

In The Land of The Ichthyophagi - Prehistoric Occupation of The Coast and Islands of The Southern Arabian Gulf: A Regional Review⁽¹⁾

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Abstract: *This paper provides a regional review of the prehistoric occupation of the coast and islands of the southern Arabian Gulf. The earliest archaeological evidence for settlement in this region dates to the Middle Palaeolithic, between around 200,000 to 150,000 years ago. The site of Jebel Barakah, whilst located on the present day coastline of Abu Dhabi emirate's Western Region, was at that time a hill overlooking the eastern edge of the Sabkha Matti river valley, which flowed northwards into the Gulf basin. Inundation of the Gulf took place from around 18,000 years ago. The earliest radiocarbon dates for occupation of the coast and islands of the southern Gulf suggest that human occupation flourished here by the mid to late 6th millennium BC. These were Ubaid-related sites founded soon after the filling up of the Gulf to its maximum sea level stand, nearly two metres above present at around 6000 BC. The results of the author's excavations on Dalma and Marawah Islands will be discussed. New evidence will be presented which demonstrates that the people of the southern Gulf formed a cohesive social group distinguishing themselves from the peoples of the central and northern Gulf. Evidence for coastal activities during the Bronze and Iron Age periods is also discussed.*

Introduction

“Archaeological research in the Middle East has evaded the poorly visible remains of the Indian Ocean's populations of prehistoric fishermen, with the result that this aspect has remained unknown... For the Greeks, to whom we owe the most accurate evidence, from Herodotus to the geographers of the Roman era, the coasts of the Erythraean Sea were inhabited by poor and backward people with no interest in commerce, scornfully united under the name Ichthyofagoi, the fish-eaters” (Tosi 1986: 95-96).

Is this above statement still a fair description of the present status of research? Let us first of all consider some of the major archaeological research carried out on the coast and islands of the Eastern Arabian seaboard.

New discoveries of Palaeolithic sites has intensified over the course of the past two decades.

A number of authors have pointed out how early humans coming out of Africa may have relied heavily on coastal resources to enable them to survive. Marine resources provide an important regular and fairly reliable and predictable resource, which could be exploited and used as a buffer enabling survival. This is why some authors have utilised phrases like “Cruising out of Africa” (Stringer 2000).

Pioneering work was carried out in the Kingdom of Saudi Arabia by Dr Abdullah Hassan Masry in his “Prehistory in Northeastern Arabia – The problem of interregional interaction” (1974, reprinted in 1997). In this ground-breaking study he discussed the presence in the northeastern deserts of Arabia and its eastern coastline of artefacts associated with the earliest inhabitants of southern Mesopotamia. A series of archaeological excavations carried out by Masry in the early 1970's along the coastline of

the Eastern Province revealed the presence of Ubaid pottery. This indicated contacts between the region and southern Mesopotamia. He also described the evidence for animal domestication in a region which previously had not been suspected to maintain settled populations.

Since Dr Masry's excavations evidence for contact with the makers of Ubaid pottery has been found throughout the Gulf including its southern limits. This has been interpreted as being a technological by-product of intensive interregional interactions, this material culture, or its ideas, spreading to east Arabia through contacts (Roaf 1974, 1976, 2003; Oates 1977; Flavin and Shepherd 1994; Uerpmann and Uerpmann 1996; Beech and Elders 1999; Beech et al 2000; Carter 2002, 2006, 2008; Carter and Crawford 2010).

There has of course been substantial progress in research on the prehistoric coastal communities of the western Indian Ocean since Tosi's statement in 1986. He himself, along with the late Serge Cleuziou, undertook the so-called "Joint Hadd Project", a mammoth undertaking working at Ra's Al-Jinz and the Ja'alan area on the coast of the Sultanate of Oman. They co-directed a number of international projects sponsored by the Ministry of Heritage and Culture aimed at uncovering the maritime aspects of the Magan civilization, along with the beginnings of navigation and trade in the Indian Ocean, by piecing together the remains of prehistoric fishermen scattered along the coasts of Oman. This project resulted in the publication of a large number of important articles, as well as the monograph "In the Shadow of the Ancestors: The Prehistoric Foundations of the Early Arabian Civilization in Oman" (Edited by Serge Cleuziou and Maurizio Tosi, 2007, published by the Ministry of Heritage and Culture, Sultanate of Oman).

In my Phd, entitled "In the Land of the Ichthyophagi - Modelling fish exploitation in the Arabian Gulf and Gulf of Oman from the 5th

millennium BC to the Late Islamic period" (Beech 2004), I attempted to adopt an inter-disciplinary approach to model regional interactions between coastal communities and their environment. The geographical framework for this study was the Arabian Gulf/Gulf of Oman, with a particular focus on the southern Gulf region and present day coastline of the United Arab Emirates. The principal data forming the basis for this study were 23 archaeological fish bone assemblages from sites located throughout the region. The chronological focus was from the 5th millennium BC to the Late Islamic period. This research provided for the first time a detailed insight into the status of past fisheries resources in the region as well as an insight into the fishing strategies utilised by the early coastal inhabitants of the Gulf during the course of the past 7000 years. The work focused on the use of biometrical techniques to enable size reconstruction of economically important fish groups. The overall aim of this research was to consider the interactions between the goals of the coastal societies, their fishing strategies and environment. The thesis and some of my subsequent work has examined the key questions of relevance to the archaeology of south-east Arabia, such as the degrees of technology available in different periods, the capabilities of ancient prehistoric fishermen and their seasonal interactions with coastal environments (Beech 2002, 2003a, 2004, 2010; Beech and Al-Husaini 2005; Mery et al 2008), as well as with the desert interior (Uerpmann and Uerpmann 2000; Uerpmann et al 2000; Cuttler et al 2007; Kallweit et al 2005, 2008).

More recently excavations have been undertaken of an important Ubaid-related site in Kuwait, known as site H3 located in As-Sabiyah on the north-east coast of Kuwait Bay (Carter 2002, 2006, 2008; Carter and Crawford 2010). This has provided a valuable insight into an Ubaid-related coastal site in the northern Gulf. It provides some of the earliest evidence for boats

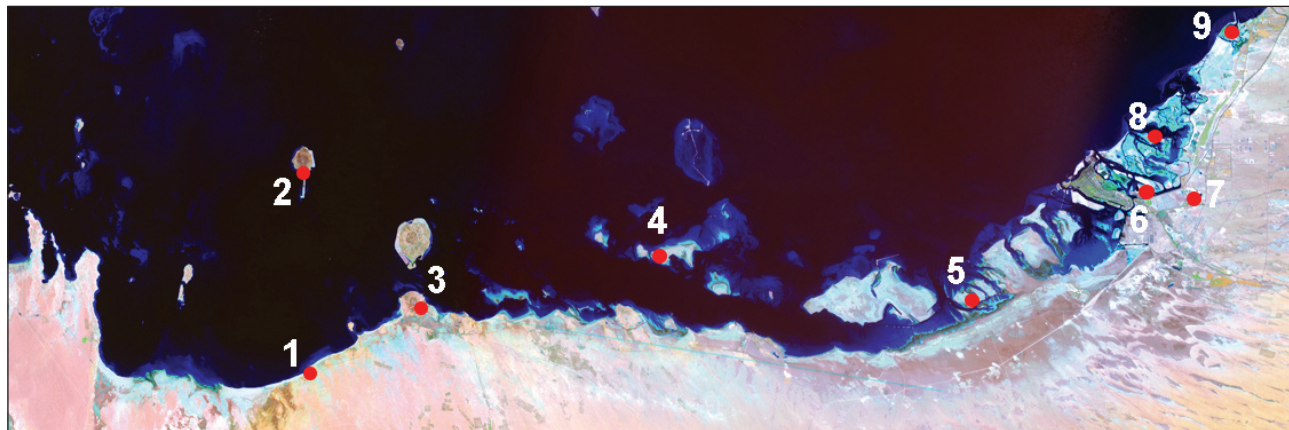


Fig. 1: Location of key prehistoric sites located on the coast and islands of Abu Dhabi emirate (Source: ADACH). Key: (1) Jebel Barakah; (2) Dalma Island; (3) Jebel Dhanna; (4) Marawah Island; (5) Rufayq; (6) Umm Al-Nar; (7) Abu Dhabi International Airport; (8) Balghelam Island; (9) Ra's Ghanadha.

in this time period, as well as for the deliberate piercing of pearls for jewellery in the Gulf.

This present paper aims to provide an up to date regional review of the archaeology of prehistoric occupation of the coast and islands of the southern Arabian Gulf from the Palaeolithic to Iron age periods. The geographic area addressed here is confined to the present day coast and islands of Abu Dhabi emirate where the author has carried out extensive fieldwork over the course of the past two decades (Figure 1).

Jebel Barakah – a Middle Palaeolithic Site By an Ancient River

The earliest archaeological evidence for settlement in Abu Dhabi dates to the Middle Palaeolithic, between around 200,000 to 150,000 years ago. The site of Jebel Barakah, whilst located on the present day coastline of Abu Dhabi emirate's Western Region, was at that time a hill overlooking the eastern edge of the Sabkha Matti river valley, which flowed northwards into the Gulf basin. The site of Jebel Barakah first became known to science as the type section for the so-called Baynunah formation (Whybrow 1989). This geological formation consists of a series of reddish sands, gravels and carbonates representing 6-8 million year old riverine deposits dating to the Late Miocene. The Baynunah formation contains

a rich selection of fossils of mammals including ancient ancestors of elephants, giraffes, three-toed horses and antelopes, as well as reptiles, birds and fish (Whybrow and Hill 1999; Beech and Hellyer 2005; Hill et al. 2012).

The strategic location, topographic situation and geology of Jebel Barakah is key to understanding its selection by the earliest prehistoric inhabitants of the southern Gulf. They visited the site to exploit the chert capping rock occurring on this hill on which they used Levallois-type technological methods to knap and produce stone tools.

The presence of prehistoric lithics at the site was first noted by McBrearty (1993, 1999). More recent studies have provided clear evidence for a Middle Palaeolithic presence in the region (Wahida et al 2008, 2009a,b). The artefacts come from five localities around Barakah. The five cluster sites represent a single techno-typological industry. Most artefacts were collected from locality BRK1 (on the western side of the jebel), that lies between the sea cliffs and the first line of ridges, some 40 m from the sea, which may be the site described by

McBrearty. The presence of a Levallois flake core, a Levallois point flake, two broken bifaces/hand-axes, and the centripetal radial or discoid form and the prepared Levallois technique



Fig. 2: The author holds a bifacial centripetal core from the Middle Palaeolithic assemblage at Jebel Barakah (top); a unifacial radial core found in situ, with a one dirham UAE coin for scale (bottom) (Source: TCA Abu Dhabi).

of manufacturing flakes, place the Barakah assemblage in the Middle Stone Age (Figure 2). The total absence of blade implements further points to a Middle Palaeolithic industry. The Barakah material complements the recent discovery of Palaeolithic material elsewhere in the UAE (Scott-Jackson et al 2009) and in Oman (Jagher 2009; Rose and Usik 2009), as well as the material already known within the kingdom of Saudi Arabia (Petraglia and Alsharekh 2003; Petraglia et al 2009). The only problem with archaeological material like this, as is the case of the majority of these sites, is that it is unstratified.

The tools are from the surface of an open-air site, not from a datable stratified context.

Recent work at Jebel Fiyah in Sharjah, on the western flanks of the Hajar mountain spine shows that early prehistoric people moved not only along the coastline, but also along the edge of mountain areas where they could tap natural springs and water supplies. Here, a rock shelter is currently being excavated by a joint team from the University of Tuebingen and the Sharjah Directorate of Antiquities, which provides the only stratified Palaeolithic site known in the United Arab Emirates (Marks 2009). It has several layers of stratified Palaeolithic layers which provide the first clear dating of the earliest humans to occupy the United Arab Emirates. These are interpreted as relating to the two identified waves of migration of *Homo sapiens* out of Africa between around 100,000-76,000 and 50,000 and 45,000 years ago.

Something to bear in mind, as stated earlier, is the fact that that Jebel Barakah was not located by the sea at the time it was occupied. Examination of satellite images of Abu Dhabi's Western Region clearly illustrate the Sabkha Matti which can be viewed as an ancient river course flowing into the so-called Ur-Schatt River basin. How do we know the positions of these ancient rivers in the Gulf? To some extent we have an idea about the more ancient river courses (at least between 6-8 million years ago) from the distribution of Late Miocene fossil sites along the coast of Abu Dhabi's Western Region. The discovery of bones from hippopotamus, crocodiles, freshwater catfish and turtle, provide direct evidence of some of these ancient rivers.

Another more innovative approach using 3D seismic data to identify the ancient river courses beneath the Arabian Gulf is currently being carried out by a team from the University of Birmingham (U.K.) in conjunction with the Qatar Museums Authority (Cutler et al. 2012).

It has been suggested that early modern humans were able to survive periodic hyperarid oscillations by contracting into environmental refugia around the coastal margins of the peninsula (Rose 2010). These early populations would have undoubtedly exploited the freshwater springs and rivers available within the Gulf Basin.

Inundation Of The Gulf

Inundation of the Gulf took place, however, from approximately around 18,000 years ago. The Gulf gradually filled up as the melting of the ice at the end of the last ice age led to a global rise in sea-levels. Various authors have attempted to model the inundation of the Gulf, based primarily on simple bathymetric data (e.g. Lambeck 1996). Lambeck subsequently noted that “...the Gulf is fairly shallow, at 12,000 years ago it was effectively dry. You had this beautiful flat valley floor and river meandering down it, you can demonstrate that there were lakes and one thing and another. And my hunch is that these people came up from the east and just migrated gradually up the Gulf floor as sea level rose and then they finished up in lower Mesopotamia where they hit the barrier from people coming down from the north and they sort of stayed there” (Lambeck 2005).

Hopefully, the Birmingham/Qatar project will go some way to answering some of our unanswered questions about the location of ancient river courses and lakes. They are using seismic data provided by petroleum and marine engineering companies to model in 3D the precise topography of the Gulf basin in proximity to Qatar. This should provide a much more accurate picture of the ancient landscape which the early prehistoric peoples of the Gulf encountered. Hopefully such work can be eventually extended to the neighbouring countries to Qatar to provide an even more complete picture of the lost world underneath the Gulf.

The earliest radiocarbon dates for occupation

of the coast and islands of the southern Gulf suggest that human occupation flourished here by the mid to late 6th millennium BC (Figure 3). These were Ubaid-related sites founded soon after what is generally believed to be the filling up of the Gulf to its maximum sea level stand, nearly two metres above present at around 6000 BC. The key results of the author’s excavations on Dalma and Marawah Islands will now be discussed.

Dalma Island – The Discovery Of An Ubaid-Related Settlement

Dalma is an island located in the western region of Abu Dhabi emirate, about 80kms east of the Qatar peninsula. The island is about 9 kms from north to south (not taking into account its

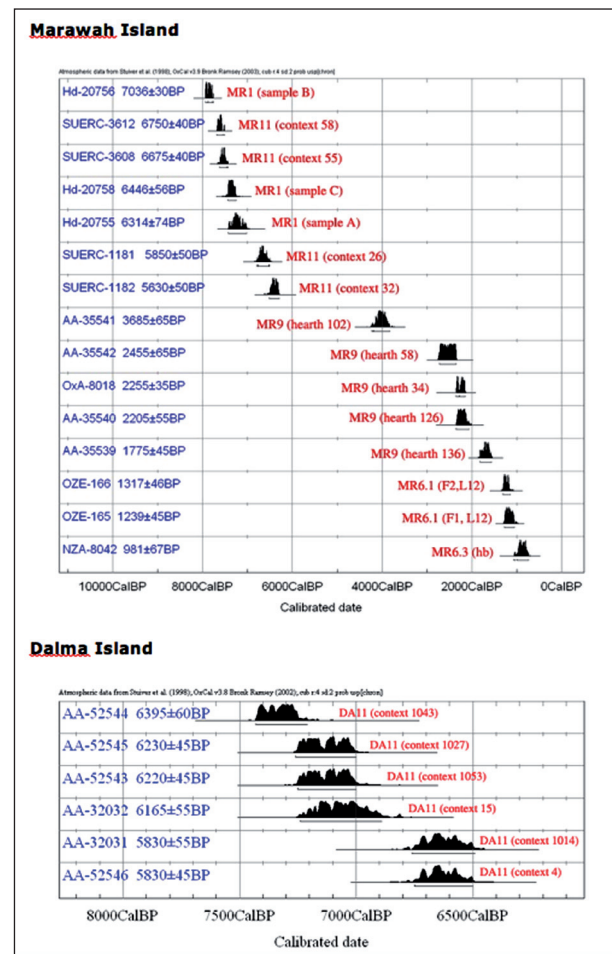


Fig. 3: Radiocarbon dates for the earliest coastal settlement sites in Abu Dhabi emirate, Marawah and Dalma Islands (Source: ADIAS).

modern landfilled peninsula to the south) and is 5kms from east to west. Its central hills rise to a maximum elevation of 98 m above sea-level. Dalma is a salt-dome island with a central hilly interior of pre-Cambrian age. The island has a modern population of around 6-7000 people. Dalma is known in the past to have had a permanent population which was made possible by the presence of wells near Dalma town, the main settlement located at the southern tip of the island. Around 200 wells are reputed to have once existed there, with freshwater being supplied to Abu Dhabi island until the 1950s.

The Abu Dhabi Islands Archaeological Survey (ADIAS) carried out an initial archaeological survey of Dalma island in 1992 (King 1998). A total of more than 20 archaeological sites were identified on the island, ranging in time from the Neolithic (Late Stone Age) to important early twentieth century buildings.

The earliest traces of human settlement discovered on Dalma island were identified at site DA11, located within the former Abu Dhabi Women's Federation compound in Dalma town. Excavations were carried out in 1993-4 by an ADIAS team led by Kate Flavin and Elizabeth Popescu (nee Shepherd). Preliminary results of this work were published in a paper in the Proceedings of the Seminar for Arabian Studies (Flavin and Shepherd 1994). In 1998 further excavations were carried out at DA11 by the author and Dr Joseph Elders. The ten day long excavation in 1998 re-excavated the two trenches excavated earlier in 1993-4 by Flavin and Shepherd, and confirmed for the first time the presence of building structures at the site, as well as providing suitable samples for radiocarbon dating the sequence (Beech and Elders 1998, 1999; Beech and Shepherd 2001; Beech et al. 2002; Elders and Beech 1998). This work demonstrated that just 10-20cm below the base of the trenches excavated in 1994 was an intact ground surface. The 5x2m trench contained what

appeared to be half of a circular structure (Figure 4). A series of postholes arranged in a semi-circle suggested that some sort of 'arish-type building was erected here. A summary of the work at site DA11 is provided by Shepherd Popescu (2003).

In November 2001 some accidental damage occurred to site DA11 due to the installation of a new sewage pipe system on Dalma island. The author, together with Dan Hull and Paula Wallace, visited the island and carried out recording of the exposed sections within their trenches. These were drawn and photographed, and several charcoal and ash samples were taken from hearths

visible in the exposed section.

The DA11 fish bones from the 1993-4 excavation seasons were then analysed by the

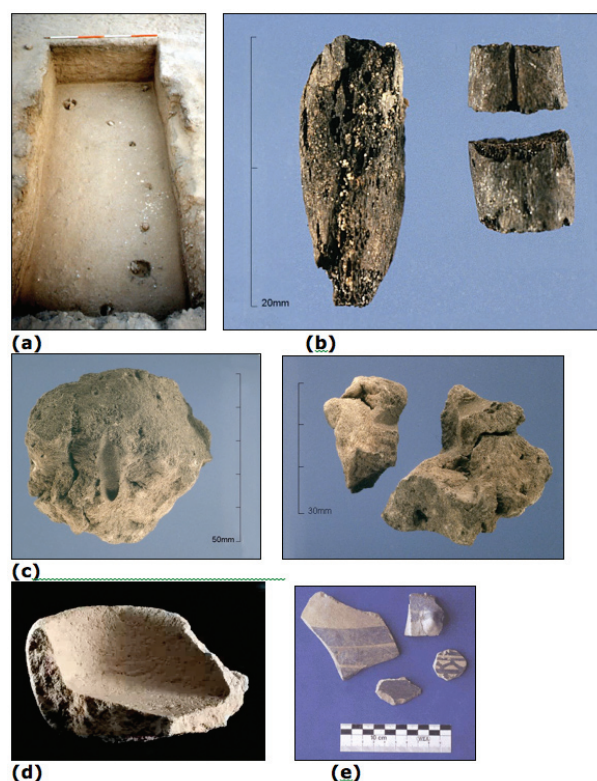


Fig. 4: Site DA11, the Ubaid-related settlement on Dalma Island: (a) trench excavated by the author in 1998 showing the circular structure; (b) carbonised date stones; (c) date impressions in mud-brick; (d) limestone bowl; (e) Ubaid potsherds (Source: ADIAS/ Dr Mark Beech).

author as part of his PhD at the University of York, and subsequently published (Beech 2000, 2002, 2003, 2004; Beech and Glover 2005). Work is currently underway on completion of the final publication on the excavations at site DA11. This will be in a volume edited by Elizabeth Popescu and the author (Popescu and Beech, forthcoming).

This work provides important information about one of the region's earliest known settlements, as well as the earliest evidence for the consumption of dates in SE Arabia. The two charred datestones recovered from the 1993-4 and 1998 excavations were radiocarbon dated to the late 6th-early 5th millennium BC (Beech 1999; Beech and Shepherd 2001; Beech 2002; Beech et al. 2002).

Other important finds recovered from the excavations included sherds of 'Ubaid pottery, painted and plain plaster vessel fragments, finely flaked stone tools, and a variety of shell and stone beads. Fragments from plaster vessels were discovered which proved to be extremely interesting. Samples of the plaster vessels have already been analysed in collaboration with the Department of Scientific Research at the British Museum (Joyner 2001). The plaster vessels are discussed in more detail below.

An additional interesting artefact was a limestone mortar. A very similar type of mortar was found at Umm az-Zamul, deep in the desert interior of south-east Abu Dhabi (Cuttler et al 2007, Kallweit et al 2005, 2008). Similar artefacts are also reported by Juris Zarins from Neolithic sites at the edge of the Rub al-Khali in Dhofar (Zarins 2001).

The animal bones from site DA11 were studied by the author (Beech 2000, 2002, 2004), and Emily Glover, a research fellow at the Natural History Museum in London studied the marine mollusca from the site (Beech and Glover 2005). These analyses revealed the presence of

domestic sheep/goat at the site, but most of the faunal remains consisted of marine remains, with fish and shellfish predominating, as well as small quantities of turtle, dugong and dolphin being present.

Marawah Island – a Place for The Living and The Dead

The island of Merawah lies around 100 kilometres to the west of the city of Abu Dhabi, and is located just to the north of the Khor al Bazm. To the west is the small island of Al Fiyah, to the southeast the island of Junaina, and to the east the island of Abu al Abyad. It is around 15 km north of the main coastline and about eight km north west of Junaina. Marawah is around 13 kilometres from east–west and a maximum of 5.5 kilometres north–south. The structure of the island is formed from relict Pleistocene limestone platforms linked by Holocene (recent) sand and beach deposits and intervening patches of sabkha (salt flats) (Evans et al. 2002).

ADIAS carried out a preliminary survey of the archaeological sites on the island in 1992 (King 1998). This identified a total of 13 major sites ranging in date from the Late Stone Age to Late Islamic period. Two sites, both located towards the western end of the island, were recognised as being important Neolithic/Late Stone Age settlement sites. These were designated as site MR1 and MR11.

Site MR1 was briefly examined in 1994 by Jakub Czastka who excavated a small evaluation slit trench across a long mound at the site. This identified a stone wall within the mound, and a single bifacially retouched flint arrowhead, typical of the Arabian Bifacial tradition. Subsequently a systematic collection of flint artefacts was made from the surface of the site (Figure 5). The entire lithic collection from the site has now been studied and is shortly to be published (Charpentier and Beech, in prep).

The site known as MR11 is located in the

south-western corner of Marawah island. It was originally described as consisting of a group of seven cairns located 2kms NW of the modern village of Ghubba at the NW tip of a limestone ridge. These mounds were initially interpreted as pre-Islamic burial mounds. It was noted that they seemed to be circular structures/mounds to which stones had been added over time. All the cairns were similar, made from mounded sand with large (50-60cms; 10cms thick) and medium (20-30cm) slabs of local beachstone. The site was subsequently briefly examined by Dr Joseph Elders and John Martin in 2000 and 2003. A test sondage was made into one of the mounds, as well as some surface clearance in order to clarify the nature of the walls and layout of the structure. An initial hypothesis was that an apsidal shaped building was in actual fact a “church”, as its size and dimensions were at first glance very similar to the example excavated by ADIAS on the island of Sir Bani Yas (Elders 2001). This assumption subsequently proved to be incorrect. Ash samples taken during the 2003 season and two charcoal samples from the 2004 season however provided radiocarbon dates which confirmed that the site in actual fact dated back as early as the mid 6th millennium BC. Occupation at the site lasted until around the mid 5th millennium BC.

In April 2004 ADIAS undertook systematic excavations at MR11, directed by the present

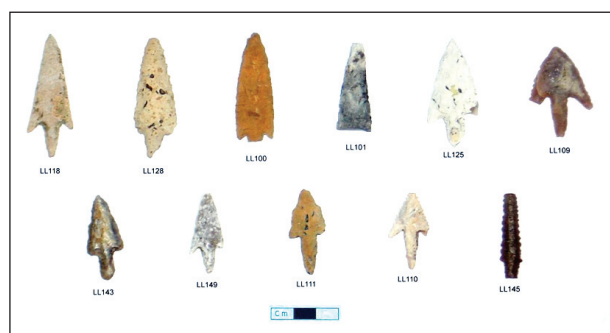


Fig. 5: Site MR11, an Ubaid-related site on Marawah Island: selection of flint arrowheads collected from the surface of the site (Source: ADIAS/Vincent Charpentier).

author, who was at that time, ADIAS Senior Resident Archaeologist in Abu Dhabi (Beech et al 2005, 2008). The team also included: Richard Cuttler and Derek Moscrop (Birmingham Archaeology, UK), Dr Heiko Kallweit (Freiburg, Germany), and John Martin (Carlisle, UK). The site, formerly believed to be a “church”, has in fact turned out to be one of the best-preserved examples of a neolithic stone structure ever excavated in the United Arab Emirates. A single room (room 1) was excavated in one of the lower mounds visible. This proved to be an apsidal ended room with additional walls and rooms butting onto it. The room had three openings into neighbouring rooms or spaces.

A rich variety of finds were discovered during the excavations at MR11 including an almost complete Ubaid vessel (Mery et al, in prep). Other finds included plaster vessel fragments (discussed below), lithics, beads and other artefacts, including two attractive buttons made from pearl oyster shell (Figure 6).

Our initial hypothesis concerning the site was that we were dealing with a settlement, consisting of a series of interlocking rooms, forming part of a series of buildings. A human burial discovered in Room 1, placed inside but across the apparent doorway was considered secondary to the initial domestic occupation of the structure (Beech et al 2005). Subsequent analysis of all the human bone material from Room 1 revealed however that a minimum of at least five individuals had originally been buried at the site (McSweeney and Beech, in prep.). This throws into question whether the site represents some special sort of mortuary site where secondary burials were interred. Only further excavations may help to answer this question.

Social Cohesion and Ubaid Interactions

Did the people of the southern Gulf form a cohesive social group distinguishing themselves from the peoples of the central and northern



Fig. 6: Site MR11, an Ubaid-related site on Marawah Island. From top left, in clockwise order: view of stone structure (Room 1); adult male skeleton found in Room 1; pearl oyster buttons from Room 1; Ubaid vessel from Room 1 (Source: ADIAS).

Gulf? A remarkable class of artefact not found at other Ubaid-related site in the Gulf was the presence of painted plaster vessels on both Dalma and Marawah islands.

At the site of MR11 on Marawah Island a large number of fragments of plaster vessels were found within Room 1. Most were plain, although some had traces of pinkish-red and dark grey paint on the outside of them (Figure 7). Some were clearly pieces of quite large vessels with walls almost 1cm thick. There were also some very fine fragments of plaster

vessels only 4mm thick.

Similar painted plaster vessel fragments have been discovered at the Ubaid-related site of DA11 on Dalma Island. Some of these have painted black chevrons and lines on them, as well as pink colouration (Carter, in prep.). Some of these fragments have been analysed by Dr Louise Joyner (Department of Archaeology, Cardiff University), when she was formerly employed in the Department of Scientific Research at the British Museum (Joyner, 2001). Her work demonstrated that whilst more were manufactured



Fig. 7: Painted plaster fragments from Dalma Island (top) and Marawah Island (bottom) (Source: ADIAS/Dr Mark Beech).

from local gypsum, some were also made of lime plaster.

The tradition of using plaster is, of course, known from the early Pre-Pottery Neolithic period in the Levant and Mesopotamia. It is fascinating that the peoples of the southern Gulf felt the need to manufacture such vessels and in particular, that the painted patterns on some of these apparently emulated the designs on the imported Ubaid pottery. This perhaps goes some way to supporting Masry's original hypothesis of inter-regional interactions, rather than the sea-faring merchants of Ur delivering their wares down the Gulf.

Whilst Masry reported at Dosariyah the widespread distribution of reed-impressioned lime plaster fragments, which he speculates were possibly used to strengthen the interior faces of

reed-bundle walls round the settlement (Masry 1997: 115), he did not identify any plaster vessel fragments from any of the sites he investigated in the Eastern Province of Saudi Arabia. Neither has such material been found elsewhere, e.g. at site H3 at Sabiyah in Kuwait, where extensive archaeological excavations were undertaken of the settlement structures.

Umm An-Nar – Copper Trade And Coastal Connections

The first archaeological excavations to be carried out in the United Arab Emirates were those by a Danish archaeological expedition in 1959. This work identified a large settlement site and a cemetery from the 2nd half of the 3rd millennium BC on the island of Umm Al-Nar (sometimes, incorrectly referred to as Umm an-Nar), just to the east of Abu Dhabi island (Hoch 1979; Frifelt 1991, 1995). Limited excavations were also conducted at the settlement site of Umm Al-Nar in 1979 (Al-Tikriti 1983). This site became the so-called type site for Umm Al-Nar culture which was subsequently identified as having a distribution from Ras Al-Khaimah in the north to Ja'alan and beyond in the Sultanate of Oman, i.e. covering a large part of south-eastern Arabia.

The Al Ain Museum also carried out two short seasons of excavation in 1982-3 on the island of Ghanadha, some 65 kilometres north-east of Umm Al-Nar. These demonstrated that the island was first inhabited in the 2nd half of the 3rd millennium BC, showing that seasonal settlements of the Umm Al-Nar culture were spread along the coastline, and were not simply confined to Umm Al-Nar and Al Ain (Al-Tikriti 1985).

A further important site relating to Umm Al-Nar is a site discovered by Abu Dhabi International Airport by the Abu Dhabi Islands Archaeological Survey (ADIAS). This was first discovered in 1995. Besides producing extensive evidence for occupation during the Late Stone Age/Neolithic period (Beech et al 2004), the site was littered

with pottery some of which had parallels with Hafit pottery from the earliest sequence at Hili 8, but most of which dated to the Umm Al-Nar period (De Cardi 1997). Two large stone-lined wells were identified at the site, which were surrounded by a dense scatter of fragments of Umm Al-Nar pottery. The topographic location of this site is the key to understanding it. It stands on the old raised coastline above the sabkha that is closest to Umm Al-Nar, and may have provided the water supply to this important site.

Occasional finds of Bronze age pottery have been noted on a number of other islands along the coastline of Abu Dhabi's Western Region (Carter 2003). It has been suggested that these are the result of way stations for traders to or from Dilmun who were heading along the coast, island hopping, i.e. stopping temporarily to take on board fresh water and food supplies.

Iron Age – Passing Camels And Caravans

Comparatively little evidence has been identified for the Iron Age period along the coast

and islands of Abu Dhabi. The only sparse data available are the presence of cooking hearths dated by radiocarbon dating of charcoal and ash to that period. These have been identified on the islands of Marawah, Rufayq and Balghelam (Garfi 1996; Hellyer and Beech 2001a). These hearths are generally constructed of slabs of locally available rock inserted vertically into the sandy substrate, forming circular, sub-circular or near-rectangular shapes.

The largest known grouping of such hearths is on the island of Marawah, where site MR-9 has in excess of 150 hearths. At Rufayq there was a group of six fireplaces and raised sub-circular mounds at site RU-2, and in excess of twenty hearths, as well as other features, were identified at site RU-5.

Radiocarbon dating of some of these hearths provides the only evidence for securely dated occupation on the islands west and north-east of Abu Dhabi. The only other evidence for this period are the burial cairns at Bitashar, a mesa located a few kilometres inland from Jebel

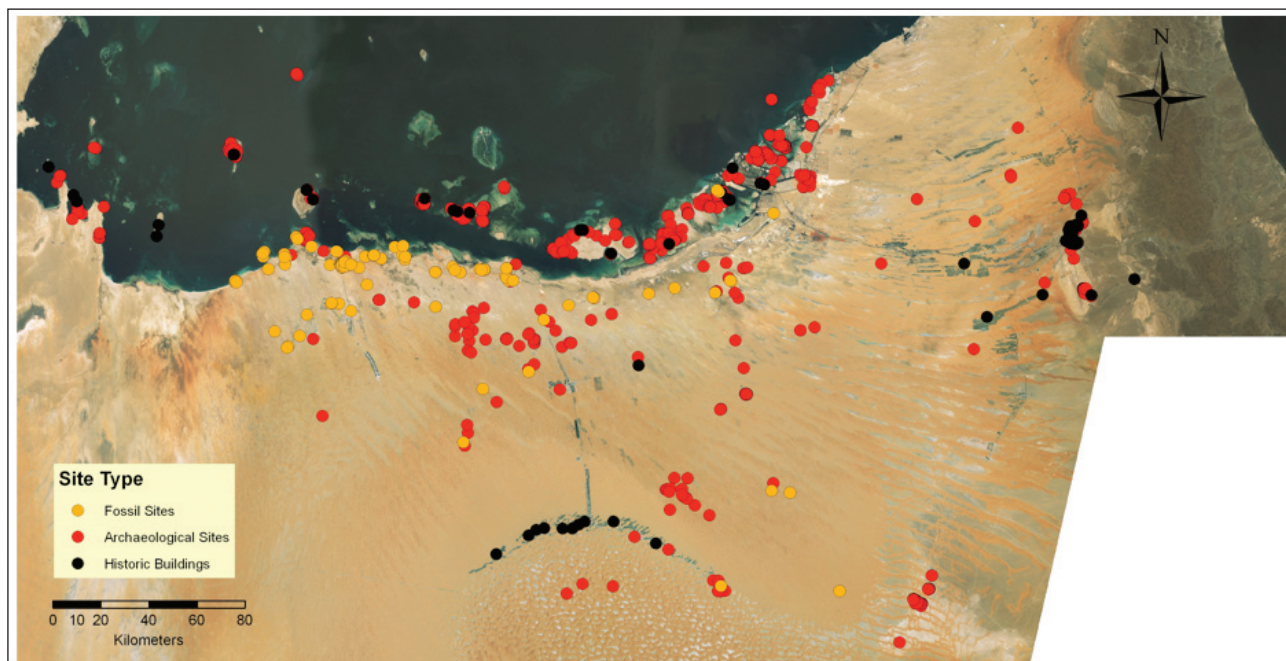


Fig. 8: Map produced from the GIS system of Abu Dhabi Tourism and Culture Authority showing the distribution of palaeontological sites, archaeological sites and historic buildings along the coast and islands of Abu Dhabi emirate (Source: TCA Abu Dhabi/Landsat 15m 2002).

Dhanna, where some Iron Age metal weapon fragments were excavated (Vogt et al 1989). Note that at least one of the hearths noted at Ghanadha was also ascribed an Iron Age date of 2470 +/- 100 BP (Al-Tikriti 1985).

An interesting phenomenon during the Iron age is that marine resources seem to penetrate more readily into the interior from the coast at this time (Beech, Hogarth and Phillips 2008). This may be due to a combination of factors like domestication of the camel, new trade routes opening up as well as increasing population growth spurred by the development of aflaj systems in the oases.

Final Comments

A number of years ago Maurizio Tosi wrote that "...the conquest of the ocean has remained one of the least comprehensible chapters in prehistory. Somehow archaeology has not yet developed adequate research strategies in this area..." (Tosi 1986: 94).

Archaeologists working in the region now have many modern tools at their disposal. The advent of Geographic Information Systems (G.I.S.) and computer technology means that it is much easier today to map and analyse the distribution of archaeological sites in any given region. There is an urgent need for the GCC countries which make up the Eastern Arabian seaboard to collaborate on the sharing of precise geospatial data relating to their Historic Environment Record Systems. The location of sites and in particular their elevation in relation to sea-level is of great interest in modelling changing patterns of coastal exploitation in different time periods. Only by a greater degree of collaboration between researchers will we successfully develop effective regional models of prehistoric settlement patterns along the coast and islands of the Gulf.

Maps identifying palaeontological sites, archaeological sites and the locations of historic buildings on the coast and islands of Abu Dhabi emirate are all documented within the Abu Dhabi

sites GIS database system managed by the Abu Dhabi Tourism and Culture Authority (TCA Abu Dhabi). This is used as a management tool to ensure protection for all key sites (Figure 8). All new major construction projects undertaken in Abu Dhabi require not only a construction and environmental permit but also cultural heritage clearance from TCA Abu Dhabi. This is carried out through a procedure known as Preliminary Cultural Review (PCR). More details are available via the TCA Abu Dhabi website at: <http://tcaabudhabi.ae/en/eservices/preliminary-cultural-review/Pages/default.aspx>

Much of the coastline of the Gulf is now under severe threat by modern coastal development, dredging and the construction of artificial new islands, etc. If we do not act sooner, rather than later, much of the archaeology of the Gulf coastline and islands will soon be gone. We will not have any coastal sites left to protect unless we establish networks of marine protected areas along the coastline of the Gulf (Hellyer and Beech, 2001b).

Archaeologists have a duty to provide an adequate Historic Environment Record System for their region. Where such records exist they can be effectively used in Integrated Coastal Zone Management (ICZM) strategies in the region. Too often the planners and developers are ahead of the environmentalists and archaeologists. There is a need to be better prepared so that we can protect the important rich cultural heritage of the eastern seaboard of Arabia.

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ملخص: يقدم هذا البحث عرضاً إقليمياً لاستيطان ما قبل التاريخ لساحل جنوبي الخليج العربي وجزره. إن أقدم الأدلة الأثرية على استيطان هذه المنطقة يعود إلى منتصف العصر الحجري (بين ٢٠٠,٠٠٠ إلى ١٥٠,٠٠٠ سنة تقريباً). وموقع جبل بركة، مع أنه يقع اليوم على الخط الساحلي لإمارة أبو ظبي، كان في ذلك الوقت تلاً يطل على الحافة الشرقية لسبخة نهر وادي ماتي، الذي يجري باتجاه الشمال، ليصب في حوض الخليج. أما فيضان الخليج فقد ابتدأ قبل ١٨٠٠٠ سنة تقريباً. ويشير الفحص الكربوني إلى أن أقدم استيطان بشري لساحل جنوبي الخليج وجزره ازدهر في منتصف الألفية السادسة قبل الميلاد؛ وهذه المواقع مواقع عبيدية تأسست مباشرة بعد وصول متسوى ارتفاع مياه الخليج إلى أقصى مداه سنة ٦٠٠٠ تقريباً قبل الميلاد (وهو ارتفاع يزيد بمترين عن ما هو عليه اليوم). يناقش الباحث نتائج حفرياته في جزيرتي دلما ومرورة، ويعرض أدلة جديدة تثبت أن مستوطني ساحل جنوبي الخليج شكلوا مجتمعاً متماسكاً وميزوا أنفسهم عن سكان وسط وشمال الخليج. كما يناقش أدلة على الأنشطة الساحلية خلال فترتي العصر البرونزي والعصر الحديدي.

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References

Beech, M. 1999. "Dalma archaeological site yields Arabia's oldest date stones"., **Tribulus** (Journal of the Emirates Natural History Group) 9.1: 18.

Beech, M. 2000. Preliminary report on the faunal remains from an 'Ubaid settlement on Dalma island, United Arab Emirates. In: M. Mashkour, A.M. Choyke, H. Buitenhuis and F. Poplin (eds.), **Archaeozoology of the Near East IV: Volume B - Proceedings of the fourth international symposium on the archaeozoology of southwestern Asia and adjacent areas**. ARC Publicatie 32. Groningen, Netherlands. pp.68-78.

Beech, M. 2002. "Fishing in the 'Ubaid: a Review of Fish-bone Assemblages from Early Prehistoric Coastal Settlements in the Arabian Gulf". **Journal of Oman Studies** 12: 25-40.

Beech, M. 2003a. "The development of fishing in the United Arab Emirates: a zooarchaeological perspective". In: D.T. Potts, H. Naboodah and P. Hellyer (eds.), **Archaeology of the United Arab Emirates: Proceedings of the First International Conference on the Archaeology of the UAE**. Trident Press Ltd., London. pp.289-308.

Beech, M. 2003b. "Archaeobotanical Evidence for Early

- Date Consumption in the Arabian Gulf". Pages 11-31. In: ECSSR (ed), **The Date Palm - From Traditional Resource to Green Wealth**. Emirates Center for Strategic Studies and Research, Abu Dhabi.
- Beech, M.J. 2004a. "In the Land of the Ichthyophagi: Modelling fish exploitation in the Arabian Gulf and Gulf of Oman from the 5th millennium BC to the Late Islamic period". Abu Dhabi Islands Archaeological Survey Monograph 1 - **British Archaeological Reports International Series S1217**. ArchaeoPress, Oxford.
- Beech, M. 2010. Chapter 7 – The Animal and Fish Bones. Pages 129-156, In.: R. Carter and H. Crawford (eds.), **Maritime Interactions in the Arabian Neolithic – Evidence from H3, As-Sabiyah, an Ubaid-Related Site in Kuwait**. American School of Prehistoric Research Monograph Series 8. Brill, Leiden and Boston.
- Beech, M., R. Cuttler, D. Moscrop, H. Kallweit & J. Martin. 2005. "New evidence for the Neolithic settlement of Marawah Island, Abu Dhabi, United Arab Emirates". **Proceedings of the Seminar for Arabian Studies** 35: 37-56.
- Beech, M., R. Cuttler, D. Moscrop, H. Kallweit and J. Martin. 2008. "Excavations at the Neolithic Settlement of MR11 on Marawah Island, Abu Dhabi, United Arab Emirates: 2004 Season". Pages 25-53. In: P. Hellyer and M. Ziolkowski (eds.), **Emirates Heritage Vol.2 - Proceedings of the 2nd Annual Symposium on Recent Archaeological Discoveries in the Emirates and of the Symposium on the History of the Emirates, Al Ain, 2004**. Zayed Center for Heritage and History, Al Ain.
- Beech, M. and Elders, J. 1999. "An 'Ubaid-related settlement on Dalma Island, Abu Dhabi Emirate, United Arab Emirates". **Bulletin of the Society of Arabian Studies** 4: 17-21.
- Beech, M., J. Elders and E. Shepherd. 2000. "Reconsidering the 'Ubaid of the Southern Gulf: new results from excavations on Dalma Island, U.A.E". **Proceedings of the Seminar for Arabian Studies** 30: 41-47.
- Beech, M. and E. Glover. 2005. "The environment and economy of an Ubaid-related settlement on Dalma island, United Arab Emirates". **Paléorient** 31/1: 97-107.
- Beech, M. and P. Hellyer (eds.). 2005. **Abu Dhabi 8 Million Years Ago - Late Miocene Fossils from the Western Region**. Abu Dhabi Islands Archaeological Survey (ADIAS)/ Dar Al Fajr Printing Press, Abu Dhabi, UAE.
- Beech, M., P. Hogarth and C. Phillips. 2008. "Zooarchaeological Evidence for Trade in Marine Resources in South-East Arabia". Pages 329-335. In: E. Olijdam and R.H. Spoor (eds.), **Intercultural relations between South and Southwest Arabia. Studies in Commemoration of E.C.L. During Caspers (1934-1996)**. **British Archaeological Reports International Series 1826**. Society for Arabian Studies Monographs no.7. Archaeopress, Oxford.
- Beech, M. and M. Al-Husaini. 2005. "Preliminary report on the vertebrate fauna from site H3, Sabiyah: an Arabian Neolithic / 'Ubaid site in Kuwait". In: H. Buitenhuis, A.M. Choyke, L. Martin, L. Bartosiewicz and M. Mashkour (eds.), **Archaeozoology of the Near East VI: Proceedings of the sixth international symposium on the archaeozoology of southwestern Asia and adjacent areas**. ARC Publicaties 123. Groningen, Netherlands. pp.124-138.
- Beech, M., H. Kallweit and P. Hellyer. 2004. "New archaeological investigations at Abu Dhabi Airport, United Arab Emirates". **Proceedings of the Seminar for Arabian Studies** 34: 1-15.
- Beech M., M. Mashkour, M. Huels and A. Zazzo. 2009. "Prehistoric camels in south-eastern Arabia: the discovery of a new site in Abu Dhabi's Western Region, United Arab Emirates". **Proceedings of the Seminar for Arabian Studies** 39: 39-52.
- Beech, M., M. Mashkour, A. Parker and A. Parton. (in prep). Wild Camels, Lakes and the end of the Holocene Climatic Optimum.
- Beech, M. and E. Shepherd. 2001. "Archaeobotanical evidence for early date consumption on Dalma Island, United Arab Emirates". **Antiquity** 75: 83-9.
- Cardi, B. de. 1997. "Third Millennium and Later Pottery from Abu Dhabi Airport". **Arabian Archaeology and**

Epigraphy 8: 161-173.

Carter, R.A. 2002. "Ubaid-period boat remains from As-Sabiyah: excavations by the British Archaeological Expedition to Kuwait". **Proceedings of the Seminar for Arabian Studies** 32:13-30.

Carter, R.A. 2003. "Tracing Bronze Age trade in the Arabian Gulf: Evidence for Way-stations of the Merchants of Dilmun between Bahrain and the Northern Emirates". In: D.T. Potts, H. Naboodah and P. Hellyer (eds.), **Archaeology of the United Arab Emirates: Proceedings of the First International Conference on the Archaeology of the UAE**. Trident Press Ltd., London. pp.123-131.

Carter, R.A. 2005. "The History and Prehistory of Pearlring in the Persian Gulf". **Journal of the Economic and Social History of the Orient** 48/2: 139-209.

Carter, R.A. 2006. Boat Remains and Maritime Trade in the Persian Gulf during the 6th and 5th millennia BC. **Antiquity** 80/307: 52-63.

Carter, R.A. 2008. "Excavations and 'Ubaid-Period Boat Remains at H3, As-Sabiyah (Kuwait)". In Olijdam E. & Spoor R. H. (eds.) **Intercultural Relations between South and Southwest Asia. Studies in Commemoration of E.C.L. During Caspers (1934-1995)**. Oxford, BAR International Series 1826 & Society for Arabian Studies Monographs 7: 92-102.

Carter, R.A. (in prep.). 'Ubaid pottery and plaster vessels from DA-11. in: E. Popescu and M. Beech (eds.), **Excavations at an early 5th millennium BC settlement on Dalma island, United Arab Emirates. Abu Dhabi Islands. Archaeological Survey Series** (No. 2), Archaeopress, Oxford.

Carter, R.A. and H. Crawford (eds.) 2010. **Maritime Interactions in the Arabian Neolithic – Evidence from H3, As-Sabiyah, an Ubaid-Related Site in Kuwait**. American School of Prehistoric Research Monograph Series 8. Brill, Leiden and Boston.

Charpentier, V. and M. Beech (in prep.). Marawah 1 – Why so many arrowheads?

Cleuziou, S. and M. Tosi. 2007. **In the Shadow of the**

Ancestors: The Prehistoric Foundations of the Early Arabian Civilization in Oman. Ministry of Heritage and Culture, Sultanate of Oman.

Cuttler, R., M. Beech, H. Kallweit, A. Zander and W.Y. Al-Tikriti. 2007. "Pastoral nomadic communities of the Holocene climatic optimum: excavation and research at Kharimat Khor al Manahil and Khor Al Manahil in the Rub al-Khali, Abu Dhabi". **Proceedings of the Seminar for Arabian Studies** 37: 61-78.

Cuttler, R., F. Al-Naimi and S. Fitch. 2012. "Considering the 'Terra Incognita' and the implications for the Cultural Resource Management of the Arabian Gulf Palaeolandscape". Pages 234-245, In.: D.T. Potts and P. Hellyer (eds.), **Fifty Years of Emirates Archaeology – Proceedings of the Second International Conference on Archaeology of the United Arab Emirates**. Motivate Publishing, Abu Dhabi and Dubai and the Ministry of Culture, Youth and Community Development, Abu Dhabi.

Elders, J. 2001. "The lost churches of the Arabian Gulf: recent discoveries on the islands of Sir Bani Yas and Marawah, Abu Dhabi Emirate, United Arab Emirates". **Proceedings of the Seminar for Arabian Studies** 31: 47-58.

Frifelt, K. 1991. **The Island of Umm-An-Nar. 1, Third Millennium Graves (with contributions by Manfred Kunter, Ella Hoch and David S. Reese)**. Jutland Archaeological Society Publications, 26:1. Aarhus University Press.

Frifelt, K. 1995. **The Island of Umm An-Nar. 2, The Third Millennium Settlement (with contributions by Andreas Hauptmann, Ella Hoch and George Willcox)**. Jutland Archaeological Society Publications, 26:2. Aarhus University Press, Moesgaard, Aarhus.

Garfi, S. 1996. "Excavations on Balghelam Island - a preliminary report". **Tribulus** (Journal of the Emirates Natural History Group) 6.2: 5-10.

Hellyer, P. and M. Beech. 2001a. "C14 dating of Iron Age hearths on the island of Rufayq, Abu Dhabi". **Tribulus** (Journal of the Emirates Natural History Group) 11.1: 21-23.

- Hellyer, P. and M. Beech. 2001b. "Protected Areas and Cultural Heritage: An Abu Dhabi Case Study". In: **Research and Management Options for Protected Areas. Proceedings of the First International Symposium and Workshop on Arid Zone Environments (January 2000)**. Environmental Research and Wildlife Development Agency, Abu Dhabi. pp.195-213.
- Hill, A., F. Bibi, M. Beech and W.Y. Al-Tikriti. 2012. "Before Archaeology: Life and Environments in the Miocene of Abu Dhabi". Pages 20-33, In.: D.T. Potts and P. Hellyer (eds), D.T. Potts and P. Hellyer (eds.), **Fifty Years of Emirates Archaeology – Proceedings of the Second International Conference on Archaeology of the United Arab Emirates**. Motivate Publishing, Abu Dhabi and Dubai and the Ministry of Culture, Youth and Community Development, Abu Dhabi.
- Hoch, E. 1979. "Reflections on prehistoric life at Umm an-Nar (Trucial Oman), based on faunal remains from the third millennium B.C." In: M. Taddei (ed), **South Asian Archaeology IV - Naples 1977**. Naples, Instituto Universitario Orientale - Seminario di Studi Asiatici. pp. 589-638.
- Jagher, R. 2009. "The Central Oman Paleolithic Survey: Recent Research in Southern Arabia and Reflection on the Prehistoric Evidence". Pages 139-150. In: M.D. Petraglia and J.I. Rose (eds.), **The Evolution of Human Populations in Arabia: Paleoenvironments, Prehistory and Genetics (Vertebrate Paleobiology and Paleoanthropology Series)**. Springer: Heidelberg, London, New York.
- Joyner, L. 2001. "Ubaid Plaster Technology at Dalma Island, Abu Dhabi emirate, United Arab Emirates". Abu Dhabi Islands Archaeological Survey (ADIAS) website. Source: <http://www.adias-uae.com/plaster.html> (last checked on 28 February 2010).
- Kallweit, H., M. Beech & W.Y. Al-Tikriti. 2005. "Kharimat Khor al-Manahil and Khor Al Manahil – New Neolithic sites in the south-eastern desert of the UAE". **Proceedings of the Seminar for Arabian Studies** 35: 97-113.
- Kallweit, H., M. Beech and W.Y. Al-Tikriti. 2008. "New Neolithic sites in the Rub al-Khali: survey and excavations at Umm az-Zamul - the 2004 season". Pages 6-24, In: P. Hellyer and M. Ziolkowski (eds.), **Emirates Heritage Vol.2 - Proceedings of the 2nd Annual Symposium on Recent Archaeological Discoveries in the Emirates and of the Symposium on the History of the Emirates, Al Ain, 2004**. Zayed Center for Heritage and History, Al Ain.
- King, G.R.D. 1998. **Abu Dhabi Islands Archaeological Survey: Season I - An Archaeological Survey of Sir Bani Yas, Dalma and Marawah: Season One**. Trident Press: London.
- Lambeck K. 1996. "Shoreline reconstructions for the Persian Gulf since the last glacial maximum". **Earth and Planetary Science Letters** 142(1): 43-57.
- Lambeck K. 2005. In conversation with Kurt Lambeck, 22/12/2005, Radio National - <http://www.abc.net.au/rn/science/incon/stories/s1525408.htm> (last checked on 28 February 2010).
- Marks, A.E. 2009. "The Paleolithic of Arabia in an Inter-regional context". Pages 295-308. In: M.D. Petraglia and J.I. Rose (eds.), **The Evolution of Human Populations in Arabia: Paleoenvironments, Prehistory and Genetics (Vertebrate Paleobiology and Paleoanthropology Series)**. Springer: Heidelberg, London, New York.
- Masry, A.H. 1974 (and 1997). **Prehistory in Northeastern Arabia: the problem of interregional interaction. Field Research Projects**. Coconut Grove. Florida (Reprinted 1997, Kegan Paul International, London and New York).
- McBrearty, S. 1993. **Lithic artefacts from Abu Dhabi's Western Region**. Tribulus (Bulletin of the Emirates Natural History Group) 3: 12-14.
- McBrearty, S. 1999. Earliest Tools from the Emirate of Abu Dhabi, United Arab Emirates. Pages 373-388 in P. Whybrow & A. Hill (eds), **Fossil Vertebrates of Arabia – With Emphasis on the Late Miocene Fauna, Geology, and Palaeoenvironments of the Emirate of Abu Dhabi, United Arab Emirates**. New Haven, CT/London: Yale University Press.
- McSweeney, K. and M. Beech. (In prep.) Neolithic life and death on Marawah Island – analysis of the human skeletal remains from MR11.

- Méry, S., J. Blackman and M. Beech. (in prep). An interesting ceramic jar from an Ubaid-related settlement on Marawah island, Abu Dhabi emirate.
- Méry, S., V. Charpentier and M. Beech. 2008. "First evidence of shell fish-hook technology in the Gulf". **Arabian Archaeology and Epigraphy** 19 (1): 15-21.
- Oates J., T. E. Davidson, D. Kamilli, and H. McKerrel. 1977. "Seafaring Merchants of Ur?" **Antiquity** 51:221–234.
- Petraglia, M.D. and A. Alsharekh. 2003. "The Middle Palaeolithic of Arabian peninsula: occupations, adaptations and dispersals". **Journal of World Prehistory** 17: 141-179.
- Petraglia, M.D., N. Drake and A. Alsharekh. 2009. Acheulean Landscapes and Large Cutting Tool Assemblages in the Arabian peninsula. Pages 103-116. In: M.D. Petraglia and J.I. Rose (eds.), **The Evolution of Human Populations in Arabia: Paleoenvironments, Prehistory and Genetics (Vertebrate Paleobiology and Paleoanthropology Series)**. Springer: Heidelberg, London, New York.
- Roaf, M. 1974. "Excavations at al Markh", Bahrain – A fish midden of the fourth millennium BC". **Paléorient** 2/2:499–501.
- Roaf, M. 1976. Excavations at al-Markh, Bahrain. *Proceedings of the Seminar for Arabian Studies* 6:144–160.
- Roaf, M. 2003. **British Excavations at al-Markh. In The Archaeology of Bahrain. The British Contribution**, edited by H. E. W. Crawford, pp. 7–12. BAR International Series 1189, Oxford.
- Rose, J.I. 2010. "New Light on Human Prehistory in the Arabo-Persian Gulf Oasis". **Current Anthropology** 51(6): 849-883.
- Rose, J.I. and V.I. Usik. 2009. "The "Upper Paleolithic" of South Arabia". Pages 169-186. In: M.D. Petraglia and J.I. Rose (eds.), **The Evolution of Human Populations in Arabia: Paleoenvironments, Prehistory and Genetics (Vertebrate Paleobiology and Paleoanthropology Series)**. Springer: Heidelberg, London, New York.
- Scott-Jackson, J., W. Scott-Jackson and J.I. Rose. 2009. "Paleolithic Stone Tool Assemblages from Sharjah and Ras al Khaimah in the United Arab Emirates". Pages 125-138 in: M.D. Petraglia and J.I. Rose (eds.), **The Evolution of Human Populations in Arabia: Paleoenvironments, Prehistory and Genetics (Vertebrate Paleobiology and Paleoanthropology Series)**. Springer: Heidelberg, London, New York.
- Shepherd-Popescu, E. and M.J. Beech (eds.). (in prep.). Excavations at an Ubaid-related site on Dalma Island. *British Archaeological Reports International Series*. Abu Dhabi Islands Archaeological Survey Monograph 2. ArchaeoPress, Oxford.
- Stringer, C. 2000. "Coasting out of Africa". **Nature** 405: 24-27.
- Al-Tikriti, W.Y. 1983. Reconsideration of the Late Fourth and Third Millennium B.C. in the Arabian Gulf with Special Reference to the United Arab Emirates. Unpublished PhD thesis. Trinity College, University of Cambridge.
- Al-Tikriti, W.Y. 1985. "The Archaeological Investigations on Ghanadha Island 1982-1984: Further Evidence for the Coastal Umm an-Nar Culture". **Archaeology in the United Arab Emirates** 4: 9-19. Al Ain, UAE.
- Tosi, M. 1986. "Early maritime cultures of the Arabian Gulf and the Indian Ocean". Pages 94-107. In: Shaikha Haya Ali Al Khalifa and Michael Rice (eds.), **Bahrain through the Ages – the Archaeology**. KPI, London.
- Uerpmann, M. and H. P. Uerpmann. 1996. "Ubaid pottery in the eastern Gulf- new evidence from Umm al-Qaiwain (U.A.E)". **Arabian Archaeology and Epigraphy** 7(2): 125-139.
- Uerpmann, M. and H-P. Uerpmann. 2000. "Faunal remains of al-Buhais 18, an aceramic neolithic site in the Emirate of Sharjah (SE-Arabia) - Excavations 1995-1998". In: M. Mashkour, A.M. Choyke, H. Buitenhuis and F. Poplin (eds.), **Archaeozoology of the Near East IVB - Proceedings of the fourth international symposium on the archaeozoology of southwestern Asia and adjacent areas**. ARC - Publicatie 32. Groningen, Netherlands, 40-49.

Uerpmann, M., H. P. Uerpmann, and S.A. Jasim. 2000. "Stone Age Nomadism in SE Arabia - Palaeo-economic considerations on the neolithic site of Al-Buhais 18 in the Emirate of Sharjah, UAE". **Proceedings of the Seminar for Arabian Studies** 30: 229-234.

Vogt, B. Vogt, B., W. Gockel, H. Hofbauer and A.A. Al-Haj (1989). "The coastal survey of the western province of Abu Dhabi, 1983". **Archaeology in the United Arab Emirates** 5: 49-60.

Wahida, G., W.Y. Al-Tikriti and M. Beech. 2008. "Barakah: a Middle Palaeolithic site in Abu Dhabi emirate". **Proceedings of the Seminar for Arabian Studies** 38: 55-64

Wahida G., W.Y. Al-Tikriti, M. Beech and A. Al-Meqbali. 2009a. "Middle Palaeolithic Assemblage in Abu Dhabi Emirate: The view from Jebel Barakah. Pages 23-36 (english version)"; Pages 23-37 (arabic version). In: **New Perspectives on Recording UAE. Proceedings of the International History Conference, New Perspectives on Recording UAE History, National Center for Documentation and Research 40th Anniversary Conference (23-25 November 2008)**. National Center for Documentation and Research, Abu Dhabi, UAE.

Wahida, G., W.Y. Al-Tikriti, M. Beech and A. Al Meqbali. 2009b. "A Middle Palaeolithic assemblage from Jabel Barakah, Coastal Abu Dhabi emirate". Pages 117-124 in: M.D. Petraglia and J.I. Rose (eds.), **The Evolution**

of Human Populations in Arabia: Paleoenvironments, Prehistory and Genetics (Vertebrate Paleobiology and Paleoanthropology Series). Springer: Heidelberg, London, New York.

Wahida, G., W.Y. Al-Tikriti, M. Beech and A. Al-Meqbali. 2012. "The Middle Palaeolithic Assemblage of Jebel Barakah in the context of the Arabian Peninsula and Adjacent Areas". Pages 34-43, in: D.T. Potts and P. Hellyer (eds.), **Fifty Years of Emirates Archaeology – Proceedings of the Second International Conference on Archaeology of the United Arab Emirates**. Motivate Publishing, Abu Dhabi and Dubai and the Ministry of Culture, Youth and Community Development, Abu Dhabi.

Whybrow, P.J. 1989. "New stratotype; the Baynunah Formation (Late Miocene), United Arab Emirates: Lithology and palaeontology". **Newsletters on Stratigraphy** 21:1-9.

Whybrow, P.J. and A. Hill. 1999. **Fossil Vertebrates of Arabia**. Yale University Press, New Haven

Zarins, J. 2001. "The Land of Incense - Archaeological Work in the Governorate of Dhofar, Sultanate of Oman, 1990-1995". **The Project of the National Committee for the supervision of Archaeological survey in the Sultanate – Ministry of Information**. Sultan Qaboos University Publications – Archaeology & Cultural Heritage Series.