). Cleuziou and Tosi (2007: 66–67) argue that the rich evidence of the Late Stone Age from the Omani coasts provides us with some insights into the social structure of the inhabitants of these sites. They suggest that these sites show some degree of uniformity in the material culture and a social system of independent local populations with different lineages who integrated in order to control a territory and its resources. Their basic social entity was the 'nuclear family', whose individuals shared the same living places. There were different 'nuclear families' that lived and moved together between seasonal campsites. Each local group consisted of four to ten nuclear families with an average size of between five and ten individuals, suggesting a total population of between 20 and 100 for each local group holding a territory. It is also suggested that these sites exhibit a material culture that did not require specialised areas for exchange production as neither pottery nor metal was manufactured (*ibid*: 67–69). Nearly all the recovered tools from these sites were made from local shells and stones.

By contrast with the coastal settlements, very little is known about the settlement activity in the interior. Recently, an important Neolithic site was recovered in the interior at Jebel al-Buhais in Sharjah. Its importance is that it is the first major Neolithic site to be located in the interior part of the peninsula with well-preserved

organic material, giving considerable insight into the economic activities of populations during this time (Uerpmann, Uerpmann & Jasim 2000: 229). This site yielded a number of tombs with the skeletal remains of around 280 individuals, together with a group of animal bones and a large number of fire pits, some of which are lined with stones (*ibid*: 229). In the desert, recently discovered Neolithic sites at Kharimat Khor al-Manahil and Khor al-Manahil are the first structures to have been found within the desert interior (Kallweit, Beech & al-Tikriti 2005: 106).

The little ethnographic data that exists about the modern nomadic tribes in Oman provides us with a good example of the nomadic seasonal routine. Chatty (1996: 10–15) indicates that there are some Bedouin tribes who still practice the nomadic seasonal routine in Oman such as the Wahiba, the Duru', the Jeneba and the Harasiis (for the discussion of the Harasiis nomadic routine, see 7.1.4.5 below). The Wahiba tribe is mainly a pastoral population who, in the winter, wander within their desert area in search of grazing for their livestock, while in the summer they shift to the edge of the Sharqyiah where they practice farming in their several date palm groves. Moreover, the Wahiba coastal population practice fishing as an important activity for their subsistence, but during the summer time, when the monsoon winds make fishing less attractive, they shift from the coast to the Wahiba settlements on the edge of the Sharqyiah and practice date harvesting. By contrast, the Duru' tribe is engaged in camel, goat and sheep husbandry. They are desert nomads during the autumn, winter and spring, but during the summer, when the temperature is high and the dates ripen, they settle outside several towns, such as Tanam and Ibri, where they own many date palm groves. They do not live in the towns themselves, but build palm frond huts or *barasti* houses nearby for the summer. This pattern of occupation is almost the same for all the Omani nomadic tribes (many similar *barasti* houses have been noticed by the current researcher around the towns of Sinaw and Barzaman).

Judging from the type of structures and the recovered artefacts from the Neolithic sites, it has been argued that almost all the sites of this time so far recovered in the Oman Peninsula are seasonal in nature and were inhabited by nomadic populations (Uerpmann 1992; Kallweit 2003: 61–63 & 2004: 144). The evidence from these sites demonstrates that the subsistence economy for the coastal inhabitants was based on the exploitation of marine resources and terrestrial animals and trade with Mesopotamia or with local Neolithic groups (Potts 1990a: 35–37 & 1993d: 173–180; Uerpmann 1989

& 1992; Kallweit 2004). Trade with Mesopotamia is confirmed by the recovery of the 'Ubaid pottery from several coastal sites (see Chapter Three, 3.1). By contrast, the inhabitants of the inland zones practiced animal herding (e.g. goat, sheep and cattle) and hunting-gathering, as evidenced by the faunal remains from several sites (Potts 1993d: 173–180; Uerpmann, Uerpmann & Jasim 2000; Kallweit 2004). It is also argued that several of the nomadic populations were involved in seasonal shifting between the interior – looking for pasture lands for their domestic animals – and the coast, where they practiced some fishing and mollusc gathering (Uerpmann 1992; Uerpmann, Uerpmann & Jasim 2000; Kallweit 2003; Kallweit, Beech & al-Tikriti 2005). This can be evidenced by the recovery of bone remains of domesticated animals from sites of different geographical localities such as those from al-Buhais 18 (Uerpmann, Uerpmann & Jasim 2000). Floral evidence is lacking but there is a clear indication of plant consumption from the excavations at Dalma Island (DA11), where carbonized date stones (*Phoenix dactylifera*) were recovered (Beech & Glover 2005: 97).

A seasonal model for the Stone Age nomadic groups was suggested for the al-Buhais 18 site, which, it was proposed, was selected by a larger nomadic population as a 'central place' as indicated by its use as a long-term burial site (cf. Uerpmann, Uerpmann & Jasim 2000: 232–233; Uerpmann & Uerpmann 2000: 48–49; De Beauclair, Jasim & Uerpmann 2006: 176). The evidence indicates a strong link between the inhabitants of the site and the coast. It is suggested that the population of al-Buhais 18 were herders during the springtime, at which time their diet was based on lambing, kidding or calving. During the summer and autumn, they shifted from the foothills and plains to the higher elevations of the Hajar Mountains, where they would have culled young animals in order to manage the size of the herds. By contrast, during the winter they moved to coastal sites, where they relied on the exploitation of marine resources such as fish and shellfish, possibly supplemented with milking (Uerpmann, Uerpmann & Jasim 2000: 232–233). The same shift has recently been suggested for the Neolithic sites excavated at Kharimat Khor al-Manahil and Khor al-Manahil in the Umm az-Zumul desert south-east of Abu-Dhabi (Kallweit, Beech & al-Tikriti 2005: 107–108).

It is also important to indicate here that the archaeological sites found in southern Arabia lie outside the natural habitat of the wild ancestors of sheep (*Ovis orientalis*)

and goat (*Capra aegagrus*) (Uerpmann 1989: 164; Uerpmann 1992: 102). Accordingly, a diffusion of these species all over the Arabian Peninsula was necessary as domesticates in the form of 'reproductively viable herds' (Drechsler 2007: 95). Therefore, it is suggested that nomadic animal husbandry in Arabia derives from a dispersal of the sedentary aceramic Neolithic from the neighbouring centre of domestication in the Levant in which a group of mobile herders may have travelled with these species into the deserts of Arabia during the late $7^{th}$–$6^{th}$ millennium BC (Uerpmann 1992: 102; Uerpmann, Uerpmann & Jasim 2000: 233). These herders had possibly lost their economic links with sedentary farmers and built up the subsistence pattern that has been proposed for the inhabitants of al-Buhais (Uerpmann, Uerpmann & Jasim 2000: 234). This diffusion probably included varied herds of goat, sheep, and possibly cattle. It is possible that this economic structure made its way across the whole Arabian Peninsula during the early Holocene when the climate was favourable (Drechsler 2007: 95). During the early and middle Holocene, moister climatic conditions (see Chapter Two 2.3; cf. Burns et al. 1998; Fleitmann et al. 2003) facilitated the diffusion of the Neolithic across the northern and southern parts of the Arabian Peninsula (Drechsler 2007: 98). During this time, there was possibly a renewal of Neolithic subsistence economies on the northern coast of Oman, corresponding with the migration of these new people from the north-west and/or north through the Arabian Gulf towards the areas located along the south-west slope of the Hajar Mountains (Uerpmann 1992: 104). These mountains represent a region where plentiful groundwater is available in a few large wadis (Chapter Two 2.5). It is argued that precipitation during this time was high, which resulted in an increase in drinking water and fodder (Drechsler 2007: 98). The exploitation of this groundwater and the fertile lands seems to have begun with the arrival of the new residents (Uerpmann 1992: 104).

Recently, a computerised model for the Neolithic dispersal into Arabia has been created by Drechsler (2007: 93–109). This model confirms a Levantine origin for the spread of Neolithic mobile herding economy in Arabia and underlines the clear effect of climatic change on its population (*ibid*: 102). These results correspond with the available archaeological evidence found, for example, in Qatar and Saudi Arabia, which is also supported by the recovery of domesticated animal remains. It is suggested that there are two different pathways for this dispersal, which both emerged from the Levant (*ibid*: 104): the first is a western dispersal south along the Red Sea

coast, while the second is an inland route crossing the Arabian Peninsula from north-west towards south-east. The second route arrives at the area where sites show similar stone artefacts to those from the Levant, which supports the suggested dispersal.

### 7.1.1.2- WADI ANDAM CONCLUSION (LEVELS 4–6):

The Wadi Andam Survey did not yield any evidence for Stone Age sites. Thus, there is a lack of Stone Age data gathered from this survey that can provide supporting evidence for the published archaeological evidence. It should, however, be noted that the absence of evidence for occupation supports the conclusion that such sites are relatively rare and difficult to find. It is possible that sites of this period were missed by the Wadi Andam Survey as they are likely to be quite limited and difficult to spot. This absence of sites or their materials might be due to the fact that, if they existed, they were subject to high drift and erosion by the wadi. It is possible that the inhabitants of this period were nomads or semi-nomads using perishable structures such as huts, *barasti* structures, etc. These structures are subject to disappearance over time due to their construction of perishable materials as well as to erosion and sedimentation, making their survival problematic. It is also possible that this lack of evidence indicates low levels of population during this period.

### 7.1.1.3- LOCAL AREA CONCLUSION (LEVEL 3):

The evidence from the data gathered from the 'local area' showed a low number of Stone Age sites, accounting for 30 possible settlement sites. This low number does not contradict the conclusions that have been outlined above. All of these sites yielded lithic material, but few sites yielded stone structures such as those reported by the British Expedition at Bahla and the Omani–German Project at Ibra. These later sites consist of lithic material associated with large boulders, walls and structures of the Late Stone Age. All sites were found to be situated on small hills, on the pebbly terraces on the wadi edges or on the flat terrain. The evidence also indicates that these sites are all settlements. The settlements' nature and location are similar, indicating nomadic populations shifting between the interior and coast according to the yearly seasonal movement cycle, described above. Moreover, there is an absence of tombs within this area. The lack of tombs from this time might be a result of the fact that they are underground burials, making their identification difficult or impossible.

### 7.1.1.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

The evidence from the whole northern Oman Peninsula shows very little evidence of the Early Stone Age but there is slightly more evidence for the Late Stone Age. The majority of the sites are midden/scatters that have largely been located along the coastal zones. Several of these yielded evidence for marine fauna exploitation (e.g. fish, turtles, dolphin, oyster, shells and shellfish, etc.). Only a few of these sites yielded structural remains and no tomb evidence has been reported from this period, with few exceptions like al-Buhais 18, Umm al-Qawayn UAQ-2 and KHB-1 at the coast Ja'alan (Cleuziou & Tosi 2007: fig. 50, p. 50 & fig. 84, p: 71). The lack of tombs from this time might be related to the above mentioned facts regarding the lack of tombs from the local area (7.1.1.3).

### 7.1.1.5- SUMMARY:

Although the Wadi Andam Survey did not yield any evidence for Stone Age sites, this supports the conclusion that such sites are relatively rare and difficult to find. In order to address the problem of Stone Age settlement in the region, a very specific type of survey would have to be organised, using very detailed survey techniques and looking at carefully selected locations, and the methodology used to carry out the Wadi Andam Survey was set out with the aim of recovering a different type of information. Thus, it can be argued that the absence of Stone Age sites from this survey might be related to the methodology used.

From the evidence at hand, and considering also the ethnographic evidence, it is possible that the nature of occupation during the Stone Age was seasonal and its inhabitants were nomadic or semi-nomadic, shifting between the coast and the interior. It is also possible that there were coastal populations and interior populations. On the coast, they were exploiting marine resources and terrestrial animals with small-scale trade contact, while inland, they practiced animal herding and hunting-gathering. Seasonal yearly movement between the coast, mountains and interior is also suggested, and a model of this movement has been set out above. Moreover, the nature of the nomadic settlements was perhaps of perishable structures such as huts, *barasti*

structures, etc., and these structures are subject to disappearance over time due to their perishable material and to the erosion as well as sedimentation.

### 7.1.2- HAFIT PERIOD:

#### 7.1.2.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

The archaeological data indicates that this period is characterised by a large number of burial cairns as well as Beehive tombs that have been located in many areas all over the Oman Peninsula, mainly in mountainous areas. The tombs show that the dead were no longer buried in settlement sites, as was the case during the Late Stone Age, but in highly visible places, suggesting perhaps a concern with territory (Cleuziou & Tosi 2007: 116). Many of the tombs were re-used later, mostly during the Iron Age (see Chapter Three, 3.2 for the chronology and problem of dating cairns). By contrast, very few occupational remains have been found from this time (see below). It has already indicated in Chapter Three that there are two arguments regarding the Hafit cairn burials and Beehive tombs. The first considers the Beehives as a transitional type between the earlier Hafit-type and the later Umm an-Nar-type. The second argument prefers the idea that both Hafit and Beehives were established during the same era, but each one represents a different type. Moreover, as a result of finds of imported Mesopotamian goods within some of these tombs, it has been argued that there was cultural contact between the Oman Peninsula and Mesopotamia by the end of the 4$^{th}$ to the early 3$^{rd}$ millennium BC (During-Caspers 1971; Frifelt 1975a-b; Potts 1990a: 73–77, 1993c: 423; Cleuziou 2002). The archaeological evidence does not give us much information about social and economic structures during this time. It is, however, argued that the occurrence of a large number of tombs might indicate a considerable size of population with a very different pattern of occupation from the later periods (cf. Potts 1990a: 84, 1993d).

The data indicates an absence of Hafit occupational remains, the reasons for which are unclear (see 7.1.2.5). In spite of this lack there is some sort of occupation activity and continuity during this time. The evidence from Hili 8 settlement (see Chapter Three 3.2), for instance, yielded pottery and C$^{14}$ dates from Period I, dated to the very late 4$^{th}$ to early 3$^{rd}$ millennium BC (Cleuziou 1980: 20), represented by a solid base of a square mudbrick tower with a central well and hearths, called Building III (Phase Ia)

(Cleuziou 1989b). It can, therefore, be suggested that occupation sites during the Hafit period did exist but, so far, few have come to light.

### 7.1.2.2- WADI ANDAM SURVEY CONCLUSION (LEVELS 4–6):

The evidence from the Wadi Andam Survey is similar to the published evidence. It shows that activity during the Hafit period is represented almost entirely by burial monuments, namely cairns and Beehives, that were located in many areas all over the Wadi Andam. These tombs have the same construction, shape, size and location as those found across the peninsula. The evidence indicates that the Hafit cairns are most often located some distance away from wadi villages but they do sometimes exist on the hills surrounding some of these villages. By contrast, the Beehives are largely situated close to the wadi villages and can be found on hills/outcrops and their slopes parallel with the lower part of the modern wadi villages or just beyond their lower boundary. Both types of tombs can sometimes be found in the same locality. Moreover, there are some architectural differences between both types (see Chapter Four, Section Three, Table 30), which possibly support the suggestion made by Frifelt (1975a) that the Beehives represent a transition between the earlier Hafit-type and the later Umm an-Nar-type (see Chapter Three 3.2).

As is the case in other parts of the peninsula, many of these cairns have been re-used (see Chapter Three, Section 3.2 on the problem of dating these cairns) mainly during the Early Iron Age, as is suggested by the finds recovered during the Wadi Andam Survey. Additionally, the evidence from the Wadi Andam did not show any settlement remains associated with these cairns, and this also emerges from the published data. The only associated evidence recorded by this survey is a small number of piled and paved stones that look like platforms. It was suggested (Chapter Four, Section Three, 4.3.2.1.2) that these could be the remains of platforms or stone foundations of perishable structures (campsites?) such as wooden houses, *barasti* or huts which have largely vanished over time, indicating possible nomadic or semi-nomadic populations. Moreover, one of the possibilities that can be put forward for the lack of Hafit settlements is that they might have been buried by alluvium. Therefore, during the Wadi Andam Survey evidence for wells, cut-sections or other land-moving activities was sought. This was in the hope of finding some buried remains from the Hafit or any other period. However, apart from the above-mentioned piled and paved stones, the

survey did not reveal any such features. It should be noted that the landscape where these tombs are located in the Wadi Andam is exposed and unlike the Batinah coast where there is high possibility that settlements will have been covered by alluvium.

During the survey, an attempt was made in the Level 4 survey (see Chapter Four, Section One, 4.1.2.1.4), to make a rough distribution of Hafit/Beehive tombs (Maps 11 & 14). It has been pointed out earlier that no such attempt has previously been made. The results of this survey indicate that there are massive tomb fields spread across the region under study in areas for which there is really no evidence at all in later periods. This must indicate that there was a very significant change in occupation as well as in burial patterns between the Hafit and the Umm an-Nar periods and later (see below). This change might have occurred between Hafit and Beehive tombs, as, for example, can perhaps be suggested by the appearance of some architectural differences (see Chapter Three, 3.2) between both types, indicating a possible transition between the earlier Hafit-type and the later Umm an-Nar-type?

### 7.1.2.3- LOCAL AREA CONCLUSION (LEVEL 3):

The evidence from the local area indicates the same pattern recorded by both the previously published evidence and that from the Wadi Andam Survey. It shows the occurrence of Hafit and/or Beehive tombs from many locations and no occupational remains. The tombs' size, shape and location are similar to the published examples from the whole peninsula.

### 7.1.2.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

The evidence extracted from the whole northern Oman Peninsula shows the same pattern as the data from Wadi Andam as well as the local area. It shows a large number of tombs and very few occupational remains. These remains include those recovered, for example, from Hili 8 and Ras al-Hadd/Ra's al-Jinz (Cleuziou & Tosi 2007: fig. 92, p. 107). It has already been indicated above that Hili 8 yielded occupational remains dated by $C^{14}$ to the very late $4^{th}$–early $3^{rd}$ millennium BC. Other occupational remains of this period were recovered from Ras al-Hadd area, like HD-6, and Ras al-Jinz area, such as RJ-4, RJ-38 (Cleuziou & Tosi 1985: 5–8 & 1990a), RJ-1, RJ-2, RJ-6, RJ-136

and RJ-142 (Monti & Usai 1998: 10–12; Cleuziou & Tosi 2000: 19–73; Martin & Cleuziou 2003: 135–142). The majority of these sites yielded limited occupational remains, such as stone foundations, postholes and shell middens. In general, the evidence shows that there was a growth in the number of sites from the Late Stone Age to the Hafit period, which are almost entirely represented by tombs. However, there are regional variations in which there was a growth in the number of recorded sites in the central part of the peninsula (Central Oman and Hajar Mountains), and a stable level in the eastern part (the Batinah and Eastern Coasts). By contrast, there was a decline in the level in the northern part of the peninsula (Abu-Dhabi Coast and Musandam and Northern Emirates). The reasons for these variations are not known.

**7.1.2.5- SUMMARY:**

It appears that the Hafit period is almost exclusively represented by burial architecture (cairns and Beehives), whilst there are only a few occupational remains recovered from sites like Hili 8 and the Ras al-Hadd/Ras al-Jinz area. The reasons behind the small number of settlement remains from this period cannot be completely understood. Almost four decades of research in the peninsula have only yielded very few occupational remains of this period, and have been unable to provide much more knowledge of its socio-economic aspects. It can, thus, be argued that it is unlikely that the lack of occupational remains from this period could be related to the intensity of fieldwork. It is, however, possible to hypothesise some reasons for the absence. It has already been suggested in Chapter Four (Section Three, 3.2) that the population using these tombs were perhaps nomadics living in perishable 'campsites', using the area as grazing land for their animals. This hypothesis might be supported by the piled and paved stones recovered by the Wadi Andam Survey that look like platforms. It is also possible that the remains of settlements have been buried by alluvium. Settlements of this time have so far been recovered at Ras al-Hadd/Ras al-Jinz by the French–Italian Joint Hadd Project on the Eastern Coast. By contrast, the large number of tombs from this time can perhaps be attributed to the fact that these tombs are very commonly found on the rock and gravel hills that are found in some regions, like the Wadi Andam, rather than others. It is possible that the inhabitants of the Hafit period buried their dead in surrounding areas with high elevations in order to protect their tombs, which, in turn, increases their degree of survival as they are not subject, for instance, to sedimentation and erosion.

As has been discussed above, the results of the Wadi Andam Survey also indicate that there was a very significant change in occupation patterns between the Hafit and the Umm an-Nar period. The evidence shows a large number of tombs clustered in extensive burial grounds in areas that did not show any evidence for the later periods. In this respect, it is important to cite a suggested 3rd millennium BC small camp that was associated with late 4th–early 3rd millennium BC tombs at Wadi Washan in Yemen (Steimer-Herbet, Davtian & Braemer 2006: 257–265). The survey in this wadi provided three major types of sites: camps, funerary monuments (mainly cairns) and commemorative or cultural buildings. Three different small camps were distinguished: isolated circles, groups of structures on terraces and circle compounds where a wall encloses residential structures, workshops and stone piles (*ibid*: 258–260). The surveyors do not tell us the distance between the tombs and associated structures or camps. Even the provided map (*ibid*: fig.1, p. 258), which shows the distribution of the camps and tombs, does not clearly distinguish between the two types of structures.

An association between the tombs and the suggested small camps is proposed, based on the excavated structure HDOR 415, House M1, which was carbon dated by a charcoal sample [Pa 2270] to around 2467 and 2329 BC (*ibid*: 258–260 & 264, note 2) (when recalibrated using 2 sigma [OxCal 3.10] this gives a date range between 2570 and 2230 BC). Based on our chronology (see Chapter Three, 3.3) this dating falls in the Umm an-Nar period (2500–2000 BC) and not the Hafit period. However, one might suggest a possible model for the Hafit period. According to the description of the structures found in wadi Washan, similar structures have been found all over the Wadi Andam Survey, in locations that are distant from the Hafit tombs. The distance between the tombs and the structures is sometimes many kilometres. Many of these structures provided evidence for later periods and some of them did not. Therefore, although it is still too early to decisively suggest any relationship between Hafit tombs and the above suggested possible platforms, it is possible that they represent traces of some nomadic camps. This can only be confirmed by carrying out soundings on some of these possible platforms.

Whatever the result of further investigation the evidence at hand demonstrates a very important change between the Hafit and Umm an-Nar periods. This change will be presented in detail in the discussion of the following period.

### 7.1.3- UMM AN-NAR PERIOD:

#### 7.1.3.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

By this time, it is generally thought that the northern Oman Peninsula was characterised by a well-established socio-economic structure with communities practising activities such as sedentary agriculture and pastoral nomadism, hunting-gathering and the exploitation of marine resources (Brunswig 1989; Cleuziou 1982, 1984 & 2002; Potts 1990a: 127–132). Evidence for agriculture is attested from inland sites such as date stones from Maysar 1 (Weisgerber 1981), as well as barley and wheat from Hili 8 (Cleuziou 1982 & 1989a-b). It is argued that agriculture was practised during this time, from evidence based on wells such as from Hili 8 (Cleuziou 1982: 19) as well as Maysar 25 (Weisgerber 1981: 198–200, figs 26–27) and House 3 at Maysar 1 (Weisgerber 1980: 82, figs 33–34). Irrigation during this time was also possibly based on constructing low barrages or dams (*gabarbands*) (Meadow, Humphries & Hastings 1976: 111). However, the al-Hajar Project (Orchard & Stanger 1994: 87 & 1999: 96) suggested that the inhabitants of the 3rd millennium BC introduced a method of irrigation based on 'a sub-surface to surface channel system' or *qanat/falaj* technology.

This subsistence economy was accompanied by new specialised activities and exchange (see 7.1.3.5 below) of goods such as pottery, copper and stone objects (Cleuziou & Tosi 1989, 2000; Potts 1990a: 102–125, 1992: 68–71). It is believed that the Oman Peninsula played an important role in the production of copper and its export to the neighbouring regions such as Mesopotamia and the Indus Valley (Potts 1990a: 149–150, 1992: 68–69, 1993c: 423–427, 2000; Frifelt 1995; Weeks 2004b). Additionally, it is argued that the development of 'oasis agriculture' could be associated with the high needs and demands of copper exploitation (Cleuziou 2002: 200). This process would require large numbers of specialised and professional, as well as unskilled manpower for cutting the wood for fuel and transporting it to the sites where the smelting operation is carried out. This transportation would require employing domesticated animals such as donkeys and/or camels. Evidence for the domesticated camel is problematic but might be evidenced by the recovery of faunal remains from 3rd millennium BC settlements such as the Umm an-Nar Island (Frifelt 1975b: 366, 1979a: 574, 1995: 222; Hoch 1979: 607–613, 1995: 249–255), Ghanadha

Island (al-Tikriti 1985: 14) and Hili 8 (Cleuziou 1989a: 81). They can also be attested in the figures depicted on grave stones from Umm an-Nar Island (Thorvildsen 1963: figs 7–8, pp. 199–200; Frifelt 1975a: figs 37–38; 1991: figs 21–21a, 22–22a, pp. 27–28) and Hili (Cleuziou 1976/7). Moreover, the large amount of manpower would also require a supply of food, as well as a place to stay (Cleuziou 2002: 200).

Trade is also evidenced by the discovery of large numbers of foreign exchanged or imported materials such as pottery vessels, indicating trade contact with Mesopotamia, the Indus Valley, Iran, Central Asia, Bactria and the Gulf (cf. Tosi 1976; Frifelt 1979a-b & 1995; Potts 1978, 1990a: 102–106, 1993c: 423–427, 1993d, 1994 & 2000, Cleuziou & Tosi 1989; Cleuziou 1989b & 2002). This period is also characterised by the large production, variety and use of local pottery of good quality, which appears to have been associated with the emergence of copper exploitation in Oman (Cleuziou 2002: 200). Three groups of pottery characterise this period: the coastal settlement pottery (e.g. Umm an-Nar Island), the interior settlement pottery (e.g. Hili 8, Bat, Amlah, and Maysar) and the graves pottery (Potts 1992: 69). The archaeological evidence indicates that there was a well-organised community with significant technology and power, suggesting a high level of socio-economic organisation, which is attested by certain characteristics peculiar to this material culture such as the distinctive Black-on-Red ware (cf. Tosi 1976).

This development of the local economic system and regional exchange network was associated with a remarkable increase in the number of settlement and tomb sites, indicating a very important development of 'social complexity' (Potts 1990a: 127–132, Cleuziou 2002: 191–236, Parker et al. 2006: 468). Although the total number of Umm an-Nar tombs appears to be lower than that of Hafit tombs, the population of the Umm an-Nar period seems to be larger. This is evidenced not only by the amount of recovered settlements, tombs and cultural material, but the fact that Umm an-Nar tombs hold numerous individuals. In other words, the apparent correlation between single and multiple burials might impact on the overall numbers of both tombs and interments. Clearly 50 cairns with four burials each could hold as many burials as 200 single interment structures and, despite the fact that the total number of Umm an-Nar tombs in the landscape is less than Hafit cairns, if the total number of burials is considered it appears that the total number of interments within the Umm an-Nar tombs is much higher than for the Hafit cairns. The data at hand indicates that the

average total number of burials within the Hafit cairns is four per cairn (Frifelt 1975a: 67; 1975b: 386 & 1976c: 57), while a single Umm an-Nar tomb might include hundreds of burials (e.g. Tomb Unar 1 at Shimal, Ras al-Khaimah includes 438 burials [Blau 2001: 560]). This shows that it is not always the case that a large number of tombs across a landscape indicates a high population, but small numbers of tombs with multiple burials might indicate a high population.

It is suggested that population growth was in the form of concentrations, perhaps as villages or towns (Brunswig 1989: 38). In analogy with the modern towns and villages. the Umm an-Nar settlements might have been inter-reliant (Phillips 1997: 206). Settlements of this time are characterised by stone construction and tower buildings and multi-chambered collective burials distributed over a large area of the peninsula. Umm an-Nar settlements are located in different geographical zones within the peninsula: they are found along the coasts (e.g. Ghanadha, Bidya, Kalba, Umm an-Nar and Tell Abraq) as well as in the inland zones (Hili, Bat, Maysar 25 and the Wadi Bahla) along the foothills of the Hajar Mountains and on the gravel hills and wadi fans. They – particularly towers – are located on top of small rocky hills/outcrops and on or at the foot of their slopes, as well as on the wadi edges or terraces. Several of them show a degree of relative 'internal complexity', with demarcations of arrangement indicating social structure and a varied architectural tradition. Evidence from, for example, Hili, Bat and Maysar, yielded good insights into settlement organisation. It was shown that several towers at Hili and Bat were found within a radius of 20–30 hectares, associated with other smaller houses in the area surrounding them (Cleuziou 1984: 382).

The tower buildings generally include a solid lower basement and are often supplied with a central well (e.g. Hili 1, Hili 8, Bat, Maysar 25, Firq, Wadi Bahla [BB19 & 22], al-Khashbah, Amlah, etc.). Their shape varies between circular, square and rectangular, although circular towers are most common. They are constructed of stones (e.g. Bat, Maysar 25), mudbrick (e.g. Hili 1, Hili 8 and Bidya) or both materials (e.g. Tell Abraq) (Potts 1990c: 30–31). Their inner layout shows the symmetrical organisation of a central row of small rooms on both sides, which are filled with stones. It has been suggested that a group of these towers were designated for and occupied by individuals high in the social hierarchy (Cleuziou 1984: 382). In many cases, there are other smaller rectangular and square buildings or houses around these

towers which are divided into several rooms or units with stone wall foundations (e.g. Bat, Hili 8 and Maysar 25). Part of these buildings was designated for industrial activities, such as copper smelting and production processes (e.g. Hili, Bat and Maysar 25). Other specialised activities included pottery, stone tools and basketry production. By contrast, Umm an-Nar tombs have been reported from different areas within the peninsula and show similar construction, funerary items and burial customs (*ibid*: 383). They are always located in close proximity to settlements. They are circular, multi-chambered collective monuments, and contain between two and ten separate chambers that hold the skeletal remains of up to 438 burials (Blau 2001: 560).

It can, thus, be summarised that the Umm an-Nar period was the first with concrete evidence of specialisation, and of a highly structured, complex social system as well as a sophisticated and widespread culture covering the whole of the region of study. The reasons for this development are thought to be related to changes brought about by copper exploitation and trade (see summary below).

### 7.1.3.2- WADI ANDAM SURVEY CONCLUSION (LEVELS 4–6):

The Wadi Andam Survey results yielded a significant amount of Umm an-Nar evidence from all parts of the survey, indicating a notable increase in the level of activity during this time at the wadi village sites, but a decline in activity in areas where Hafit cairns are common. This evidence comes from PCAs, large and small settlements, tombs, 'other structures' and pottery scatters. It shows that this period is represented by a few large sites (over 10 hectares) and a considerable amount of evidence from small sites (less than 10 hectares). As has been argued in Chapter Four, Section Three (4.3.3), larger sites are usually concentrated within or close to modern villages while smaller sites are often located away from the modern villages, and scattered along the wadi banks. In this respect, it is worth pointing out that the size of sites recorded during this survey does not compare with the size of sites found in other parts of the Middle East, such as the tells of Mesopotamia (e.g. Adams 1965 & 1981; Wilkinson TJ 2003) and the Levant (cf. Joffe 1993; MacDonald, Adams & Bienkowski 2001). This probably reflects lower levels of agricultural productivity and population generally.

The evidence shows that Umm an-Nar sites are more commonly located in the northern part of the Wadi Andam and that they become fewer as one moves towards the south. It has been noted in Chapter Four (Section Two) that there was more activity during this period than in all other pre-Islamic periods. The evidence shows that all wadi villages and perhaps their surrounding areas were occupied, or at least used, by the inhabitants of this time, suggesting that it was one of the most intensive periods of occupation (see Figure 13 at Chapter Four, Section Two). This indicates that a fundamental change took place at the beginning of the Umm an-Nar period, with a new settlement pattern over the whole region under study. The evidence also suggests that since this time, settlement patterns have remained more or less stable and settlements have remained largely in the same locations (see Chapter One 1.1.2.1). The settlements only differ in the intensity of occupation from one period to the other (see below).

It has been also argued that with the exception of some Beehives/cairns in the surroundings of some of the wadi villages, the Umm an-Nar is also the earliest evidence for the occupation of the wadi villages. Moreover, unlike the Umm an-Nar period, the Hafit period is represented by massive tomb fields distributed over areas that did not show any type of evidence for later periods. This clear shift in occupation pattern may be due to the fact that Hafit tombs appear to occupy higher areas where it is difficult to establish larger settlements or villages like those established during the Umm an-Nar. These settlements require flat areas that are very close to water and other natural resources. The most likely areas are, for example, those along the foothills of the mountains and along the wadi banks as is evidenced by the results of Wadi Andam Survey.

It is also worth pointing out that the layout of the large Umm an-Nar sites does not provide us with much evidence about the organisation of these sites (see Chapter Four, Section Three 4.3.3). The only possible site that offers some such insights might be al-Ghoryeen CS.2.5.2, which has already been noted as a possible Umm an-Nar village. Its layout shows that it can be divided into three or four parts: the tower building and a part for houses and associated structures as well as two parts for burials within close vicinity of the settlement. This evidence, together with that mentioned above and the large number, variety and quality of Umm an-Nar pottery, allows us to suggest that there was a considerable degree of socio-economic complexity and a larger and more specialised population than was the case in the Hafit period (see 7.1.3.5 below).

As indicated in Chapter Four, Section Three (4.3.3), the layout of some of the Umm an-Nar sites shows towers as well as the remains of 'other structures', tomb fields and pottery scatters. These include large monumental fortified towers; sometimes one (e.g. CS.2.52) or more (e.g. CS.5). The nature of occupation within these towers is unclear: who was occupying them? What was their function? Two suggestions can be made: first, they might be designated for some elite members of society, most possibly a headman or chief/sheikh, whilst the other inhabitants might have lived in structures surrounding the tower, as was perhaps the case at site CS.2.52; second, that each of these towers was inhabited by a group of people from the same kin or family, and thus the towers were designated to protect them from any attack (see 7.1.3.5 below). The inhabitants of these sites might have also reserved parts of the village for their ancestors and dead. It should also be noted that the pattern during the Umm an-Nar period appears to show a close association in the evidence between tombs and settlement which is quite different to that from the Hafit as well as the Wadi Suq periods. It appears that the Umm an-Nar tomb fields are not built in high positions but in flat areas located not far from the main settlement.

It is possible, as suggested in the previously published data, that the inhabitants of the Umm an-Nar period at Wadi Andam practised agriculture and animal husbandry. This might be supported by the evidence already recovered from excavated sites within the limits of Wadi Andam Survey study area, such as those at Maysar. Excavations at Maysar 1 (Weisgerber 1981: 191–196) yielded floral remains in the form of date stones, suggesting perhaps date palm cultivation together with other possible crops. Irrigating these crops was probably carried out using low barrages or dams (*gabarbands*), as suggested by the Harvard survey (Meadow, Humphries & Hastings 1976: 111). Wells were also used for both agricultural and domestic purposes. As has been indicated above, evidence for wells from this time was attested at Maysar 25 and House 3 at Maysar 1. One also cannot dismiss the possibility of irrigation based on *falaj* channels suggested previously by the al-Hajar Project (Orchard & Stanger 1994: 87). However, until further supporting and consistent evidence comes to light, this remains an open question.

### 7.1.3.3- LOCAL AREA CONCLUSION (LEVEL 3):

This period is well represented in the local area (Chapter Five) where almost all the reviewed surveys yielded large and, more commonly, small settlements with different functions such as fortifications, copper production/smelting sites or domestic structures. These include, for example, the copper production/smelting sites recorded at al-Mudhaybi area (e.g. Bilad al-Maaidin-1 & 2; Mullaq; Maysar 1; Maysar M2, M16, M4 [Weisgerber 1981]; and Wadi Samad 5 [Meadow, Humphries & Hastings 1976]), Ibra (e.g. Batin 1; Zahir 2 & 3 [Berthoud 1978: 13]) Bahla (e.g. al-Aqir [Weisgerber & Yule 2003]). Fortifications include those recorded at Wadi Bahla (BB16, BB19 & BB20–22) (Meadow, Humphries & Hastings 1976) and in the Bisya area (Orchard & Orchard 1985, 1997, 2002). The size of some of these settlement buildings is large, mainly the Umm an-Nar towers. Sometimes, these towers are associated with or surrounded by other domestic and/or industrial stone structures of different sizes (e.g. Maysar M25 [Weisgerber 1981: 198–203]). These settlement remains are located on top of the rocky hills/outcrops and on or at the foot of their slopes as well as on the wadi edges or terraces. They are sometimes associated with Umm an-Nar tombs situated in the same localities within the settlements. Indeed, many survey projects have associated some of the Hafit and Beehive tombs with these settlements, such as the Bisya area by the Hajar Project and Bahla BB19 by the Harvard Expedition. Furthermore, the size of some of these settlements extends for up to 40–50 hectares (Frifelt 1976c: 61 & 1979a: 584).

### 7.1.3.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

The evidence from the whole northern Oman Peninsula indicates a large number of Umm an-Nar sites. It shows that there was growth in the level of activity during this time compared to the Hafit period. At the sub-regional level, the same pattern is valid across the whole area, with the exception of the Batinah and Hajar Mountains regions that witnessed a stable level of activity. Thus, it can be argued that the conclusions from the published data as well as those from the Wadi Andam Survey and the local area are to some extent confirmed by the regional data.

The statistical analysis (Chapter Six, Tables 59–60, Figure 49) indicates that both settlements and tombs are represented during this time and can be found over large areas of the peninsula. Both large and small settlements are represented and show different functions such as fortifications, copper production/smelting sites or domestic structures. The location, size and layout of these settlements are the same as those in the published data. The size of some of the buildings is large, mainly the Umm an-Nar towers. In some cases, these towers are associated or surrounded by domestic or workshop (e.g. copper production or smelting) stone structures of different sizes (e.g. Bat, Hili, Maysar), as well as tomb fields. The evidence from the regional level provides us with a reasonable amount of information about the settlement pattern during this time, and this points in the same direction as the previous archaeological evidence. It shows that the Umm an-Nar period is the first period with some evidence of specialisation and of a highly structured, complex social system as well as a sophisticated and widespread culture across the whole region of study.

**7.1.3.5- SUMMARY:**

It appears that the Umm an-Nar period witnessed, for the first time, the establishment of wadi villages as well as an increase in both the size of population and settlements. Little is known about the social structure and how these villages were organised and developed. However, with the evidence at hand, it is possible to provide a speculative picture of such structure and organisation. Here, it is my intention to combine the evidence from the Oman Peninsula regarding the Umm an-Nar period and attempt to postulate the nature of society and how it was organised and controlled.

Generally speaking, some idea of the social structure and organisation can be attested by combining the evidence: a large number of settlements and tombs found all over the peninsula, large monuments (tower buildings), funerary practices (large multi-chambered collective burials), specialisation (large number and good quality of pottery types, metalwork and stone objects), as well as strong evidence for exchange and trade with neighbouring regions. This might suggest a specialised and integrated society. Moreover, there are some hypotheses for such social structure based on kinship or tribal control (see below). All this evidence suggests a developed society that was well organised and structured. So how did the Umm an-Nar inhabitants organise and structure their society?

Some attempts to understand the social structure of the Oman Peninsula, and more generally the Arabian Peninsula, have been made (e.g. Tosi 1986; Cleuziou and Tosi 1989 & 2007: 239–245; Lancaster and Lancaster 1991, 1992, 1996 & 2002; Cleuziou 2002 & 2003). All agree that, unlike the early states in Mesopotamia and Egypt where there were cities with a social hierarchical order (c.f. Maisels 1999), the social structure of Arabia was largely based on kinship (e.g. tribal) and equality among the society members. This kinship had power that had nothing to do with exploitation or enslavement, but rather an integrated and cooperative way of life that secured the subsistence and natural resources as well as tribal traditions and customs.

It is possible that the social structure of Umm an-Nar society might have included different groups such as a head of the family or tribe (e.g. sheikh, chief or head), elites (e.g. priests, leaders, merchants), craftsmen, farmers and possibly others such as those dealing with defensive tasks. It is also possible to suggest that specialisation is the principal impetus for the social structure within this society. As has been indicated above, there is strong evidence for full-time specialisation: such as craftsmen (e.g. pottery, softstone, copper) and for the organisation of labour for building, transporting and production of agricultural infrastructure as well as for trade, wealth and luxury.

It is possible to argue that specialisation might have brought some sort of social structure to these farming-based villages as there is some evidence for socio-economic organisation and co-operation between different groups. There was a need for a labour division and task distribution. Thus, developments within these agricultural settlements may have required organisation. There was also a need for protection of production and resources in order to secure the subsistence and income. This requirement might have increased the need for leaders or elites in order to organise and protect this process (pottery and copper production, water distribution, land protection, etc.).

For example, the evidence indicates full-time pottery specialisation. There is a remarkable homogeneity and consistently high quality in Umm an-Nar pottery across the entire peninsula (cf. Méry 1996 & 2000). Local wares have been reported from different sites across the peninsula, clearly indicating the involvement of a number of specialists. Evidence for this specialisation can be found at Hili (1068), where a pottery kiln dating to the 3$^{rd}$ millennium BC was recovered (Frifelt 1990: 4–15). The evidence from a number of sites also shows that there was a full-time specialisation in the

copper mining and smelting process (cf. Weeks 2004b). There are also the tower buildings, either designated for the whole population or confined only to the elite. It is impossible that these buildings could have existed in a vacuum. Their size and sophisticated construction indicate a big investment and the involvement of a large society. They have been taken by some to suggest a degree of status competition between the elite and other wealthy members of the Umm an-Nar population (Cleuziou & Tosi 2007: 240). These monuments indicate that there must have been specialists in cutting, carrying and transferring large stones, and building these monuments. The same is true for the other structures (e.g. dwellings and industrial structures). Moreover, since we are dealing with agricultural societies, the involvement of a large full-time labour force and number of beasts would have been required to carry out all the farming activities such as preparing the land for cultivation, plantation, irrigation and harvesting, as well as other activities related to water management and distribution. Farming might have also been practised by potters, miners and herders, but perhaps as a part-time specialisation. They may have used some sort of system in dividing the shares of water for irrigation, as perhaps is the case nowadays with the *falaj* distribution system, probably using the same techniques, such as the stars and the sun's shadow. Besides wells (e.g. Hili 8 [Cleuziou 1982: 19], Maysar 25 [Weisgerber 1981: 198–200] and House 3 at Maysar 1 [Weisgerber 1980: 82]) and *gabarbands* (Meadow, Humphries & Hastings 1976: 111), it is also argued that the *falaj* technique was used during the 3rd millennium BC (Orchard & Stanger 1994: 87 & 1999: 96). If this was the case, there must have been some people or specialists who took responsibility for distributing water and maintaining the *falaj* channels and wells.

Although there is no clear evidence for writing during this time, there is evidence for rock art in the form of engraving or in relief (e.g. Umm an-Nar Island, Hili), which might express some aspects and events of the inhabitants' daily life and their beliefs. This might indicate that there were specialists, like engravers and sculptors, who spent time portraying some snapshots of daily life, such as hunting and riding scenes. Moreover, it is argued that the recovery of some stamp seals carved locally in the upper part of a broken steatite hemispherical bowl found at Ras al-Jinz with inscribed South Arabian writing might indicate some sort of written documents, suggesting that by the end of the 3rd millennium BC Magan had reached a level of complexity (Cleuziou & Tosi 2007: 245–247). Cleuziou (2003: 146) suggested the development of local writing systems for commercial purposes, perhaps adopted from the Harappan or

Proto-Elamite writing systems. He argues that this adoption might indicate an 'administrative system' in the Oman Peninsula during the Umm an-Nar period, which was also associated with the development in the 'social structure' (2002: 225).

However, the question of whether Umm an-Nar society was hierarchical is a complex and unresolved one. Some of the evidence listed above might lead us to expect some degree of social complexity but at the same time there is no clear evidence of elite status, there are no palaces or high-status residences, burial is communal and there are no other indications.

It is possible that the famous round towers that are known from many sites such as Bat, Hili, Maysar, Bisya, Nizwa, etc. may have functioned as elite residences, but the evidence from Bat, for example (Frifelt 1979a: 582-584, 2002: 107) suggests that these towers may not have been occupied at all and there is therefore considerable debate about their function (cf. Frifelt 1979a: 578; Potts 1990a: 102; Crawford 1998: 112-120; Orchard & Orchard 2002: 165-175). So whilst their construction is evidence for some degree of social organisation, they cannot be taken as conclusive evidence for an elite or ruling class.

It is perhaps easier to argue for the existence of priests or religious leaders who organised the ritual practices of the inhabitants. Umm an-Nar tombs are distributed all over the peninsula and show homogeneity in their structure and burial practices. They are large multi-chambered monuments designated for collective burials that sometimes hold the remains of hundreds of skeletons of different gender and age. This homogeneity and ritual practices did not exist in a vacuum; there must have been some bodies or individuals – possibly priests – taking the responsibility for organising and leading such practices. Their main task was perhaps making sure that these rituals were practised in the same manner by people all over the peninsula. It might have been their duty to teach people how to perform such practices, possibly in order to satisfy beliefs related to a god or divine. One might also suggest that there was a 'cult-centre' during this time, which people visited in order to practise their rituals. In fact, there is no evidence for such religious places in the form of monuments, such as temples, but it is possible that people practised their cult in an open place or through everyday contexts. In this place, people might have learned, perhaps via priests, how to practise their life

rituals, such as worshipping their god(s) and building their tombs, as well as burying their dead in a unified manner.

There is also large volume of literature dealing with the idea of trade and exchange between Oman and its neighbouring regions during the 3rd millennium BC (e.g. During-Caspers 1971; Potts 1978, 1993a, 1993c: 423–427 & 1994; Cleuziou & Tosi 1989 & 2007: 184–191; Edens 1992, Cleuziou 1992, 2002, 2003; Cleuziou & Méry 2002). This trade is a good indicator of order and organisation within the communities, which produced items and were able to transfer them to other parts of the world. Copper was the major traded commodity during this time, and formed a large part of the local economy. This trade required men to mine, smelt and produce copper as well as to transfer it (both in raw and finished objects) to the trading centres. It is argued that the several items indicated in the Mesopotamian texts demonstrate that Magan was a developed country that provided not only raw materials and semi-finished goods but also the specialised workers (perhaps miners, coppersmiths, stone cutters or ship builders), tools and products of its industries to the outside worlds such as Dilmun and Mesopotamia (Cleuziou & Tosi 2007: 187). Coastal settlements (e.g. Umm an-Nar, Ras al-Jinz, Tell Abraq) were the main entrepôts both for transferring the 'Omani goods' and trading them overseas, and transferring foreign goods to the interior lands of the peninsula. In other words, they were a link between the outside world and the peninsula as a whole. The process, thus, was an integrated one between the coastal and inland populations.

It can, thus, be concluded that although speculative, the combined evidence might suggest a social structure and integration among the Umm an-Nar societies. However, this remains a hypothesis which future fieldwork might or might not provide strong evidence to support.

What can clearly be evidenced is that the Umm an-Nar period represents a marked change from the Hafit period, and appears to have witnessed the beginning of the establishment of a more complex socio-economic structure for the first time in the region. The mechanism that drove the transition from Hafit to Umm an-Nar appears to have involved a big shift from sparse settlement activity to really quite an abundance of sites. Its inhabitants practised incorporated sedentary agriculture and pastoral nomadism, hunting-gathering and the exploitation of marine resources. This

subsistence economy was accompanied by specialised activities and the exchange of different goods, as well as foreign trade contacts with neighbouring regions. Linked to this development in the local economic system and regional exchange network was an increase in the population size as well as settlement and tomb sites (oases or wadi villages). Thus, it can be argued that the Umm an-Nar represents the earliest occupation of the wadi villages, suggesting that it was at this time that these settlements first came into existence as settled villages. It is a period that witnessed the establishment of sedentary agriculture that is differed completely from the nomadic pastoralism of the preceding periods.

Evidence from the Wadi Andam Survey has shown that all the investigated wadi villages yielded evidence of this period and (see Chapter Four, Section Two) demonstrated that Umm an-Nar pottery is the most common pottery found at these locations. This suggests that this period witnessed one of the most intensive periods of occupation in the history of the region. It can be argued that this strengthens our understanding of two points: first, the radical change that took place at the beginning of this period, with a completely new settlement structure and economy; second that after that time, settlement patterns remained almost stable and settlements remained largely in the same locations. The only difference is in the intensity of use of these settlement locations.

### 7.1.4- WADI SUQ PERIOD:

#### 7.1.4.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

The archaeological evidence from the Wadi Suq consists of a large number and variety of tombs that is much greater than the evidence for occupation. However, the Wadi Suq tombs appear to be concentrated in the northern part of the peninsula. These are mostly long, collective overground burials (Carter 1997b: 87; see also below). There are also single cist burials that have been located all over the peninsula, mostly in the eastern part (Cleuziou 1981: 291). It is argued that a new cultural development from the Umm an-Nar period had appeared during the early 2nd millennium BC with a large level of regional differentiation (Cleuziou 1981; Potts 1990a: 234; Velde 2003). During this time, the number of known settlements is much less than in the Umm an-Nar period, which might indicate that the pattern of occupation during the 2nd

millennium BC is still unclear when compared to the Umm an-Nar period and the succeeding Iron Age (Carter 1997b: 96). It is believed that there was a change in settlement patterns and funerary customs as well as pottery types (Cleuziou 1981 & 1984; Carter 1997a-b; Velde 2003). However, it is argued that during the early Wadi Suq period, the Umm an-Nar period traditions were not suddenly abandoned but that there was a transitional period with clear links between the two periods (Potts 1990a: 234; Carter 1997b: 97). The evidence indicates that Wadi Suq remains are frequently located in the same areas where the inhabitants of the previous Umm an-Nar period had lived (Carter 1997b: 96–97). However, Wadi Suq remains are relatively poor in their structures and cultural deposits, or they are largely represented by tombs (*ibid*: 97).

It is also argued that less is known about the second part of the 2nd millennium BC, which was thought to represent a time when the population had turned to what was described by Cleuziou (1981: 292) as a 'full time nomadism', indicating an economy based on nomadic herding. However, this idea has been challenged by the discovery of settled sites of this period (e.g. Tell Abraq, Kalba 4 and Shimal). These sites revealed that some settled life continued during the second part of the 2nd millennium BC, at least in some parts of the peninsula (cf. Potts 1990a: 234; Vogt & Franke-Vogt 1987; Franke-Vogt 1991; Velde 1991, 1992; Carter 1997a-b); they yielded large monumental remains and a ceramic sequence covering the entire 2nd millennium BC (Carter 1997b: 87). Thus, it was argued that during the Wadi Suq there was perhaps some large permanent occupation in some parts of the peninsula (*ibid*: 95). However, our knowledge of their way of life is still unclear (Cleuziou & Tosi 2007: 257–259). Furthermore, the evidence shows that there was clear development in ceramics between the early and middle 2nd millennium BC, and between the middle and late 2nd millennium BC (Potts 1990a: 234). However, the vast majority of Wadi Suq sites are of small size and consist of structures indicating perhaps '*simple village communities*' with relatively low populations and levels of social organisation (Carter 1997b: 94–95). Additionally, the number of sites of this time, especially larger sites, is small, indicating perhaps a decline of settlement, population and/or economy (*ibid*: 96–97). However, the peninsula during this time was not totally isolated and some contact with Dilmun, Mesopotamia, Elam and the Indus Valley continued (Cleuziou 1981: 291; Carter 1997b: 96).

Very little is known about the subsistence economy of the inland areas during the Wadi Suq period. By contrast, more evidence on the subsistence economy can be attested in the coastal area along the Arabian Gulf, at sites such as the settlement of Shimal (Vogt & Franke-Vogt 1987; Franke-Vogt 1991) and Tell Abraq (Potts 1990a: 257, 1990c: 56–95, 1991, 2000). These sites provided evidence for faunal remains, suggesting large exploitation of shellfish and animal husbandry (e.g. sheep, goat, cattle, camel, pig, dog and gazelle). There is also possible evidence for continued agriculture during this time from Tell Abraq (e.g. date stones and grinding stones) and possibly from Shimal (grinding stones and high occurrence of dental caries indicating date consumption) (Potts, 1990a: 257; Carter 1997b: 94). Trade is also evidenced by the recovery of imported goods from neighbouring regions.

### 7.1.4.2- WADI ANDAM SURVEY CONCLUSION (LEVELS 4–6):

The evidence from the Wadi Andam Survey makes a very important contribution to our understanding of this period. It was stated earlier that there are several hypotheses and conclusions set out by different scholars for the decline in evidence from the Wadi Suq period in the peninsula but none of them has attempted properly to quantify the level of activity. These conclusions were based on an assessment of the number of sites that are known from the literature and the fact that Wadi Suq layers are absent from a number of main sites. The Wadi Andam data are the first to give a quantifiable indication of the relative scale of this decline at the lowest level of the settlement hierarchy. It has shown that there was a real decline in the level of activity (see Chapter Four, Section Two). This period is only represented by sparse pottery sherds, almost none of which appear to come from settlement areas. The evidence shows a few possible tombs whilst no other distinguishable features of settlements were found. The statistical analysis from the pottery database indicates that the numbers of Wadi Suq sherds from all the survey parts (PCAs, OVAs and UWA) are always markedly lower than for the other pre-Islamic periods, especially the Umm an-Nar and Iron Age, indicating a marked change in the settlement pattern between these periods. Therefore, it was argued that, although there is a lack of evidence of settlement from both PCA assemblages and other settlements, there seems to be some evidence for the use of tombs, mostly located in or around the wadi villages. Moreover, the evidence from the Wadi Suq period is in sharp contrast to that from the Umm an-Nar period, indicating a dramatic change in settlement patterns, funerary customs and pottery types. Unlike the

Umm an-Nar overground tombs, as well as those from Wadi Suq in the northern part of the peninsula, Wadi Suq tombs in the Wadi Andam are subterranean and most likely to contain a single inhumation. Furthermore, unlike the Umm an-Nar period where there is a clear association between tombs and settlements, there is a different relationship between tombs and settlements during the Wadi Suq. The evidence suggests that there was still activity of some sort around the wadi villages that had been occupied during the Umm an-Nar period, but there is no evidence for occupation. This evidence is similar to that from the published literature, which also indicates a lot of evidence from tombs. However, the Wadi Andam Survey did not yield any settlement remains such as those identified at sites such as Tell Abraq, Kalba 4 and Shimal.

It is, thus, possible to suggest that during this time there was a decline and change in settlement patterns all over the Wadi Andam, which can be attested not only by the absence of settlement remains but also by the low number of tombs and pottery. It is unclear whether the reasons behind this decline are related to economic change or population decline or to a climatic deterioration. The evidence indicates that the inhabitants of Wadi Suq used the same sites in which their Umm an-Nar 'ancestors' had lived. This evidence for the continued use of tombs during the Wadi Suq period is intriguing. All of these tombs are located of the fringes of the wadi villages that the PCA evidence suggests had been largely abandoned during this period. The most likely explanation for this seems to be that these tombs continued to be used, either by very small residual communities who have left hardly any trace in the archaeological record, or by nomadic or semi-nomadic populations who continued to use the old abandoned settlements as camp sites and cemeteries. This might indicate some sort of cultural attachment to ancestral lands, or it might simply indicate that these locations continued to be attractive due to the natural resources they offered, or for other reasons. However, in the southern part of the peninsula where these tombs are single subterranean burials, no evidence for re-use of Umm an-Nar tombs has been reported. Instead they built smaller, simple single tombs in the same localities or around them. It should be noted that the Wadi Suq populations were living not in an unrestrained environment but in a landscape which had already been shaped irrevocably by the activity of Umm an-Nar groups who had chosen the best locations for occupation. In effect it was a second-hand landscape, so this might, to some extent, have shaped their response. So there seems to be reoccupation in the already exploited landscape but

with a different intensity and pattern of life. Whatever the explanation the evidence clearly indicates some limited cultural continuity using the same locality but with different much lower settlement intensity.

### 7.1.4.3- LOCAL AREA CONCLUSION (LEVEL 3):

Only a few Wadi Suq sites that have possibly yielded settlement evidence and tombs were recorded in the local area. Again, this picture seems not to be very different from the previously published evidence or the Wadi Andam Survey.

### 7.1.4.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

Although the evidence from the whole northern Oman Peninsula shows a decline in the number of known sites during the Wadi Suq period, there is considerable sub-regional variation; the data shows a growth in the number of recorded sites in the northern part of the peninsula, namely, the Musandam and Northern Emirates. On the contrary, the rest of the peninsula either witnessed a decline or a stable level of activity. Therefore, it is possible to argue that that, unlike the Umm an-Nar period, which showed broadly similar patterns over the whole peninsula, the Wadi Suq appears to indicate significant sub-regional variation. This evidence coincides with the evidence from the Wadi Andam Survey, indicating a decline in settlement activities during this time.

The high numbers of Wadi Suq sites in the Musandam and Northern Emirates is notable and difficult to interpret. It might be related to the problem of tomb visibility as Wadi Suq tombs in this region are overground structures, making them easy to spot by the survey members. By contrast, tombs in the southern part of the peninsula (e.g. the Hajar Mountains) are subterranean, and these are difficult to locate during survey. Additionally, the subterranean tombs are difficult to distinguish from those tombs of the later periods such as the Iron Age and Hellenistic–Parthian (cf. Yule 2001a).

However, it is also possible that we are dealing with an archaeological reality in which the high percentage of sites within this region is indicative of the fact that there was more activity during the Wadi Suq period in this part of the peninsula than the other

parts, or that there was a different sort of activity in this sub-region that can perhaps be called a 'Wadi Suq Enclave'. Perhaps this sub-region was chosen for certain environmental or topographical reasons. It includes a long mountainous area crossed by several wadis, which could have provided water, arable land and other natural resources. It is possible that this area was more attractive for some reason, but it does not contain resources that are notably absent elsewhere in the peninsula. The limited palaeoenvironmental data available does not allow us to chart climatic changes in this part of the peninsula with any certainty. It is, however, possible that aquifers were more accessible and groundwater was more abundant in this part of the peninsula during the Wadi Suq. It is possible that the inhabitants of this time had access to the groundwater table by digging down into the wadi bed to tap the groundwater flow. This water comes from the mountains and foothills passing below the ground and is reserved in layers of porous sediments which partly cover the principally resistant bedrock, thus establishing reachable aquifers in the gravel fans along the mountains (Carter 1997a: 18). At present, fertile soil and groundwater is plentiful and traditional agricultural irrigation is based on wells (cf. Bowen-Jones 1966/7; Wilkinson JC 1977; Kennet 2004). Whether or not this was the case during the Wadi Suq period is still unclear and cannot at this stage be established. Moreover, this region is located close to southern Iran and the Straits of Hormuz, which has perhaps facilitated contact and trade. However, it is difficult, with the evidence at hand, to be certain whether topographic, climatic and/or economic factors were the major reasons behind this increase in the number of Wadi Suq sites within the Musandam and Northern Emirates region.

**7.1.4.5- SUMMARY:**

The archaeological evidence from the Wadi Suq indicates a large number and variety of tombs that is much greater than the evidence for occupation. Despite the fact that there is evidence for sedentary continuity in some parts of the peninsula (e.g. Tell Abraq, Kalba 4 and Shimal) during the whole of the 2$^{nd}$ millennium BC, occupational remains are still rare compared to those of the former Umm an-Nar period and the subsequent Iron Age. The bulk of the evidence for this period indicates that there was a decline in settlement intensity, indicated by the low number of settlement sites and the nature of the available evidence. This trend is not so different from that of the Middle and Late Bronze Age in the arid zone of the Levant, where very low settlement

evidence has been recovered for the period between around 2000 and 800 BC (cf. MacDonald, Adams & Bienkowski 2001).

With the evidence at hand, it is difficult to give a definite explanation for the settlement decline during the Wadi Suq. It is argued that the decline and cultural change during this time might be related to a decline in the climate at the end of the 3rd millennium BC (Brunswig 1989: 37–38). Radiocarbon dated evidence from several playa lake beds indicates that the peninsula witnessed a progressive aridity from the end of the 4th millennium BC (cf. McClure 1988; Parker et al. 2006: 474). This might be supported by the evidence from, for example, Hili 8, that indicates a reduction in the water table during the 3rd and perhaps the 2nd millennium BC. The evidence shows that the bottom of the central well of the earliest tower was found at 3.85 m deep, indicating that the water table was very high and accessible in Hili during the 3rd millennium BC (Hili Period I) (Cleuziou 2002: 198). By contrast, the evidence indicates a lowering of the water table to 8.5 m below the surface in the well associated with the second tower used at the onset of the 2nd millennium BC (*ibid*: 198).

Other reasons behind the decline have been attributed to external destabilisation and the arrival of new people (Cleuziou & Tosi 2007: 271–272). It is argued that this may have led to the destruction of the previously established social structure and the dispersal of its population over a wide area, although there is no strong evidence for such a suggestion. It is also argued that the decline in the Oman Peninsula's wealth during the first part of the 2nd millennium BC was a result of changes in the economy of the Arabian Gulf at that time (cf. Crawford 1996 & 1998). During the early 2nd millennium BC (end of Ur III period), Magan seems to disappear from the Mesopotamian texts, which is also confirmed by the absence of any Mesopotamian artefacts on the Oman Peninsula (Crawford 1998: 131). At this time, Dilmun took control over the Arabian Gulf trade and become the main entrepôt for long-distance trade contacts between the Oman Peninsula and its neighbouring regions. In this respect, goods from Oman (e.g. copper, pottery and softstone vessels) and the Indus Valley were transported by the merchants of Dilmun to Mesopotamia and Susa (Carter 1997a: 111). The archaeological evidence from the peninsula indicates that there were contacts with Dilmun – evidenced by the recovery of a large number of red-ridged Barbar pottery sherds from the late 3rd to early 2nd millennium BC contexts at Tell Abraq. These sherds have parallels from City II at Qala'at al-Bahrain and at Failaka

(Potts 1990a: 247, 1991: 72–75, 1993b: 123). Other examples of these sherds were also found at Khatt (de Cardi, Kennet & Stocks 1994: 44–46) and Nud Ziba (Kennet & Velde 1995). It is argued that the recovery of such types of pottery within the late 3rd to early 2nd millennium BC levels at Tell Abraq, and the evidence for transporting copper through Dilmun to Mesopotamia, indicates that the inland Omani copper was still under export during the early 2nd millennium BC (Carter 1997a: 117).

These changes may also have played a role in shifting the peninsula's contact routes as well as settlement patterns. Due to the shift in trading patterns in the Arabian Gulf area, Magan perhaps attempted to find an alternative trade contact for exporting its goods, which was possibly the Indus Valley (Crawford 1998: 131). This contact is evidenced by the recovery of Harappan materials from sites such as Shimal and Ra al-Jinz (*ibid*: 131).

The Indus civilisation appears to have witnessed important cultural changes from the rise of urbanisation during the Mature Harappan period between 2600 and 1900 BC to the decline of this tradition after 1900 BC (cf. Allchin 1995: 26–40). The Mature Harappan period corresponds with the Umm an-Nar period, and the decline coincides with the Wadi Suq period. Little can be said about the causes that led to the breakdown of Harappan society and its structure during the 2nd millennium BC. Here is not the place to present such an argument but, briefly speaking, different individual or combined factors have been suggested (*ibid*: 27–28). These include, for example, natural factors (decline in rainfall and gradual increase in population [human and cattle], leading to land exhaustion); calamitous natural events (a sudden change in the unstable course and gradual drying up of the Indus river); human intervention (movement of tribesmen into the Indus Valley from the hills to the west for various reasons, and the collapse of trade contacts with Mesopotamia in the early 2nd millennium BC); and epidemics that perhaps led to the inability of the Indus population to adapt to the different changes in the environment and the outside world.

It is argued that this breakdown in the Indus civilisation during the 2nd millennium BC (or post-urban period) involved the abandonment of urban centres (Allchin 1982: 330). It is possible that during the post-urban period there was climatic deterioration that led the populations of arid regions to adopt and develop new ways for survival, such as shifting to pastoral nomadism and an increase in the cultivation of millets. It seems

that there was a progressive decline and change in the 'Harappan socio-cultural system' that did not happen equally in all the urban centres (cf. Possehl & Raval 1989: 24). Some elements appear to have continued during this post-urban period, but there was a complete disappearance of the specialised urban crafts and trade networks (Allchin 1995: 38). Allchin (*ibid.*) argues that the population of Sindh was overwhelmed and that there was a complete disappearance of specialised urban crafts. By contrast, there was a more steady climatic system in areas where there is significant evidence for the survival of many settlements during the post-urban period. This can, for instance, be seen in the Punjab, Haryana and the northern part of the Ganges–Yamuna Doab. Allchin claims that all of these areas indicate a general population flow towards the east due to the climatic deterioration in the Indus region and the availability of water resources in the Sarasvati Yamuna river. Thus, the northern regions played a significant role in the survival of elements of the Indus culture and ideology. Furthermore, a less extreme situation existed in the southern part at Saurashtra and southern Rajasthan than in Sindh, where there was cultivation of millets (*ibid.*). It is possible that these changes that affected the Indus civilisation might also have affected the Oman Peninsula in some way that has yet to be established.

Dilmun control over long-distance trade in the Gulf appears to have ended during the Old Babylonian period (end of the Isin Larsa period) due to the appearance of new trade routes between Babylonia (Mesopotamia) and the copper mines of Anatolia and Cyprus, as well as the decline of the cities of southern Mesopotamia (Crawford 1996: 16–17). This shift resulted in the relative isolation of the Oman Peninsula during the Middle and Late Wadi Suq periods (Carter 1997a: 123). It is believed that by this time, Failaka continued as a trade centre, as is evidenced by the recovery of Old Babylonian material at Tell Abraq (*ibid*: 123).

It is reasonable, therefore, to suggest that these changes in the trade contacts might have had their influence on the economy of the Oman Peninsula, as well as on the ancient maritime Gulf trade that flourished during the 3rd millennium (Crawford 1998: 121). The decline in the importance of copper from the mountains, for instance, might have affected the residents of those parts of the peninsula, which might explain the lack of large Wadi Suq sites in these areas (Carter 1997b: 96). However, this remains a hypothesis until further evidence comes to light and provides us with a more detailed

picture of the nature of occupation and social structure that existed during the Wadi Suq. This is difficult to understand but it seems that it was completely different to that which existed during the Umm an-Nar period. So what was the nature of this structure?

In fact, it is difficult with certainty to say anything about the nature of the social structure during this time. During the Wadi Suq, there appears to be a very different situation to that which existed during the Umm an-Nar period. It is possible that there was a collapse of the complex social structure that had developed during the Umm an-Nar. At present it is difficult to give an explanation for such a collapse. It is unclear whether or not this might be associated with the decline and shift in the copper trade. Such a suggestion has still to be demonstrated. The evidence indicates that different changes occurred during this time, represented by the production of new types of pottery, copper tools and stone vessels, as well as the construction of new types of tombs where single and collective burials can be found for the first time in more than a millennium (Cleuziou & Tosi 2007: 257 & 266–270). There were changes in the pottery, both in quantity and quality (cf. Velde 2003): there was less decorated pottery and fewer types, which can probably be associated with changes in the production and distribution pattern (cf. Méry 2000). Moreover, no towers seem to have been constructed or re-used (possibly Tell Abraq and Nud Ziba continued to be used), and the previous Umm an-Nar towers were completely abandoned by this time. There were no large collective burials, apart from those in the north, which are quite different from the previous Umm an-Nar tombs, both architecturally and ritually. Moreover, there seems to be a variety of tomb architecture during this time and different tomb types can be found in the same area as can, for example, be seen in Ras al-Khaimah, where three or more different multiple burial types are attested: Khatt, Shimal and Ghalilah (cf. Carter 1997a). The majority of the tombs are single subterranean burials, particularly those in the south-eastern part of the peninsula. Cleuziou (2002: 228) argues that the appearance of single tombs during the Wadi Suq might be related to changes in kinship relations, and that this change ended the establishment of 'an early state structure in the Oman Peninsula, no matter what level had actually been reached'. This might have resulted in the population changing their settlement patterns and structure. However, these are speculations that need to be confirmed by future fieldwork. The question of the collapse of social structures is difficult to answer with any certainty based on the currently available evidence.

In fact, with the evidence at hand, it is difficult to be certain that climate and/or trade were the major reasons behind the low number and distribution patterns of Wadi Suq sites. However, it is possible, based on this evidence, that there were perhaps two types of communities that existed during the Wadi Suq period. The first of these is the nomadic or semi-nomadic groups who were probably the residents of the southern and south-eastern parts of the peninsula, as confirmed by the evidence from the Wadi Andam Survey. Other nomadic groups might also have existed in some places in the northern part, as evidenced by single subterranean tombs. The settlements belonging to these groups were perhaps small temporary structures built of perishable material, such as huts or *barasti* houses, and not of large monumental building, such as those of the preceding Umm an-Nar period. This suggestion accords with Cleuziou's idea (1981: 292) about the existence of a nomadic way of life during the 2nd millennium BC. These groups were perhaps travelling around and were part of a process of material and cultural exchange between themselves and the settled populations in the far north of the peninsula (Carter 1997a: 121). Moreover, it is suggested that nomadic pastoralism was perhaps practised in the regions where it is difficult to reach plentiful groundwater (*ibid*: 122).

The second type of community is represented by the settled populations in the northern part of the peninsula, evidenced by the recovery of large permanent settlements at, for example, Tell Abraq, Kalba 4, Shimal and Bida'a. It is argued that their recovery indicates that there was no sudden abandonment of 3rd millennium BC farming practices; but that their importance might have been reduced (*ibid*: 122).

Regarding the tomb architecture of these two communities, it seems likely that the large collective overground tombs in the northern part of the peninsula required large amounts of time, effort and organised labour to build (*ibid*: 54). This type of tomb involves settled communities with access to appropriate resources in a specific location. By contrast, the simple and small subterranean tombs that characterise the southern and south-eastern parts of the peninsula are easy to construct and do not require as much time, effort and organisation. Thus, it is possible that these small single-subterranean burials might indicate the presence of small nomadic or semi-nomadic groups who were moving around. Many of these tombs are grouped into cemeteries (e.g. Wadi Suq [Frifelt 1973d & 1974]; Samad S10, S20, S21 and S22 &

Maysar M8 [Yule & Kazenwadel 1993: 253–254; Yule et al. 1994: 385; Yule & Weisgerber 1988: 8–12]). Their occurrence in large numbers in the same locality might be related to the fact – indicated above – that it is possible that the Wadi Suq nomadic populations had a belief in ancestor worship or sanctification and respect, so they returned to their ancestors' lands to bury their dead. They built smaller, simple tombs in the locality where their ancestors were buried. Although these tombs are mostly grouped into cemeteries, there are a number spread across the countryside on their own, such as the excavated tombs in the Bustan (Gr.Bu6 & Gr.Bu8 [Yule 2001a: 374–376]), as well as those observed during the Wadi Andam Survey (e.g. CS.2.4 and possibly CS.5.18 and CS.7.2). It is also possible that these nomadic groups used some locations as cemeteries or burial grounds for their dead and probably lived in temporary structures near or not far from these tombs. The issue of tomb visibility indicated earlier, perhaps resulted in the increase in Wadi Suq sites in the northern part of the peninsula, namely the Musandam and Northern Emirates, as they are easy to spot during survey.

To sum up, it is possible that there was a climatic deterioration or economic change in the southern part of the peninsula that led to a collapse of the Umm an-Nar social structure and, thus, the populations of arid regions had to find alternative ways for survival, such as shifting to pastoral nomadism. However, as was the case in the post-urban Indus period, this process does not seem to have occurred equally in all the regions, particularly the northern part of the peninsula (Musandam and Northern Emirates). It is argued that during the early Wadi Suq period, the Umm an-Nar period traditions were not suddenly abandoned, and there was a transitional period between the Umm an-Nar and early 2$^{nd}$ millennium BC with clear links between the two periods (Potts 1990a: 234; Carter 1997b: 97). Therefore, it is possible that some of the cultural elements that existed during the Umm an-Nar continued during this time, but with a complete disappearance of the specialised urban crafts and social complexity. This continuity can possibly be related to more or less steady climatic conditions and the availability of water resources in the northern part.

It is possible that environmental conditions played a significant role in the seasonal round of the nomadic populations that might have existed during the Wadi Suq. The ethnographic data available related to the modern nomadic tribes in Oman might shed a light on such a routine and the effect of the environment. In his book *Mobile*

*Pastoralist: Development Planning and Social Change in Oman*, Chatty (1996) discusses the nature of occupation and seasonal movement of the Harasiis tribe. She indicates that the main concentration of this tribe is on the desert plateau of Jiddat-il-Harasiis, but in the summer they often share the Awta and the Jazir coast with the Jeneba tribe. They traditionally practise camel and goat husbandry, for the production of milk rather than meat, in the naturally available grazing lands (*ibid*: 81). Their seasonal migration is determined by an amalgamation of different seasonal and ecological variables in which the need for water and pasture for the herds strictly directs the options available to the family, and households are likely to move every few weeks (*ibid*: 104). In other words, water and pasture are the basic rule of organisation for their way of life. Not unlike other pastoral groups, the Harasiis look for control over a territory or an ecological niche that provides them with adequate resources necessary for shared life. During winters, the Jiddat usually provides an adequate shelter under many trees, as well as grazing lands in its several haylats and wadis. It also offers them plentiful choices to supplement their diet with gazelle, the Arabian oryx and other game, which they occasionally hunt. During the later part of the winter, goat herds are kidded and provide abundant milk that compensates for the shortage of water. The availability of such resources at Jiddat make the Harasiis movements less regular in the winter (*ibid*: 104).

During the summer months when the temperature is extremely high and the water source is absent in the Jiddat, the Harasiis either move to the coastal areas or to the north, where they have established interdependent relationships with the sedentary populations along the Sharqyiah foothills, particularly Adam and Sinaw. In the first instance, they move to the Jazir Coast and the Awta where there is access to a number of brackish water wells. Here, families tend to camp where the wild date groves of the Awta supply them with food for the herds, and they practice some trading in order to obtain bartered or bought fresh and dried fish (particularly sardines and shark) with their neighbours from the Jeneba tribe which also shares the region with them. During this time, buying or small-scale catching of fresh fish also plays an important part in their diet. By contrast, the other movement of some of the Harasiis families is towards the north into the Wadi Halfayn and even further north close to Adam, where some of them own date palm groves. They normally leave the fallow camel herd behind with an adult male in one of the major wadis leading to the sea from the Jiddat-il-Harasiis. Then, the bulk of them and their herd of goats move and settle close to their date

gardens, where water, food and shelter are obtainable. During their stay, they look after the herds, milking the goats and camel for their basic dietary needs. Additionally, the women and older girls often braid the palm leaf fronds (*sa'af*) from the local wild date trees into food mats, bowls, baskets, covers, and a variety of other vessels for their own use and possible future sale. They often sell their young male goat kids as well as some of the braided items in the village marketplace to exchange with or buy supplies for the coming winter months such as flour, sugar, tea, coffee, rice and cloth. Finally, when the summer ends, the families move back on to the Jiddat (Chatty 1996: 105).

### 7.1.5- IRON AGE (EARLY IRON AGE):[55]

#### 7.1.5.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

Surveys and excavations in the Oman Peninsula have provided us with a large number of Iron Age sites distributed throughout the peninsula. The evidence shows that there is general continuity in settlement between the second half of the 2nd millennium BC (Late Wadi Suq) and the Early Iron Age (Iron Age I period) in the Oman Peninsula, despite the fact that there are obvious dissimilarities between their assemblages (Potts 1990a: 254; Magee 1998b: 51; Magee & Carter 1999: 174). It is suggested (Magee & Carter 1999: 174) that the Iron Age I period (1300–1000 BC) witnessed an early stage of settlement increase and developing overseas trade contacts and social hierarchy (see summary below). Only a few coastal and inland settlement sites of this period have been recovered, such as Tell Abraq, Shimal, Bithnah and Kalba 4 (Magee & Carter 1999). Apart from $C^{14}$ dates from Salut or BB-15 in Bahla (Avanzini, Sedov & Condoluci 2005: 351 & 374, Table 1), no sites of this period have so far been found in 'Central Oman', which might indicate that this period is a 'regional variant' of the Iron Age and not a real period (Schreiber, 2007, Pers. Comm.).

The archaeological evidence also indicates continuity in occupation between the Early Iron Age (Iron I & II Period) and the Late Iron Age (Iron III Period). This continuity is confirmed by the evidence recovered from sites like Tell Abraq, Kalba 4 and Muweilah, which, together with Rumeilah, have provided us with a better understanding of settlement patterns and development during the Iron Age (e.g. Potts

[55] This period corresponds with the suggested Early Iron Age period terminology for the evidence from the Wadi Andam Survey.

1990a: 354; Magee 1996 & 2003). It is suggested (Magee & Carter 1999: 174) that during the Iron Age II period there was development and intensification of occupation and economic activity accompanied by the introduction of the *qanat* or *falaj* irrigation system (Magee 1998b: 51–54, 2003 & 2004: 41). This system appears to accompany the appearance of large 'polities' along the edges and in the wadis of the al-Hajar Mountains (Magee 2004: 24). Settlement sites of this period have been found in different parts of the peninsula, both on the coast and inland. Inland settlements have been found in the piedmont (e.g. Rumeilah, al-Thuqaibah, Hili 17), mountains (e.g. Raki 2 and Husn Awhala) and desert foreland (e.g. Muweilah) (Magee 2003: 8–9). The piedmont settlements are characterised by a demarcation in building function in which the main architectural features are free-standing, mudbrick structures (Magee 1998b: 54). There are also structures accompanied or surrounded by *falaj* system installations or structures and fortified elements (*ibid*: 54). By contrast, our knowledge of settlement sites during the Iron Age III period is still relatively limited (Magee 1998: 51). This period appears to have witnessed a decline in the settlement pattern that developed during the Iron Age II (Magee 1996). Tombs of this time are single subterranean cist burials and have been recorded all over the peninsula, such as those excavated at Wadi Samad (e.g. Yule 1993, 2001a & 2005; Yule & Weisgerber 1988 & 1991).

The subsistence economy of the Iron Age appears to be based on a wide variety of food resources. This period is characterised by a possibly extensive, domestic non-specialised economy that is evidenced by the ceramic assemblage, which was produced on 'a part-time occasional basis', and was made for domestic use (Magee 1998b: 51). Evidence for agriculture during the Iron Age I period is attested by the existence of date palm (*Phoenix dactylifera)* during this time, suggesting a large-scale exploitation and cultivation of this plant (Magee 1998b: 51; Magee & Carter 1999: 164). The evidence also provides indications for the cultivation of wheat and barely, which was supported by wells as evidenced by the excavations at Tell Abraq (Magee 1998b: 51; Magee & Carter 1999: 164). There is also evidence for the exploitation of a large range of domesticated terrestrial (e.g. sheep, goat, taurine and/or zebu cattle), aquatic and hunted (e.g. gazelle, oryx and the Socotra cormorant bird) animals (Magee 1998b: 51; Magee & Carter 1999: 164). Evidence for the exploitation of marine resources is attested at the coastal sites of Tell Abraq, Shimal and Hamriyah, indicating a reliance on the mangrove snail *Terebralia palustris*, fish and dugong (Magee 1998b:

51). It is also suggested that during this time the inhabitants of the Iron Age I period had external contacts and engaged in foreign trade, suggesting an involvement in the 'inter-regional exchange' that followed a period of relative isolation (Magee & Carter 1999: 174). During the early phase of the Iron Age II period, there is strong evidence for the intensification of 'intra-regional trade' based on local raw materials and finished goods as well as external contacts and trade where several goods were imported from Arabia, Iran and Mesopotamia (Magee 1998a-b; 2004: 24). It is argued that during the Iron Age II, occupation in the Oman Peninsula was based on fishing and the exploitation of marine resources on the coasts, and sedentary farming inhabitants, together with possible herding, in the inland zone (Potts 1990a: 389). Moreover, the camel seems to have been an important domesticate, which facilitated the wide and long movement of the nomadic populations during this time into the desert, even allowing them to live there permanently, but in a different way to the settled oasis populations (Cleuziou & Tosi 2007: 293), moving with the herds in search for pasture, and living on the fringes of the oases settlements. Camels also created new economic and political relations as they, rather than the donkey caravans, were used for land trade, and possibly provided more powerful raiding and fighting parties (*ibid*: 294).

It is also argued that at the very beginning of the Iron Age (ca. 1300 BC), major copper extraction and production in Oman continued or restarted on a really large scale, and the Cyprus double-step chalcopyrite smelting technique appears to have had arrived here as it did elsewhere during the same period (Weisgerber 2007b: 302). During the Iron Age, major copper ores in Oman were exploited for the first time, demonstrating transformations in smelting technology that increased production (Cleuziou & Tosi 2007: 292–293). During this time, the smelting debris produced large tapped slag cakes of up to 10 kg that can be simply distinguished from the smaller Bronze Age waste (Weisgerber 2007b: 302). One of the important settlement sites that yielded evidence for copper production during this time is Raki 2, where excavations revealed a large settlement with a long period of copper production, from 1200 to 800 BC (Weisgerber & Yule 1999: 110–115).

### 7.1.5.2- WADI ANDAM SURVEY CONCLUSION (LEVELS 4–6):

The evidence for the Iron Age (Wadi Andam Survey 'Early Iron Age') shows a slight growth in the level of activity from that of the Wadi Suq period (see Chapter Four). Almost all the recorded sites from the survey yielded pottery sherds and other objects of this period; however, this evidence comes mostly from tombs. The number of settlement remains is higher than that for the Wadi Suq, but is still very low compared with that of the Umm an-Nar and Hellenistic–Parthian (Wadi Andam Survey 'Late Iron Age/Samad'). It is suggested that the PCAs were not inhabited during the Early Iron Age, or more accurately, were not used in the same way. This was evidenced by the recovery of very few pottery sherds of this period within these PCAs (e.g. al-Fulayj CS.1 and al-Khurais CS.3). By contrast, it was suggested that the areas around wadi villages (OVAs) were more inhabited by the Early Iron Age people than the PCAs, which was evidenced by the recovery of occupational remains and tombs within these areas (e.g. CS.3.8, CS.4.3, CS.4.4, CS.4.13, CS.4.14, CS.5.7, CS.5.10, CS.5.13, CS.5.14, CS.9.2 and CS.9.5).

It appears that Early Iron Age sites recorded during the survey might have been inhabited through several periods during which their populations re-used the preceding (Hafit and Umm an-Nar) period tombs – and perhaps their settlements as well – as they possibly constructed their own new tombs (e.g. sites CS.4.3, CS.4.13, CS.5.10, CS.5.13, CS.2.52, CS.2.67, CS.2.68 and CS.2.69). It is possible that during this time, settlements appear to be occupied for a short timespan, and their small size indicates perhaps small sporadic sites that were used by a small nomadic population (e.g. CS.2.11, CS.2.50 and CS.4.4). This conclusion is based on the low number of settlements and their small size, as well as the simplicity of their structural remains and layout compared with those of settlements from other periods, as well as on the low number and types of pottery recovered, mostly from tombs. The possibility of short occupation might also be supported by the fact that there was only very little activity during this time within the wadi villages (PCAs) and that the occupational remains and tombs of earlier periods were re-used. Hypothetically, one can say that the Early Iron Age might be a continuation of the pattern established in the Wadi Suq period with a little, but not much, more evidence of settlement of possibly short occupation. The Early Iron Age settlement pattern is quite different to that noted during the Umm an-Nar period and the following Late Iron Age/Samad. This evidence from the survey is

similar to that from the previously published archaeological evidence. It supports the idea that at the beginning of the Iron Age there was an early stage of settlement increase and developing social hierarchy after a possible abandonment of settlement during the Wadi Suq, along with some changes in the settlement pattern, including a spread into areas that had not previously been occupied, such as defensive sites outside the wadi village areas.

### 7.1.5.3- LOCAL AREA CONCLUSION (LEVEL 3):

The quantified data from the local area indicates a considerable amount of Iron Age evidence. Tombs are located on low elevations, flat wadi plains, wadi edges and close to the modern villages. Several of these tombs yielded evidence of re-use of older tombs such as Hafit, Umm an-Nar and Wadi Suq, but new tombs were also established. By contrast, few settlements were found, and they are almost all small in size, but varied in function from fortifications situated on hills and their slopes to copper production sites located on the wadi terraces. Several of these settlements re-used the previous Umm an-Nar structures, but new small settlements were also established, probably campsites and/or farmsteads. This is similar pattern to that in the Wadi Andam (see 7.1.5.2 above).

This evidence is similar to that from the published archaeological evidence. The location of both tombs and settlements as well as the practice of re-using older tombs and settlement remains is always the same. The low number of settlements might perhaps be related to the survey methodology used by the projects that carried out fieldwork in this area (see Chapter Five). None of them has attempted to apply a sampling methodology based on quantifying the level of activity. In reviewing and quantifying the evidence from the local area in Chapter Five, it appeared that there was a bias from several of these projects towards recording specific types of sites, namely tombs, as was the case with the German Mission in the al-Sharqiyah region. This situation has complicated our understanding of settlement activities within the region and resulted in an increase in the number of tombs over settlements. It is clear that the results of several of these surveys provide a somewhat biased picture of the relative levels of activity.

### 7.1.5.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

As is the case with the published data, the Iron Age is always one of the best represented periods among the pre-Islamic periods. The quantified data shows that there was a large growth during this time after a decline in the Wadi Suq. At the sub-regional level, the data shows that there was a growth in the number of recorded sites in the central, eastern and south-eastern parts of the peninsula, namely Central Oman, the Eastern Coast and the Hajar Mountains. It also shows that there was a stable level in the north-western part, namely, the Abu-Dhabi Coast, while there was a decline in the level in the northern and north-eastern parts, namely the Batinah Coast and Musandam and Northern Emirates. In comparison, as has already discussed, the last region showed a higher level of activity during the Wadi Suq period. Moreover, it is notable that the areas where there is decline are the same areas where there is a high level of Wadi Suq activity, so in fact it may simply be an equalising of a situation where population had become concentrated in the north (e.g. Musandam and Northern Emirates, and possibly the Batinah coast) during the Wadi Suq period.

### 7.1.5.5- SUMMARY:

After the settlement decline during the Wadi Suq, there seems to be some sort of emerging socio-political complexity during the Iron Age, but this appears to be less complex than the Umm an-Nar. Although the combined evidence (archaeological, environmental, historical and comparative) does not tell us a great deal about such complexity, it permits us to speculate on some aspects of the social organisation that perhaps existed within the Iron Age settlements, particularly those located on the piedmont zone. These settlements include different types of structures: dwellings, fortifications, workshops, tombs, agricultural installations, storehouses/rooms and, most importantly, the *falaj* system. These structures vary in size and shape, and include different divided or attached units. They are located either on flat areas (e.g. along the wadi banks and its terraces) or on higher elevations (e.g. rock or gravel hills/outcrops and sometimes along their edges and slopes). Agriculture is evidenced by the remains of *falaj* irrigation channels in different places, which have been dated to the Iron Age (e.g. al-Thuqaibah, Rumeilah, Hili 2, 14, 15 and 17, Bida' Bint Sa'ud, al-Jabeeb, Zahra 2). The results from the Wadi Andam Survey showed that several of these settlements

are associated with agricultural installations such as fields, irrigation channels and other stone and mudbrick structures that were specified for storing grain and agricultural equipment. Therefore, undoubtedly the inhabitants of these settlements practiced intensive agriculture. It has also been noted above that the economy of the Iron Age inhabitants appears to have been based not only on farming but also on a wide variety of food resources, ranging between herding, hunting, fishing and the exploitation of marine resources (Potts 1990a: 389; Magee 1998b: 51; Magee & Carter 1999: 164), as well as the 'inter-regional exchange' (Magee 1998a-b; 2004: 24). The evidence also indicates socio-economic development during this time, represented by the settlement intensity and use as well as the large amount of cultural material, particularly pottery.

Recent attempts have provided some insights into the socio-political structure during this time (cf. Magee 1998a, 2004). More evidence for such complexity is suggested for the Iron II period than the Iron I period. It is argued that during the Iron I, there was a level of regionalism in the material culture, which is attested by the ceramic traditions from the neighbouring settlements of Tell Abraq and Shimal (Magee & Carter 1999: 174). Moreover, there is no evidence for ceramic exchange between the east and west coasts during this period (*ibid*: 174). By contrast, there was a dense occupation during the Iron II period which had never been attested in any other prehistoric period in the Oman Peninsula, and there is also evidence for the emergence of a 'material culture *koine*' that can be attested all over the peninsula (Magee et al. 1998:236). It is believed that this might be related to the 'emergence of complex regional exchange mechanisms', which are perhaps indicative of 'increasing social and political complexity' within the peninsula during this time (*ibid*: 236). In other words, the combined environmental, archaeological and historical evidence indicates the occurrence of a group of 'politically complex polities' during the Iron II period (Magee 1998a: 49). These include the settlements established in the piedmont zone, which include different aspects of complexity such as the *falaj* and its related irrigation systems; intensive agriculture; and fortifications and other defensive aspects in order to control and protect these resources (Magee 1998a: 49; Magee et al. 1998: 237–241).

It is argued (Boucharlat 1984; Lombard 1985; Magee & Carter 1999: 175; Magee 1999, 2003: 9, 2004: 41; al-Tikriti 2002a-b) that the intensification of settlement and the appearance of complexity during the Iron II was a result of the introduction of *falaj*

irrigation, which created large polities in the piedmont areas along the wadi banks of the al-Hajar Mountains. Magee (1998b: 54) has remarked on the dichotomy between free-standing structures and fortified buildings located near the *falaj* system and he proposes that this might be an indication of an endeavour from a group of polities to control access to the *falaj* and agricultural products (Magee & Carter 1999: 175) (see below). It is also argued (Magee 2004: 24–25) that not only did the introduction of the *falaj* result in the remarkable settlement intensification and change during the Iron II period but that camel domestication also influenced the location and organisation of settlements in the peninsula during this period. The camel played a significant role in facilitating the transportation of goods from the desert zone to areas that were previously unreachable and therefore unoccupied. This process increased the number of settlements in such previously unoccupied areas as well as influencing their location and the organisation of trade networks (*ibid*: 24–26).

It is also believed that this complexity was the result of increased 'intra-regional trade' in both raw and finished materials as well as imported items from the neighbouring areas such as Arabia and the Middle East (Magee 2004: 24). This increase in trade was possibly due to the demand for prestigious items from some elites or political authorities in many polities (*ibid*: 24). Very few prestigious items that might indicate status and authority have been recovered from Iron Age sites within the peninsula. Among these are decorative bronze axe-heads, which have been recovered at seven sites of which three are located in the piedmont, two coastal, one in the mountains and one in the desert (Magee 1998b: 56–57). It is argued that these axe-heads represent symbols of power (cf. Weisgerber 1988: 287; Magee 1998b: 57). Evidence for prestigious items also came from other mountainous (Rafaq) and coastal (ed-Dur) sites, showing some contact with Assyria. The first site yielded a local softstone vessel decorated with Assyrian griffins and imported Assyrian cylinder seals, while the second yielded a decorated bronze bowl with iconography based on Assyrian prototypes – 'Nimrud bowls' (*ibid*: 57).

Recent excavations at the Iron II desert site of Muweilah yielded more evidence for prestigious items. The distributional and compositional analysis of imported artefacts recovered from the site indicates that there was access to elite items such as painted pottery, iron and incense (Magee 2004: 24). The excavated Building II was interpreted as a political and possibly religious structure, based on the recovery of a large number

of foreign elite items such as iron and bronze (*ibid*: 36). It is believed that it was designated as an elite structure and indicates influence from the Iron Age Iranian 'columned hall' tradition (Magee & Thompson 2001: 128). This might be an indication of 'increased social differentiation', due to the ability of its inhabitants. most likely elite, to acquire and control foreign and local goods (Magee 2004: 24). The excavations at Muweilah revealed a badly eroded iron dagger (M-988) with a simple tang and a leaf-shaped point (Magee 1998a: 113). This recovery provides some insights into the social and economic developments within the Oman Peninsula. It represents the initial appearance of iron in the peninsula and was probably a status and prestige item as iron during this time was very rare and one of the strongest metals (*ibid*: 116). The site also yielded an artefact that gives the earliest evidence for the use of South Arabian script in the peninsula (Magee 1999: 43, figs 3–4). It is a fragment of a locally made storage jar with three South Arabian letters inscribed just below the rim. It is believed to have been made at Muweilah itself, perhaps by travelling potters who moved from one settlement to the other (*ibid*: 43–44). Although possible, it is unclear whether or not this rare item was produced for someone who was elite with some sort of power or authority. Furthermore, the fine, well-levigated, painted ware, imported from Iran (see below), which was recovered at the site, might be regarded as an elite/status good due to its rarity at that time in the peninsula (it represents less than 1% of the entire ceramic ware found in the piedmont site of Rumeilah, Muweilah in the desert and Tell Abraq in the coast [Magee 1998b: 57]).

There is also evidence for the construction of Iron Age monumental platforms such as those found at Tell Abraq and Kalba, which, based on the brick sizes, might be similar to those constructed during the Early Iron Age in Central Asia (Magee & Carter 1999: 175). It is argued that these monuments might indicate some social and/or economic change that had not obviously been attested since the construction of the Umm an-Nar tower buildings (*ibid*: 175). Unlike those in Central Asia, which are linked with the establishment of large irrigation canals, the platforms at Tell Abraq and Kalba might indicate some sort of social differentiation, suggesting the appearance of elites who attempted to control some limited resources and needed to distinguish themselves from the other settlements (*ibid*: 175).

The above evidence indicates the possible occurrence of an elite during the Iron Age, but what about the other members of society? What type of subsistence strategy were they involved in? Were they specialists? As has been indicated above, the evidence clearly indicates that the economy during this time was based on multiple resources and activities. However, the question is; did all settlements in the different environmental zones practise all activities or professions together, or was there some sort of regional specialisation? The evidence clearly demonstrates the existence of regional specialisations, which perhaps resulted in the appearance of the trade and exchange concept between the different environmental zones.

The archaeological evidence suggests that there was some sort of social structure within these Iron Age settlements. Specialisation played a major role in this structure, in which there is strong evidence (large amounts of standardised pottery) for the presence of craftsmen during the Iron II period. Potters are among the main specialists, producing large numbers of vessels for different purposes, mainly domestic. Recent ceramic compositional and distributional data from Muweilah and other Iron II settlements (Qarn Bint Saud, Tell Abraq and the tomb at Sharm) demonstrate that these products were produced in the piedmont settlements and distributed all over the peninsula (Magee et al. 1998; Magee & Carter 1999: 176; Magee 2004: 36). The analysis indicates that the most common Sandy Ware and the less common Fine Painted Ware (representing only 1% of the assemblage), found at Iron II settlements, were produced in different production centres (Magee et al. 1998; Magee 2004: 36). The combined geological and archaeological evidence suggests that the Sandy Ware was most likely produced at one single production centre, which is believed to be al-Ain Oasis (Magee et al. 1998: 236). By contrast, it is believed, based on a combination of the geological evidence and some stylistic and morphological parallels, that a production centre in eastern Iran (e.g. the Iron Age settlement at Tepe Yahya) might be the origin for the Fine Painted Ware (*ibid*: 236). The analysis also included one fragment of possible imported ware (Pseudo-Barbar) from Muweilah, which has parallels in the Iron Age deposits at Qala'at al-Bahrain. This sherd and the Mesopotamian vessels from Muweilah might indicate the involvement of this settlement in long-distance trade, most probably using a land route through eastern Arabia. Thus, it can be suggested that Muweilah was receiving ceramics from different local and foreign production centres, and then redistributing them to the coastal settlements within the northern regions of the Oman Peninsula (Magee 2004: 40–41).

As was the case during the Umm an-Nar, it seems that there was some sort of exchange between these producers and other specialists in the other parts of the peninsula, such as the coastal sites. This might indicate a reliance on inland-produced pottery that perhaps led to the amalgamation of coastal economies into a 'regionally specialised economy' (Magee & Carter 1999: 176). In this respect, coastal sites perhaps participated by providing marine resources (e.g. dried and salted fish and shellfish) and imported materials and exchanged them with agricultural products and pottery from the piedmont region and possibly copper from the mountains. Magee (1998b: 54) argues that this exchange process might indicate 'economically complex institutions'.

There is increasing evidence for regional and overseas trade during the Iron Age, in which coastal sites such as Tell Abraq participated in these trade networks. As has been seen earlier, it is also suggested that desert sites such as Muweilah possibly participated largely in 'controlling cross-desert trade routes and may have also been important centres for activities such as camel breeding and date-palm cultivation' (*ibid*: 57). It has already been indicated above that there was increased 'intra-regional trade' in both raw and finished materials as well as imported items from the neighbouring areas, which led to settlement intensification during this time. It has also been suggested that camels perhaps facilitated the transportation of local and foreign goods to areas that were previously inaccessible. Based on distributional analysis, it is suggested that Muweilah is located in a position that is about one (e.g. Tell Abraq, Hamriyah lagoon) or two (e.g. al-Thuqaibah) days travel by camel from some important Iron Age coastal and inland settlements (Magee 2004: 26). Therefore, it is argued that this location played an important role in controlling camel-borne trade, in which its inhabitants travelled to and from the coast and brought back large amounts of marine resources, which can be evidenced by a large number of shellfish from Areas A and B buildings at Muweilah (*ibid*: 26). However, the main supplier of ceramics, steatite, copper, flint and grinding stones were the inland oasis settlements. Thus, it is suggested that Muweilah was the 'end point of an important trade inland-coastal system in raw and finished products' (*ibid*: 26). Moreover, there is evidence for imported luxury items and cultural exchange with Iran, Mesopotamia and Arabia (e.g. Bahrain and Yemen), suggesting that trade played a vital role in the Muweilah's economy (Magee 1999: 48; Magee & Thompson 2001: 128). Other imported artefacts include Middle Elamite cylinder seal(s) at Tell Abraq and Iranian ceramics at Kalba,

suggesting that the Oman Peninsula during this time was engaged in a fully inter-regional exchange (Magee & Carter 1999: 175).

To sum up, although there is evidence that might suggest social and political complexity during the Iron Age, these remain speculations until further evidence is produced by fieldwork. It is most likely that there was some sort of exchange among the settlements from different environmental sub-regions; however, the mechanism of this exchange is not well understood and requires more work in order to give a more detailed picture of how these settlements were integrated and how they practised such exchange. It is also important to stress here that the Iron Age needs to be broken down into sub-periods before it can be fully understood. This was not possible in this thesis based on the material from the Wadi Andam Survey. The difficulty derives from the fact that it was impossible to distinguish the pottery from the earlier and later parts of the Iron Age, which has led us to refer to this period as one single period, namely the Early Iron Age (1300–300 BC), when dealing with the Wadi Andam Survey results.

### 7.1.6- THE HELLENISTIC–PARTHIAN (LATE IRON AGE/SAMAD):[56]

#### 7.1.6.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

It is argued that during the Hellenistic–Parthian period there was a wealth of settlement and burial activity as well as economic growth in the Oman Peninsula (Kennet 2007: 103). The evidence from the Hellenistic settlements (e.g. ed-Dur, Mleiha and Samad) indicates that there was continuity of occupation from the 1st millennium BC until the 4th century AD (Boucharlat 1991: 297). Boucharlat and Mouton (1991) suggest, based on the evidence from Mleiha, a cultural evolution during the Hellenistic period with several changes from the very Late Iron Age, which brought the peninsula's population from protohistory (Iron Age) towards the historical periods (Hellenistic period). These changes included a shift from small settlements (hamlets or villages) to a very large settlement (oasis).

[56] This corresponds with the suggested Late Iron Age/Samad terminology for the evidence from Wadi Andam Survey (see Chapter Three, 3.6, Table 16).

The evidence at hand, moreover, indicates a large number of Hellenistic–Parthian burials within very large and widespread cemeteries (Kennet 2007: 105). However, many of these tombs are difficult to date precisely, and, thus, impossible to distinguish from the Late Iron Age. Based on the evidence from Mleiha, tombs belonging to the early Hellenistic period (PIR-A, ca. 3rd–2nd centuries BC) are massive quadrangular mudbrick monuments that cover a rectangular underground single burial chamber, while in later periods, namely PIR-B (2nd century BC–1st century AD) and PIR-C (1st–2nd centuries AD), the tombs were larger and built of substructures for one or two burial chambers with stairs and an entrance passage as well as offering platforms and hearths (Mouton 1999: 21–24).

It is also evidenced that the materials recovered from the Hellenistic–Parthian contexts within the peninsula indicate that by the beginning of this period, the peninsula witnessed the large-scale exploitation of iron, as a number of iron objects and fragments have been recovered from different contexts (Potts 1990b: 272; Boucharlat 1991: 297; Mouton 1999: 22). It is further argued that the inhabitants of these settlements were involved in local and regional exchange and trade contacts with neighbouring areas such as the Gulf, South, East and North-East Arabia, Mesopotamia, South and South-Western Iran, India, Pakistan, the Near East and the East Mediterranean countries (Mouton 1999: 21–23; Benoist, Mouton & Schiettecatte 2003: 72; Kennet 2005: 114). These contacts can be evidenced by the large number of imported objects from these areas and by the recovery of a number of industrial places or workshops, indicating local copper, iron, softstone tool-production for local use and export (Mouton 1999: 23). Classical sources and the large number of locally minted and circulated coins also support this type of trade contact (Kennet 2005: 114).

### 7.1.6.2- WADI ANDAM SURVEY CONCLUSION (LEVELS 4–6):

The evidence from Wadi Andam indicates that the Hellenistic–Parthian (Wadi Andam Survey's Late Iron Age/Samad) is better represented than any other pre-Islamic period and shows levels of activity almost equal to those of the Umm an-Nar period. Several sites of this period have been recorded from the survey. The evidence comes from different types of sites, such as large and small settlements, tomb fields, and scattered pottery sherds. Sites of this period vary in their density and size as well as the amount of evidence they have yielded. Several of these sites (major sites) might have been

occupied by sedentary populations while there are other smaller sites (minor sites) that could have been inhabited seasonally. The evidence suggests that wadi villages and their surrounding areas were largely occupied during this time, perhaps for the first time since the Umm an-Nar period. Larger sites are often concentrated within or close to modern villages (e.g. CS.2.50 and CS.2.51 near Mahleya, CS.2.43, CS.2.52 and CS.2.57 near al-Ghoryeen, and CS.3.4 within al-Khurais). By contrast, although some are located close to these modern villages, the majority of the smaller sites are located away from these villages, and scattered along the wadi banks and on their edges and slopes.

This evidence indicates that there was significant cultural change from the earlier periods, particularly the Wadi Suq and Early Iron Age. This change can be noted in the intensification of settlement and population as is evidenced by the large number of recovered sites as well as the finds within and around wadi villages. It is also evidenced by the large size of sites (settlements sometimes reach over 90 ha.)[57] (e.g. CS.2.50) as well as the variety of structures within the same site (e.g. houses, walls, large cemeteries, pottery scatters, agricultural fields and other possible structures). Settlements are, however, loosely organised with possibly very low densities of occupation. The evidence clearly shows more sites and finds from the Late Iron Age/Samad than for any earlier period. In Chapter Four, Section Three (4.3.6.1), it was noted that this period is represented by around 34 sites as well as 9 PCAs in comparison with 27 sites and 12 PCAs for the Umm an-Nar period (4.3.3.1), 9 sites and 2 PCAs for the Wadi Suq (4.3.4.1), and 23 sites and 3 PCAs for the Early Iron Age (4.3.5.1). It was also noted in Chapter Four, Section Two (4.2.3; Figure 13) that the total number of Late Iron Age/Samad pottery sherds is 2,194, which is close to the Umm an-Nar total of 2,019 sherds. By contrast, other pre-Islamic periods yielded much smaller numbers of pottery sherds. Moreover, Late Iron Age/Samad tombs are single subterranean burials similar to the Wadi Suq tradition.

[57]By Mesopotamian and Levantine standards, this would be sizeable, but although large, sites from the Oman Peninsula are loosely organised with possibly very low density occupation, which is a different pattern to that of the Mesopotamian sites, which show very dense occupation (cf. Adams 1965 & 1981; Joffe 1993; Van de Mieroop 1997 & 2004; MacDonald, Adams & Bienkowski 2001; Wilkinson TJ 2003; Daniel 2005).

### 7.1.6.3- LOCAL AREA CONCLUSION (LEVEL 3):

The evidence from the local area indicates that this period is mostly represented by tombs. They are located on the flat wadi terraces and on the plain close to the modern villages, where they are sometimes mixed with later, mainly Islamic, tombs. Some of them re-used the older Wadi Suq and Iron Age tombs. By contrast, few settlements of this period have been located. Some may be under modern villages, as has been suggested by the PCAs in the Wadi Andam Survey. Those that are known appear to continue using the earlier Iron Age settlements and fortifications in the same locations and possibly for the same purpose. Thus, settlements appear to be small in size and situated on the hills and their slopes as well as on the wadi terraces. The layout, size and location are the same as for the earlier Iron Age settlements. This evidence is slightly different to that yielded by the published data and the Wadi Andam Survey, which shows a large number of both settlements and tombs, while the evidence from the local area shows more evidence for tombs. As indicated in Chapter Five, this is probably related to the bias problem that has resulted from some of the previous surveys carried out by different projects.

### 7.1.6.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

The evidence from the whole northern Oman Peninsula suggests that there was a decline (see summary below 7.1.6.5) during the Hellenistic–Parthian period, relative to the large growth and extensive activity during the Iron Age. This contradicts the published theories that this period witnessed a growth in the number of settlements and tombs (Kennet 2007: 103). At the sub-regional level, the quantified data shows that during the Hellenistic–Parthian period there was a stable level of activity on the Abu-Dhabi and Batinah Coasts, while the rest of the peninsula witnessed a decline. In general, the evidence shows that the majority of Hellenistic–Parthian sites are more commonly represented by tombs, which, again, contradicts the published evidence that indicates that both settlements and tombs are represented during this time. It was suggested in Chapter Six that the large number of tombs might be related to the reliability of the evidence. It was noted that there was a bias on several survey projects toward recording tombs of specific periods. Moreover, many of these tombs can be shown to have been re-used over time, particularly during the period from the Wadi

Suq to the Parthian periods (Yule 2001a). It is, however, difficult to be certain about the dating of these tombs (see 7.1.6.5 below).

### 7.1.6.5- SUMMARY:

Although there is a slight contradiction in the evidence that might be a result of unreliable data (e.g. the large number of tombs and fewer settlements), it is generally accepted that there was a high point in settlement intensity during the Hellenistic–Parthian period, but it is possible that the growth had begun earlier in the Iron Age. It shows that there was a cultural change in the settlement and tomb patterns from the Iron Age. The most remarkable change is the extensive use of iron during this time. Coins also mark another important cultural and economic development, indicating a local and regional trade network (Mouton 1999: 21–23; Benoist, Mouton & Schiettecatte 2003: 72; Kennet 2005: 114).

It should be noted that the quantified data within Chapters Five and Six show an increase in the number of tombs against settlements. However, many of these tombs were re-used, and several of their $C^{14}$ dates and parallels have proven incorrect (see Chapter Three 3.6.3).

## 7.1.7- SASANIAN–EARLY ISLAMIC:

### 7.1.7.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

It has been suggested that there was a very dramatic decline during the Sasanian period after a Hellenistic/Parthian settlement 'boom' (Kennet 2007). The evidence indicates that there was a decline in the number and size of settlement during this time as well as a diminishing of tombs and coins in circulation. This decline is related to a gradual decline in the economic activity and population all over the region (*ibid*: 86). Despite the fact that there is evidence for trade contact with South-Arabia, Mesopotamia, Iran, Egypt and South-Asia during this time (Kennet 2004: 69–72, 80–2), the idea that there was economic decline is supported by the general lack of archaeological evidence (Kennet 2005: 115–116). The evidence shows that very few sites of this time and the following Early Islamic period have been discovered in the peninsula (Potts 1990b: 296). It also indicates very limited evidence of early Sasanian period burials compared

to those from earlier periods, especially Hellenistic–Parthian (Kennet 2007: 104–105). Tombs from this time are either single or contain a small number of burials, and they frequently use older tombs (*ibid*: 105).

### 7.1.7.2- WADI ANDAM SURVEY CONCLUSION (LEVELS 4–6):

The evidence from the Wadi Andam points towards a decline in settlement activity during the Sasanian and Early Islamic periods, which accords with the conclusion suggested by the published evidence. No structural remains were found and the only available evidence from this time are a few scattered pottery sherds, which do not tell us very much about the levels of activity in settlements or tombs. It is difficult to identify this period based on pottery evidence, particularly from surface survey, as the material is quite rare, and bears some similarities to later Islamic material. Also, tombs from this time are difficult to distinguish from those of the later Islamic periods as they display the same features.

### 7.1.7.3- LOCAL AREA CONCLUSION (LEVEL 3):

As was the case in the Wadi Andam, the Sasanian–Early Islamic period is only represented by a few scattered pottery sherds. The evidence shows very few possible small settlements and fortifications, which are located either on the hills and their slopes or on the flat wadi terraces. It is, however, fair to say that the evidence for this period is very limited, as is the case from the whole peninsula, indicating a decline in settlement during this time. However, the limited evidence is unreliable due to the fact much of it is based on a very few pottery sherds picked up from surface survey.

### 7.1.7.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

The evidence from the region confirms the suggested decline during the Sasanian–Early Islamic periods. However, the sub-regional pattern shows variations in the level of activity, such as a growth in the number of recorded sites in the northern and north-eastern/western parts of the peninsula (Abu-Dhabi Coast, Batinah Coast and Musandam and Northern Emirates). However, it was suggested (Chapter Six) that this apparent growth might be related to the misleading data obtained by several survey

projects and the problem of understanding the pottery types of this time as well as the problem of some incorrect $C^{14}$ dates (cf. Kennet 2007: 100–101) The comparison shows that there was a decline in the level of activity in the central and eastern parts of the peninsula (the Eastern Coast and Hajar Mountains and possibly Central Oman).

### 7.1.7.5- SUMMARY:

Generally speaking, the evidence indicates that there was a decline in settlement activity during the Sasanian–Early Islamic periods within the whole northern Oman Peninsula. The number of settlements and tombs during this time is very small, which indicates a decline in activity as well as possible depopulation during this time.

## 7.1.8- MIDDLE ISLAMIC:

### 7.1.8.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

The archaeological evidence for the Middle Islamic period is based largely on surface material, mainly pottery, as well as very few excavated sites within the Oman Peninsula. Among the most important excavated sites with Middle Islamic material is Kush. This site yielded an occupational sequence dating to between the 5th and 13th centuries AD (Kennet 1997, 2001, 2004, 2005), in which the Middle Islamic period is placed into three periods of the site's sequence: Periods K-V, K-VI and K-VII. Period K-V provided evidence for the construction of a large and well-preserved mudbrick structure dated to the 11th or early 12th century (Kennet 2004: 13). The final period (Periods K-VI and K-VII: 12th–13th centuries) in the Kush sequence is characterised by a sporadic or 'squatter' occupation in the form of *'arīsh* structures. There is some evidence of palm-frond matting and occasional postholes, suggesting that the occupation consisted of palm-frond huts (*'arīsh*) (Kennet 1997). The pottery from this period includes Yue-type Wares (GGW), Carved White-Stoneware Louts Bowls (CWW), first Monochrome Green Sgraffiato (GGRAF) and first FRIT from Phase V (Late 11th/early 12th centuries); Chinese ceramics from Phase VI (12th century AD); and Dehua Moulded Whiteware (DHM) and Longquan Celadon (LQC) from Phase VII (13th/possibly to 14th century) (Kennet 2004: Table 2, pp: 14).

This period has often been regarded as an 'economic dark age', and there is very little settlement evidence along the Arabian side of the Gulf coast (Lowick 1974; Kennet 2002: 160–161). It is also suggested that during the 12th century, there seems to have been more dependence on locally made coarse wares, which are not well understood by archaeologists (de Cardi, Kennet & Stocks 1994: 61). By contrast, the evidence shows a significant amount of settlement in the Batinah region. Middle Islamic sites in this sub-region have been reported in the hinterland of Sohar (Costa & Wilkinson TJ 1987) as well as on the coast (Cleveland 1959; Kervran 2004). Other sites have been reported from Fujairah (Ziolkowski 2000; Brass & Britton 2004).

### 7.1.8.2- WADI ANDAM SURVEY CONCLUSION (LEVELS 4–6):

The evidence from Wadi Andam indicates that there was perhaps a small increase in the level of settlement activity. It appears that the previously established wadi villages continued to be reoccupied on and off during the following periods, including the Middle Islamic, and other small settlements within and around them were established. These settlements were possibly extended in later periods. The evidence from the pottery database indicates that there was more activity within wadi villages (PCAs) during this time than the areas around them. However, other sites of earlier and later periods along the wadi banks and on some gravel or rocky hills also yielded evidence of this period. There are also some Middle Islamic sites established around these villages (e.g. CS.3.5, CS.3.7, CS.4.12 and CS.9.10), of which the majority are located on the gravel or rock outcrops, in the case of fortifications and on wadi terraces. They consist of several stone structures, remains of walls and tombs, as well as old agriculture fields and other earthworks. However, it is impossible to distinguish the tombs from those of other Islamic periods.

The evidence from Wadi Andam thus shows a slightly different picture to that from the published data. The published data indicates an 'economic dark age' during the Middle Islamic on the Gulf, while the Wadi Andam Survey indicates more evidence of this period. The Wadi Andam Survey makes an important contribution to our understanding of this period by showing a slight growth in the settlement activity. One might suggest that the level of activity during this time was perhaps more significant in the interior of Oman, an idea which might be supported by the evidence produced by the Omani–German team (see below and Chapter Five, 5.4.6) and to some extent by

the published evidence from the Batinah region. However, such a hypothesis should be treated with caution, as the evidence from the quantified data from the whole northern Oman Peninsula shows sub-regional variations in the level of activity (see below).

It is possible to argue that the Wadi Andam material shows closer affinities with the Batinah (the western coast of the peninsula) pattern. As has been indicated earlier, the Batinah coast shows a lot of activity during the Middle Islamic compared to the Gulf coast, where there is practically none (Kennet 2002: 160–161).

### 7.1.8.3- LOCAL AREA CONCLUSION (LEVEL 3):

It is clear that the evidence for the Middle Islamic from the local area shows that there was a small increase in the settlement activity during this time. Settlements were located on hills and their slopes but they were always within or close to wadi villages, and in several cases they included fortifications such as watchtowers as well as cemeteries. There were also other smaller sites located away from the wadi villages, which yielded the remains of possible campsites. Several Islamic cemeteries were located but it was impossible to date them precisely.

The evidence from the local area supports the evidence from the Wadi Andam Survey, which shows that the interior of Oman has closer affinities with the Batinah pattern. The evidence also contradicts the published data, which shows a slight growth in the level of activity during the Middle Islamic (see Chapter Five, 5.5.2 & 5.5.3.8).

### 7.1.8.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

The data from the whole region shows that there was an overall decline in the level of activity during the Middle Islamic period, which perhaps coincides with the suggested 'economic dark age'. By contrast, the sub-regional analysis shows variations in the level of activity. During this time there was a stable level in the whole peninsula, with the exception of the Abu-Dhabi Coast, the Musandam and Northern Emirates sub-regions, which witnessed a decline. The decline from these two regions corresponds with the suggested economic decline on the Gulf Arabian littoral (Lowick 1974; Kennet 2002: 160–161), indicated above. By contrast, the stable level of activity from

the rest of the peninsula perhaps confirms the results of the Wadi Andam Survey and the quantified data from the local area, indicating a slight growth in settlement activity within these sub-regions, namely the interior of Oman as well as the Eastern and Batinah Coasts. The reasons behind such variations are unclear but are possibly related to the shift between trade centres (see summary 7.1.8.5 below).

**7.1.8.5- SUMMARY:**

The evidence presented above shows some contradictions. The published data indicates decline on the Arabian coasts, which is supported by the evidence at the regional level, whilst the evidence from the Wadi Andam Survey and the local area shows a small growth in the inland zones, which is supported by the evidence at the sub-regional level. In the inland areas, settlements appear to be clustered within and around the modern wadi villages. However, little is known about the socio-economic aspects of this period.

The evidence therefore shows sub-regional variations in the level of activity during the Middle Islamic period. Two levels of activity during this time can be suggested: decline on the northern coasts of the peninsula along the Arabian littoral, and a slight growth in the inland zones and the eastern coasts along the Gulf of Oman. The reasons behind such variations are unclear but are possibly related to a shift in trade centres at a supra-regional level. There is no evidence for a flourishing trade centre during this time along the Gulf coasts, while there is historical and archaeological evidence indicating the existence of some trade centres along the eastern coasts such as Qalhat (Vosmer 2004; Bhacker & Bhacker 2004). Qalhat during this time took over control of trade through the Gulf of Oman, possibly after the decline of Sohar (Vosmer 2004: 389). Several imported finds have been recovered from the archaeological site of Qalhat (*ibid*).

### 7.1.9- LATE ISLAMIC–RECENT:

#### 7.1.9.1- PREVIOUS ARCHAEOLOGICAL CONCLUSION (LEVEL 1):

The archaeological evidence indicates overwhelmingly that there was a dramatic growth in the number of settlements during the Late Islamic–Recent times in the whole northern Oman Peninsula. It is argued that this period witnessed an 'economic boom' (Kennet 2002: 160). However, very few excavated sites within the peninsula have provided evidence of this time, with the majority of the evidence based on surface material, mainly pottery. Among the important excavated sites are Kush and Julfar (al-Mataf). The first site yielded evidence for occupation during the 16$^{th}$/17$^{th}$ centuries AD or Kush Period K-VIII (cf. Kennet 1997, 2001, 2004, 2005). The second site yielded evidence spanning the period from the early to middle 14$^{th}$ to the 17$^{th}$ centuries AD (al-Mataf Phases M-Pre, M-I to M-VI & M-Rec) (Kennet 2003). The later site offers a comprehensive picture of the site's development from a small fishing community in the mid-14$^{th}$ century to a fully urbanised settlement by the mid-15$^{th}$ century, until its final decline and abandonment by the late 16$^{th}$ century (*ibid*: 103). The archaeological evidence indicates a wide local, regional and overseas trade network. Coastal sites played a significant role in this trade network; mostly the overseas trade with Arabia, Iran, India, Mesopotamia, Central, South and East Asia, as well as south and south-east Africa (cf. Kennet 2004). It is argued that during the Late Islamic period, Hormuz played a vital role in the Gulf trade with these areas, which reached its peak during the 14$^{th}$ to 17$^{th}$ centuries (Kennet 2002: 161, 2003: 121). Therefore, during this time Hormuz – one of the main maritime trade centres in the Indian Ocean – became very prosperous and stimulated much of the economic development of the Arabian Gulf (Kennet 2002: 161).

#### 7.1.9.2- WADI ANDAM SURVEY CONCLUSION (LEVELS 4–5):

The Late Islamic–Recent evidence from the Wadi Andam indicates that this period is the most intensively represented of all periods. Most of the evidence comes from occupational areas; all the PCAs yielded very large quantities of different types of pottery, far more than for any other period. These sherds are either locally made (e.g. glazed Bahla ware, combed ware and Julfar ware) in the pottery kilns/workshops found in Bahla and Ras al-Khaimah (cf. Stocks 1996: 146–155), or imported (e.g. celadon,

Chinese Blue-and-White, enamelled Chinese porcelain and European porcelain). The evidence shows that the settlement pattern during this period witnessed a distinct change in the level of activity along the Wadi Andam. The already established wadi villages, both large and small, along the wadi banks were re-occupied during this time and associated with agricultural fields, supplied by irrigation systems and agricultural installations as well as fortifications. These settlements have been shown to have been established during earlier times (e.g. Umm an-Nar) and continued to be used over time or to have been re-occupied from time to time.

### 7.1.9.3- LOCAL AREA CONCLUSION (LEVEL 3):

The evidence from the local area indicates that Late Islamic–Recent period is represented by a large number of settlement sites associated with extensive cemeteries, watchtowers or fortifications, agricultural installations (fields, irrigation system etc.) and other structures, which are related to some industrial activities. It was noted in Chapter Five (Figure 37 and Table 41) that this period is represented by around 95 settlement and tomb sites in which settlements represent 88% of the total. Almost all the modern wadi villages yielded evidence of Late Islamic pottery sherds. The evidence indicates a dramatic change in the settlement pattern, which is exactly the same picture as that from the published data from the whole Oman Peninsula and from the Wadi Andam Survey.

### 7.1.9.4- REGIONAL AND SUB-REGIONAL LEVEL CONCLUSION (LEVELS 1–2):

The evidence from the whole northern Oman Peninsula shows the same pattern, indicating that the largest number of sites is represented by the Late Islamic–Recent periods. It shows that there was a dramatic growth during these periods, which is also confirmed by the evidence from all of the sub-regions.

### 7.1.9.5- SUMMARY:

It is remarkable that the Late Islamic–Recent period witnessed such dramatic increase in settlement and, apparently, size of population. The subsistence economy of this population was mainly farming based on wells and *falaj*, herding, fishing and the

exploitation of marine resources, as well as local, regional and overseas trade. The evidence from the Wadi Andam Survey, as well as the quantified level of activity from the local area and the whole peninsula, has confirmed this dramatic growth in settlement activity. This evidence confirms that the growth is attested in both small and large wadi villages as well as the coastal areas to the north and east of the peninsula.

Thus, in summary, the intensive evidence from the Wadi Andam Survey and the literature points towards a settlement intensification during the Late Islamic period. Sites such as Julfar (Kennet 2003: 103) demonstrate that during this time, the region witnessed a high degree of settlement urbanisation as well as the fuller integration of the local area into a global economic system. Kennet (*ibid*: 121) states that Julfar was a true 'town' according to the criteria used to identify urbanism: 'it was larger than any contemporary settlement in the region (900 by 250 meters for al-Mataf alone), it had a dense network of stone and mudbrick houses and streets, a large mosque, a fort, a town wall, evidence of extensive overseas trade, and its peripheries stretched for 1.5 km along the coast to the north and south'. Moreover, it is argued that the urbanisation of Julfar is related to the 'Hormuzi economic boom' during the 14$^{th}$ and 17$^{th}$ centuries AD (cf. Kennet 2002, 2003, 2004). The archaeological evidence indicates a wide overseas trade network in which the coastal sites (e.g. Hormuz) played a significant role. It shows trade contact with Arabia, Iran, India, Mesopotamia, Central, South and East Asia as well as south and south-east Africa (cf. Kennet 2004). It has already been indicated above that during this time Hormuz played a fundamental role in Gulf trade and economic development that reached its peak during the 14$^{th}$ to 17$^{th}$ centuries (Kennet 2002: 161, 2003: 121). As one of the largest and wealthiest commercial centres in the Indian Ocean, its strategic location on the thriving trade route facilitated contacts between India and China and some major cities in Iran (Kennet 2003: 122). The recovery of large quantities of Chinese, Vietnamese, Thai and Iranian ceramics confirms engagement in the Indian Ocean trade network (King 2001: 90; Kennet 2004). Sasaki and Sasaki (2003: 258) argue that a large number of Chinese ceramic kilns have been found in Southeast Asia, which produced large quantities of ceramic, and that many of these ceramics made their way to the Arabian Peninsula, indicating extensive overseas trade contact.

The closeness between Julfar and the urbanised centre of Hormuz perhaps encouraged the agricultural production in Julfar's hinterland to satisfy the demand of food from the large population of Hormuz (Kennet 2003: 122). It is argued that during the late Islamic period, for the first time there was a shift from a prevailing subsistence economy to a predominantly cash-or-market-based economy, which can clearly be supported by the recovery of a large number of 15$^{th}$ to 16$^{th}$ century coins at Julfar (*ibid*: 119–122). In other words, the appearance of a large urban centre would encourage new products entering the local market as well as the appearance of specialisation and new activities, and thus, a development in the range of pottery types. Therefore, it is argued that the developments that led to the urbanisation of Julfar were related to 'the monetization of the local economy and the intensification of agriculture in the plains of the hinterland' (*ibid*: 122). This development was not limited only to Julfar but covered the whole region and influenced its social and economic structure, resulting in the integration of the whole region into the global trade networks as well as the growth of population and settlements during this time.

## 7.2- CONCLUSION:

The discussion within this chapter shows that this thesis has provided a comparative summary of a number of important issues regarding settlement patterns over time in the northern Oman Peninsula. Generally speaking, although the comparison shows some contradictions among three levels of evidence (the published conclusions [Level 1], the Wadi Andam Survey [Levels 4–6], and data from both the local [Level 3] and regional areas [Levels 1–2]), the patterns of activity show strong correlations across the peninsula in many periods and a potentially important lack of correlation in others.

The Wadi Andam data are the first to give a quantifiable indication of the relative scale of growth and decline at the lowest level of the settlement hierarchy. This is important because it challenges and tests the assumptions already set out by numerous scholars on the patterns of change through time in the Omani record. It is clear from conversations and published comments that conclusions based implicitly on reviews of the published data based on an assessment of the number of sites that are known from the literature were being carried out by many scholars in impressionistic, unsystematic and non-rigorous ways based on their own reading and general experience. General opinions about the relative density of activity and occupation in different periods are

commonplace and they are all based on this same data set. The chance was therefore seized here to put such comparisons on to a firmer footing and to make them explicit and testable in so far as is possible.

The data presented in this thesis has made a number of important contributions and discussed a number of themes some of which can be summarised here. These include the importance of small wadi villages, the need for a quantified methodology, the main trends in settlement history and levels of activity through time and the question of settled and nomadic ways of life. Each of these will be briefly presented in this conclusion and will be followed by a proposal for further research.

### 7.2.1- MAIN CONTRIBUTIONS:

#### 7.2.1.1- WADI VILLAGES:

It has already been indicated in the introduction (1.1.1) that the aim of this research is to attempt to pay particular attention to small wadi villages as they have been neglected by other survey projects who have generally concentrated on larger sites and settlements. The aim was then to investigate what these small wadi villages can tell us about settlement history and whether or not they have a similar history to the larger ones. The results of survey have in fact provided us with a completely new perspective on the settlement record in the northern Oman Peninsula. All of the six surveyed wadi villages have demonstrated that they were established and occupied in the Umm an-Nar period and have remained in use until the present day, indicating that they have played a significant part in the settlement history and patterns of the peninsula. It has already been indicated in Chapter One (1.1.2.1) that there are only a few places in the Omani landscape that are suitable for agricultural settlement and these are generally on the banks of the larger wadis in the parts where sufficient space is present between the wadi channel and the hill slopes. Such places tend to have been occupied over and over again due to the fact that people are constrained by the landscape.

The very existence of these small wadi villages in the Umm an-Nar period, away from sources of copper ore demonstrates that agriculture was a significant aspect of the Umm an-Nar economy. This goes against some general assumptions and is a topic that needs to be further developed as it may change fundamentally our understanding.

### 7.2.1.2- QUANTIFIED ANALYSIS OF SETTLEMENT TRENDS:

As has been indicated in Chapter One (1.1.2.2), many surveys have been carried out in the Oman Peninsula and its surrounding region but only very few of them have attempted to provide quantified data on settlement activities over time. It has also been argued in Chapters Five and Six that almost all of these surveys set out to locate, explore and describe areas or settlements or to answer specific research questions. Their results are useful for mapping settlements and providing descriptive information about particular areas and periods, and when the results are combined, it is possible to obtain a rough and sketchy picture of longer-term regional trends in the growth and decline of settlement intensity (see Chapter Six). But it has also been shown that several of these surveys suggest biased and misleading trends due to their unsystematic methodologies. Therefore, in this thesis an attempt has been made to develop a systematic and an unbiased survey methodology, including a developed sampling technique- based on large-scale surface pottery collection- that is usable in the particular circumstances of the study area, given the nature of the geographical environment, climate and type of settlement (see Chapters One and Four). The results of this methodology can be shown to be effective in providing quantifiable data on the relative scale of growth and decline at the lowest level of the settlement activity, intensity and hierarchy that has a greater degree of statistical validity than data collected in a traditional, non-probabilistic fashion. The methodology also allows a more reliable comparison between sites and regions to be made and potentially provides a degree of detail and insight that would be missed by other survey techniques.

In addition, a quantified picture based on the available data in the literature about the Oman Peninsula has been provided in Chapters Five and Six. This quantification was based on a review of all the available published data. It was done in order to find a reliable and robust way of establishing the different levels of activities between periods and to gain a clearer idea of the amount of available evidence for each period and its possible patterns. In addition, it provides a broader context or framework for the Wadi Andam Survey material and its final conclusions as well as providing comparative material. Although the data set is unusual and undeniably problematic, the hope is that the sheer quantity of available evidence will have ironed out at least some of the localised problems and will provide a reliable indication of general trends. The quantified data does show important changes in the number and type of sites through

the archaeological sequence that may correspond to population levels and/or economic activity. It has also been possible to demonstrate sub-regional variations in the numbers of sites in different periods. However, interpreting these trends is complicated and more work needs to be done before they can be fully accepted or explained. This quantified data outlines some preliminary developments and patterns that could help to develop hypotheses and interpretations for the changing levels of activity. It also provides a much more detailed picture of the development of the region than previously possible. Some of the former conclusions about the region's development appear to be correct and coherent, while others need to be revised. Nonetheless, caution must obviously still be applied until the conclusions can be more rigorously tested.

### 7.2.1.3- PERIOD BY PERIOD IMPORTANT CONTRIBUTIONS:

The results presented in this thesis produced a large amount of data based on the different levels of survey defined for it. The Wadi Andam Survey has provided important new insights into some periods (e.g. Hafit, Umm an-Nar, Wadi Suq and Iron Age) and less important for others (e.g. the Stone Age). It has also been shown that the Wadi Andam is reasonably typical of its geographic zone.

For the Hafit period, the survey carried out, for the first time in the peninsula, a rough distribution for the Hafit cairns and Beehive tombs scattered all over the area of study. The results showed that they are clustered more in the northern part of the study area and they do not appear to be associated with any evidence for settlement, apart from some paved stones that could be possible platforms of perishable structures. It seems also that there are massive tomb fields spread across the region under study in areas for which there is really no evidence at all in later periods, indicating that there was a very significant change in occupation as well as in burial patterns between the Hafit and the Umm an-Nar periods.

The Wadi Andam survey has considerably contributed to our knowledge of the settlement pattern during the Umm an-Nar period. It has demonstrated a notable increase in the level of activity during this time in the wadi villages, but a decline in activity in areas where Hafit cairns are common. All wadi villages and perhaps their surrounding areas were occupied, or at least used, by the inhabitants of this time.

suggesting that it was one of the most intensive periods of occupation. With the exception of some Hafit cairns/Beehives in the surroundings of some of these villages, the Umm an-Nar represents the earliest occupation of the wadi villages, suggesting that it was at this time that these settlements first came into existence as settled agricultural villages. This indicates that this period represents a marked settlement change from the Hafit period, with a more complex socio-economic structure. Since this time, settlement patterns remained largely in the same locations, with only a difference in the intensity of use of these settlement locations.

The evidence from the Wadi Andam Survey makes another very important contribution to our understanding of the settlement pattern. The Wadi Andam data are the first to give a quantifiable indication of the relative scale of the suggested Wadi Suq decline at the lowest level of the settlement hierarchy. The evidence shows that, although there is a lack of evidence of settlement from both PCA assemblages and other settlements, there seems to be some evidence for the use of tombs, mostly located in or around the wadi villages that had been occupied during the Umm an-Nar period, but there is no evidence for occupation. The reasons behind such continuity in using tombs during this time are unclear.

The evidence for the Early Iron Age shows that the PCAs were not inhabited during this time, or more accurately, were not used in the same way. By contrast, the OVA areas appear to have been more intensively inhabited during this time than the PCAs. This evidence suggests that at the beginning of the Iron Age there was an early stage of settlement increase and a developing social hierarchy after a possible abandonment of settlement during the Wadi Suq, along with some changes in the settlement pattern, including a spread into areas that had not previously been occupied, such as defensive sites outside the wadi village areas.

The evidence from the Wadi Andam suggests that wadi villages and their surrounding areas were widely occupied during the Late Iron Age/Samad period, perhaps for the first time since the Umm an-Nar period. This indicates that there was significant cultural change from the earlier periods, particularly the Wadi Suq and Early Iron Age. During this time, there was a high point in settlement intensity, but it is possible that the growth had begun earlier in the Iron Age.

The evidence from the later periods, namely Sasanian to recent times, shows the same pattern suggested by the published evidence, pointing towards a decline in settlement activity during the Sasanian and Early Islamic periods, slight growth during the Middle Islamic and dramatic growth during the Late Islamic–Recent times.

### 7.2.1.4- NOMADIC AND SEDENTARY OCCUPATION:

One of the most important issues that have appeared during the discussion of various periods within this thesis is the cycles of sedentary and nomadic occupation (see Chapter Two, 2.8.6). Several periods appear to be occupied by nomadic or semi-nomadic populations (e.g. the Hafit, Wadi Suq/Early Iron Age and Sasanian-Early Islamic); while for others (e.g. the Umm an-Nar, Late Iron Age/Samad and the late Islamic period) there is clear evidence for a substantial sedentary population. The problem of identifying the remains of these inhabitants has already been discussed in Chapter Two (2.8.6). Understanding the reasons behind such shifts in occupation between periods is not always easy to grasp but this issue is potentially key to understanding the fluctuating levels of occupation that have been recorded here.

## 7.2.2- RECOMMENDATIONS FOR FURTHER WORK:

The thesis provides a large amount of data that can be used and developed in different ways. It is multi-period survey and, given its aims and the time and space allocated for it, it is impossible to discuss everything in detail. Therefore, further work- either in Wadi Andam or in other regions within the peninsula- might be required in the future in some of these periods and their related issues. The following are some recommendations for such work, starting from the Wadi Andam:

### 7.2.2.1- WADI ANDAM:

More systematic surveys and excavations need to be carried out in this region, which cannot be done without the collaboration of different bodies and individuals, using different levels and techniques of survey and excavation. Such work can include:

- Carrying out more survey for wadi villages PCAs and OVAs. This will increase the number of surveyed areas, and thus, allow carrying out a ubiquity

analysis for the total number of sites that have provided sherds from each period. This will permit us to have more detailed picture about the levels of activity in the area under study.

- It has already been seen that there is a lack of Stone Age data gathered from the Wadi Andam Survey. It is possible that sites of this period were missed by the survey as they are likely to be quite limited and difficult to find, particularly with the methodology used for this survey. Therefore, in order to address the problem of Stone Age settlement in the region, a very specific type of survey would have to be organised, using very detailed survey techniques and looking at carefully selected locations.
- Making soundings on some of the possibly identified platforms around the Hafit cairns in order to understand their function, dating and relationship with these cairns. The occurrence of these structures in areas of Hafit cairns is very important as it makes them potentially a prime candidate for future excavations. They might provide us with some insights onto the nature of occupation during this time.
- Excavations could be done in some selected sites/features in order to understand some of the issues raised in the discussion within the thesis chapters. This might include, for instance, excavating- perhaps partly- the Umm an-Nar site at al-Ghoryeen CS.2.52 in order to understand its deposits and layout. This can also include excavating some of the tombs and houses in the same site to understand the relationship between each part of the site. Other good examples of Umm an-Nar sites that can be excavated are those in al-Khashbah village CS.5.
- A proposal for archaeological parks can be made for some sites like al-Ghoryeen and al-Khashbah.
- The Iron Age needs to be broken down into a finer chronological scheme and divided it to sub-periods before it can be fully understood. This was not possible in this thesis based on the material from the Wadi Andam Survey. Therefore, an agreement has been made with P. Magee to re-examine all the identified Iron Age sherds from the survey.
- It is hoped that this attempt will form the basis for more deliberate and comprehensive future work by researchers who are concerned with Omani archaeology. Therefore, it is the intention to publish all this work as a book. Other publications will be also developed from different parts of the thesis.

### 7.2.2.2- OTHER REGIONS:

- More systematic surveys and excavations need to be carried out in other parts of the peninsula. It is important for the type of survey carried out in the Wadi Andam to be continued and carried out in the future in other regions, either by the current researcher or by other people, as it is the first of its kind in the region. This will build on what has already been achieved in this thesis and will add to our knowledge of the settlement history and patterns over time. More survey of wadi villages PCAs and OVAs need to be carried out in the future. This will permit us to have more detailed picture of the levels of activity in the area under study. One of the prime regions that need to be surveyed is, for example, the Batinah which has different landscape and environment than that in the Wadi Andam.
- A systematic survey and detailed examination needs to be carried out for the Hafit cairns. This can, for instance, include, carrying out a systematic survey in different zones looking for cairn locations, structure, distribution, densities, and then excavating some of them. This might allow us to solve the problem of dating these cairns (see Chapter Three 3.2) and to understand their distribution over the landscape as well as their development and architecture. They might provide us with some insights onto the nature of occupation during this time.
- The thesis includes a sites' database that was created from the literature for the quantified analysis in Chapters Five and Six. It is important for such a database to be updated regularly as many sites might appear from new surveys and excavations. This database could also be made accessible online for the public.

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## ABBREVIATIONS

AAAG= Annals of the Association of American Geographers

AAE= Arabian Archaeology and Epigraphy

ADIAS= Abu Dhabi Islands Archaeological Surveys

AJA= American Journal of Archaeology

AJPA= American Journal of Physical Anthropology

ARA= Annual Review of Anthropology

ASSE= Archaeological Surveys in Sharjah Emirates (U.A.E.)

AUAE= Archaeology in the United Arab Emirates

BAR= British Archaeological Report

BASAS= Bulletin of the Arabian Society for Arabian Studies

BASOR= Bulletin of the American Schools of Oriental Research

BSOAS= Bulletin of the School of Oriental and African Studies)

ERC= Editions Recherche sur les civilizations

EW= East and West

HAOB= Historical Association of Oman Bulletin

IsIAO= Istituto Italiano Per L'Africa e L'Orient

IsMEO= Istituto Italiano per il Medio ed Estremo Oriente, Rome

JAE= Journal of Arid Environments

JFA= Journal of Field Archaeology

JGS= Journal of the Geological Society

JNES= Journal of Near Eastern Studies

JOS= Journal of Oman Studies

JQS= Journal of Quaternary Science

JSA= Journal of Social Affairs

JSR= Journal of Sedimentary Research

JWP= Journal of World Prehistory

Kuml= Journal of the Jutland Archaeological Society

NSAO= The National Survey Authority of Oman

Paléorient= Pluridisciplinary Review of Prehisotry and Protohistory of Southwestern Asia

PSAS= Proceedings of the Seminar for Arabian Studies

QSR= Quaternary Science Reviews

SAA= South Asian Archaeology

Tribulus= Journal of the Emirates Natural History Group.

UNDP= The United Nations Development Programme

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Getting access to adequate maps and aerial photographs was another difficulty during the survey. Only 1:100,000 topographical maps were available from the Department of Geology in the College of Science at Sultan Qaboos University. These were photocopied both in colour as well as black and white. Geological maps for the study area with the same scale of 1:100,000 were borrowed from the Directorate of Minerals at the Ministry of Commerce and Industry[6].

Another problem was setting out a proper chronology for the evidence from the Wadi Andam and that in the literature. There is disagreement among scholars working on the archaeology of the Oman Peninsula regarding the chronology of some periods where different periodizations/terminologies are presented. Although there does seem to be a valid chronological division of some of these periods, it is not possible to construct one from the published literature, where the distinction is rarely made. Therefore, an attempt will be made to present the chronology of the Oman Peninsula and the periodization normally used in the literature (see Chapter Three). It will review the evidence that forms the basis of the chronology. A presentation of the chronology and terminology adopted within this thesis will then be made at the end of the discussion of each period, indicating why the specific chronology had been chosen.

## 1.6- THESIS LAYOUT:

This thesis consists of seven chapters in which **CHAPTER ONE** is an introduction to the thesis. It outlines the research aims and questions as well as the nature and importance of the selected study area (Wadi Andam) and the reasons behind choosing it. It will also highlight the current state of research in Oman and the problem of quantifying settlement in Arabia. The research difficulties and limitations as well as the thesis outline structure will also be presented in this chapter.

**CHAPTER TWO** provides a geographical and environmental background of the northern Oman Peninsula. It shows the geography, topography and geology of the peninsula as well

[6] I am indebted to Mr. Salah Al-Masrori, the office director of the Undersecretary for Administrative and Financial Affairs in the Ministry of Commerce and Industry for his great help in obtaining these maps.