

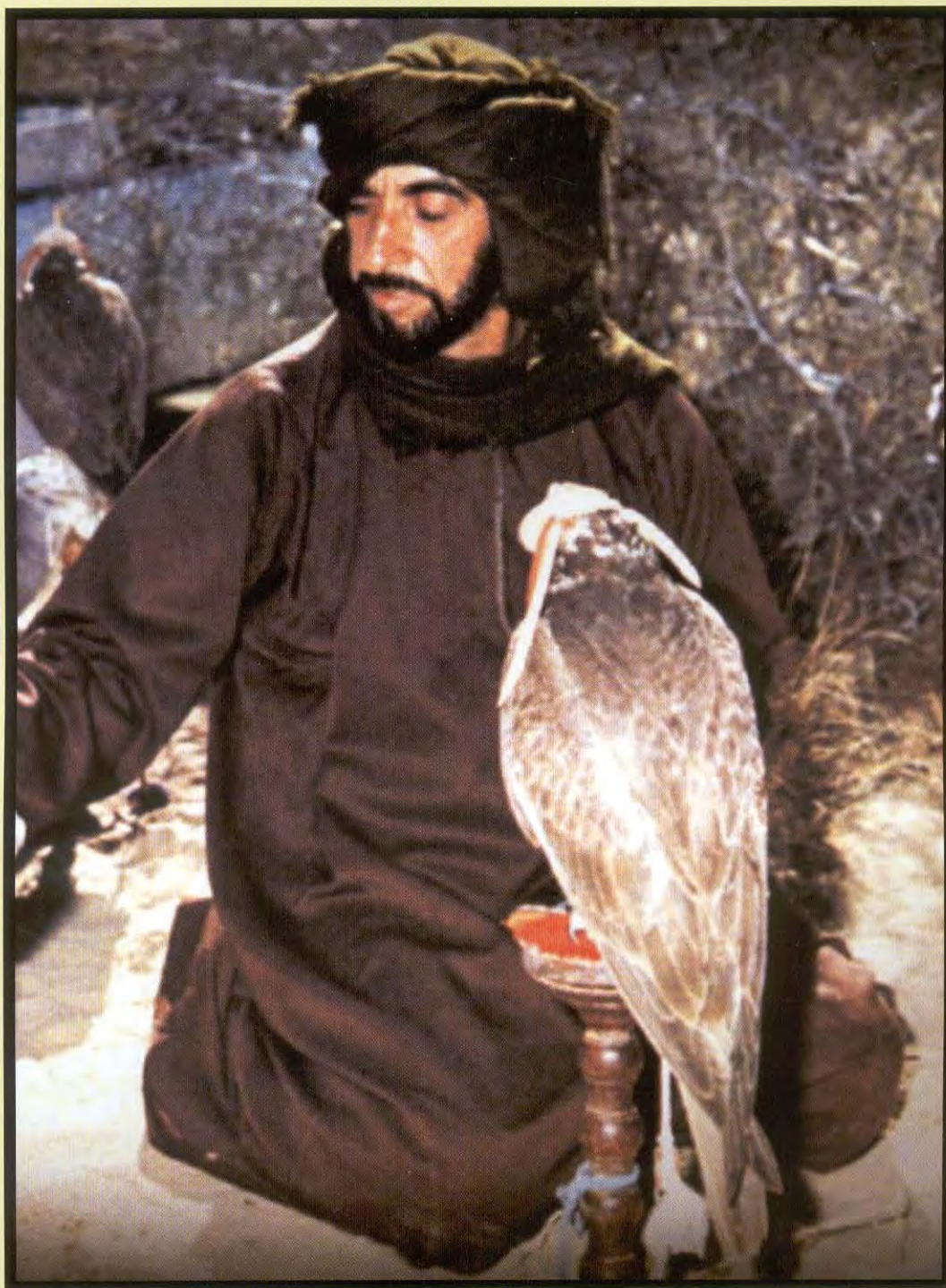
TRIBULUS



Journal of the Emirates Natural History Group

Vol. 14.2

Autumn/Winter 2004



TRIBULUS

NOTES FOR CONTRIBUTORS

TRIBULUS is the Journal of the Emirates Natural History Group and was launched in 1991. The Group was founded in 1976, and over the next fourteen years, 42 issues of a duplicated Bulletin were published.

TRIBULUS is published twice a year. The aim of the publication is to create and maintain in standard form a collection of recordings, articles and analysis on topics of regional natural history, heritage, geology, palaeontology and archaeology, with the emphasis on the United Arab Emirates and adjacent areas. Papers, short notes and other contributions are welcomed from anyone but should not have been published elsewhere. Guidelines are set out below. The information carried is as accurate as can be determined, in consultation with the Journal's Advisory Panel and referees, but opinions expressed are those of the authors alone.

All manuscripts received are reviewed by the Editorial Board and appropriate Advisory Panel members and, where appropriate, are also submitted to blind peer review.

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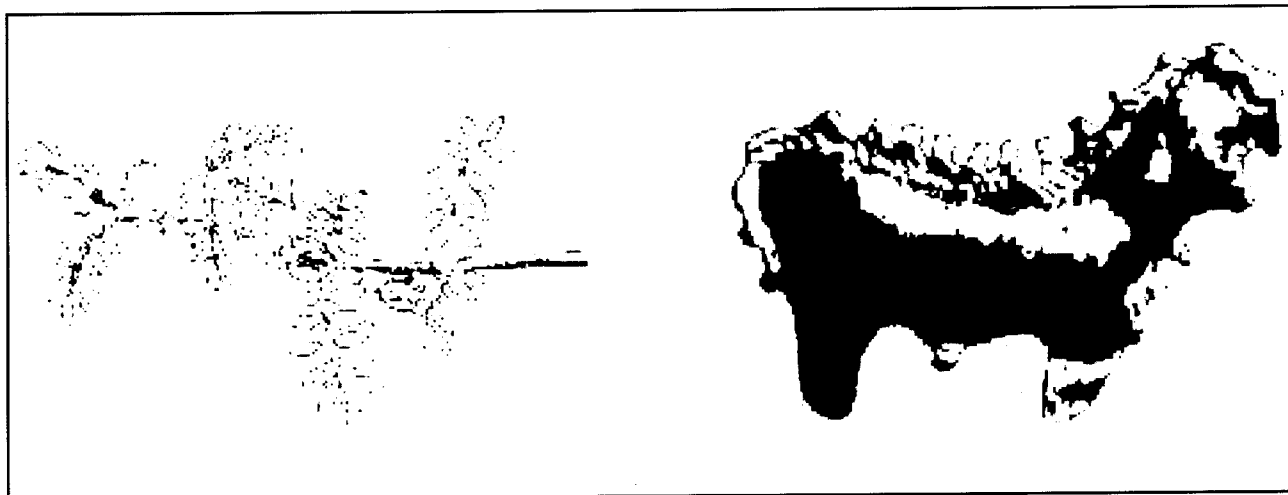
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The plant motif above is of the genus *Tribulus*, of which there are six species in the UAE. They all have pinnate leaves, yellow flowers with free petals and distinctive five-segmented fruits. They are found throughout the country, except in coastal sabkha.

The animal motif above is of a tiny golden bull, excavated from the early Second Millennium grave at Qattarah, Al Ain. The original is on display in Al Ain Museum, and measures above 5 cm by 4 cm.

Manuscripts should be submitted in electronic form, with a printed copy, typed on one side only, and double-spaced. A short abstract should precede the article, with the address(es) of the author(s) at the end. Photographs may be submitted and should be clearly captioned. Line drawings and maps, if not submitted in electronic form, should be in black ink on strong white or translucent paper. References should give the author's name, with the year of publication in brackets, and with the list of articles, showing title and publisher, in date order. Scientific names should follow customary nomenclature in Latin, while the English and, if appropriate, available local Arabic names should also be supplied.

International Standard Serial Number (ISSN): 1019 - 6919.

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Cover Illustrations:

Front: HH Sheikh Zayed bin Sultan Al Nahyan with a favourite falcon (*Emirates News Agency, WAM*)

Back: Fish trap on Yasat al-Sufla (*Simon Aspinall*)

The Editorial Board of TRIBULUS and the Committee of the Emirates Natural History Group acknowledge, with thanks, the support of the Group's Corporate members, a full list of whom can be found on Page 2, and without whom publication would be impossible. We also acknowledge the support and encouragement of our Patron, H.E. Sheikh Nahayan bin Mubarak Al Nahayan, UAE Minister of Education.

TRIBULUS is published for circulation to members of the Group, and is also available at selected outlets in the UAE and on subscription inside and outside the UAE. Subscription in the UAE & the Arabian Gulf states: Dh 50 per year. Overseas details on request.

The Group is a non-governmental member of IUCN, the World Conservation Union.

**Published by the Emirates Natural History Group,
P.O. Box 45553, Abu Dhabi, United Arab Emirates**

Designed by Wafa M. Morda'a & Genedine dela Fuente

Printed by Dar Al Fajr Press, Printing, Publishing and Advertising, P.O. Box 505, Abu Dhabi, UAE

EDITORIAL

This issue of *Tribulus* coincides with the passing of the UAE's first President, His Highness Sheikh Zayed bin Sultan Al Nahyan, who died on 2nd November 2004. A review of some of his direct, personal contributions to conservation and investigation of the country's environment and heritage is the first paper in the issue. It is appropriate, we believe, to pay tribute in this way to a man who was undoubtedly one of the leading Arab statesmen of the second half of the twentieth century, as well as being very much the founder of a consciousness about environmental and heritage issues in the country. The Editorial Board offer their condolences to his son and successor, HH Sheikh Khalifa bin Zayed Al Nahyan, to the Al Nahyan family and to the government and people of the United Arab Emirates.

The best way to acknowledge his work is to continue it, and we shall endeavour to continue to promote knowledge of the environment and heritage of the country he held so dear.

The second paper, by Mark Beech and Nasser Al Shaiba, represents the first detailed study of a type of archaeological site that is known to exist throughout the Gulf, but has been little reported – that of inter-tidal man-made structures. This paper reports on the discovery of several sites of this type on the island of Marawah, further evidence of the importance of this island to the UAE's archaeology. As is the case with many papers in *Tribulus*, this one may well represent only the tip of the iceberg – if its publication prompts the reporting of further sites of this type, we shall be well pleased.

The third paper is by one of our most regular contributors, Gary Feulner, who turns his attention on this occasion to the presence of 'landslide dams' in the Ru'us al Jibal. Only someone such as Gary, who has probably climbed more of the mountains in the UAE and Musandam than any other expatriate resident, could have put together a paper like this. It is easy to assume at first glance that the mountains have remained relatively unchanged for thousands of years, apart from the impact of erosion and the depletion of their natural vegetation as a result of climatic change and over-grazing. Here, as in his earlier paper on wadis that fork downstream, Gary shows that the geology is not immutable, or only changing very very slowly, but can be subject to sudden change. With the reports in the last couple of years or so of seismic tremors in the mountains, his paper is a timely reminder.

The fourth, and last of the main papers, is a lengthy study by Dr. Geoffrey King of a group of three Late

Islamic mosques on the island of Dalma. First recorded by the Abu Dhabi Islands Archaeological Survey, ADIAS, in 1992, these are the only group of their type still known to survive in eastern Arabia, and are a unique component of Abu Dhabi's architectural history. In recent years, they have been restored, and Dr. King's paper provides a detailed record of their state prior to restoration.

Our Notes section is shorter than usual this issue, because of the need to provide space for the four main papers (and even so, this issue is much longer than the now-conventional 28 pages). The single Note, by Drew Gardner, draws attention to the identification of a new species of viper, endemic to the UAE and Northern Oman, the Oman saw-scaled viper *Echis omanensis*, this now having been distinguished from Burton's saw-scaled viper *Echis coloratus*, formerly thought to be present here. The new species has been described on the basis of museum specimens – further confirmation, as if we needed any, that there is a real value to the maintaining of, and the proper curation of, museum reference collections of specimens. This is an area in which, sadly, the UAE is still lacking, although there are a growing number of specimens of various orders (insects and fishes, in particular) in private hands. We look forward, hopefully, but a bit cautiously, to the long-term establishment of some proper reference collections in the UAE in the years to come. It is right, and appropriate, that specimens of UAE flora and fauna can be found in major international scientific institutions, where they can be consulted by overseas scientists, but it is also essential that such collections are established in the UAE itself.

There is one Obituary – of a man, Edward Wiltshire, whose name is unlikely to be familiar to most readers of this Journal, even though he co-authored a paper on large moths in 1998. In a life of 94 years, he spent over 80 years of his time, when not engaged in a successful professional career in diplomacy, studying the insects of Arabia and elsewhere, an example to all those who believe that 'amateurs' can play a role in the promotion of scientific studies of natural history.

Finally, in our Review, Publications and Research section, mention is made of the PhD recently obtained by Chris Drew of the Environmental Research and Wildlife Development Agency, ERWDA, for his study of the Cape hare *Lepus capensis* in the deserts of Abu Dhabi. It is good to see some solid scientific results coming out of ERWDA's multi-faceted work. There are now quite a large number of archaeologists with doctorates on UAE topics, and we look forward to seeing more doctorates on natural history topics as well in the years to come.

Corporate Members of the ENHG

Production of *Tribulus*, and many of the other activities of the Emirates Natural History Group, including the grant programme of the Group's Conservation Fund, would not be possible without the generous support of the Group's Corporate Members, many of whom have provided consistent assistance over many years. The Editorial Board and the Group Committee acknowledge, with thanks, the invaluable support of the following companies and bodies, currently Corporate members of the Group, and all past Corporate sponsors:

Abu Dhabi Company for Onshore Oil Operations, ADCO; Al Fahim Group; Al Nasser Holdings; BP; Environmental Research and Wildlife Development Agency, ERWDA; Kanoo Group; Al Masood; Intercontinental Hotels; Jashanmal National Company; METCO; Motivate Publishing; Nama Development; National Bank of Abu Dhabi; Omeir Travel Agency; Richards Butler; Rotana Beach Hotel; URS Dames and Moore.

Intertidal Archaeology on Marawah island: New Evidence for Ancient Boat Mooring Sites

by Mark Beech and Nasser Al Shaiba

Introduction

This paper presents details of a new category of archaeological site which occurs in the intertidal zone on the island of Marawah. Three examples of these sites were recently discovered by Nasser Al-Shaiba during his duties on Marawah for the Marine Environment Research Centre (MERC), part of the Environmental Research and Wildlife Development Agency (ERWDA) in Abu Dhabi. Subsequently two further visits were paid to the sites by both authors to record their location and to take measurements and photographs of them.

The island of Marawah 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 (*Figure 1*). To the west is the island of Liffiyah, to the south-east the island of Junaina, and to the east the island of Abu Al Abyadh. 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 is 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. More recent surveys during the late 1990's and since 2000 have added more sites to this total.

Intertidal Archaeology

Very few archaeological sites are known in the intertidal zone along the coastline of Abu Dhabi. The rapid pace of development of the coastal zone, accompanied by such activities as dredging, reclamation, landfill and new construction, means that sites where they do exist are often under threat. Many sites may have been lost as the original course of the coastline has been dramatically altered, especially during the past ten years or so.

The aim of this paper is to highlight this important new category of archaeological site in the hope that it will encourage the reporting of further examples. Such sites should be protected as they form an important link with the past heritage of the UAE when the pearl trade formed the basis of the pre-oil economy. The coastal communities of the UAE have always had a close connection with the sea and it would be a pity if all traces of these structures were to disappear. Fortunately those discussed here are located within the Marawah Marine Protected Area (MMPA), which is being managed by the Environmental Research and Wildlife Development Agency (ERWDA) in Abu Dhabi, with the objective of preserving the natural diversity and quality of the coastal marine environment for the benefit of the people of Abu Dhabi Emirate and the UAE. Although these new sites discussed here should be safe for the foreseeable future, this sadly may not be the case for similar sites elsewhere.

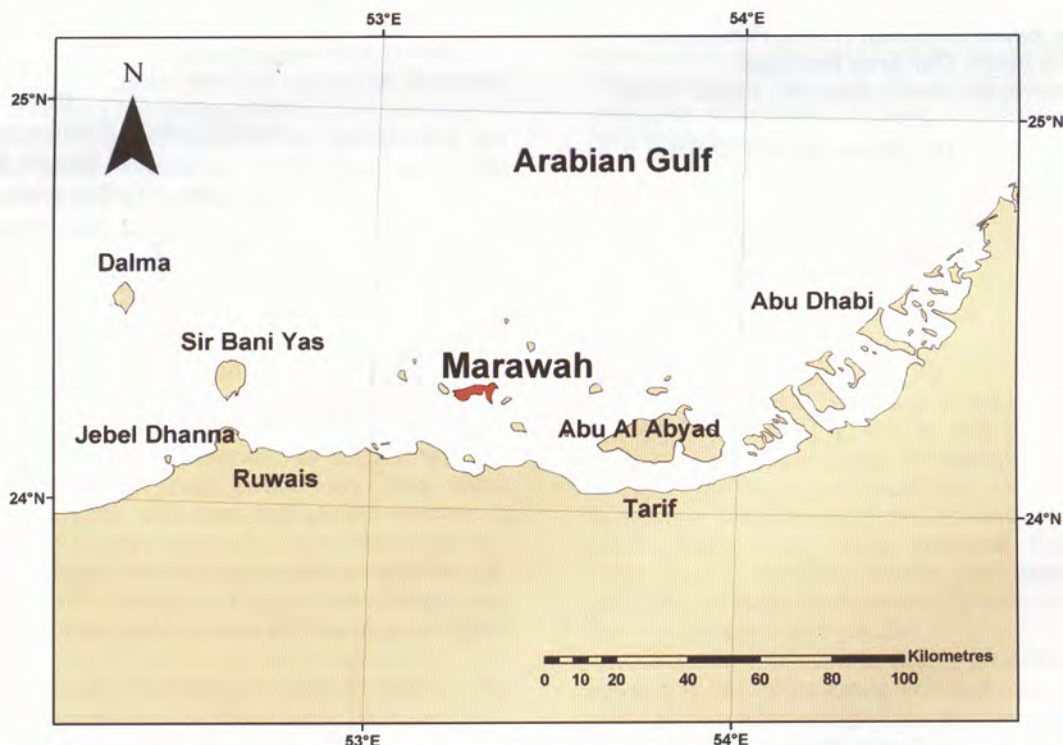


Figure 1. Location of Marawah island in Abu Dhabi emirate, UAE.

Intertidal Fish Traps

Among sites so far recorded in the intertidal zone of the United Arab Emirates are fish traps. These fall into several types.

The best known type are "*haddrah*" or "*al hadhra*". In Bahrain these are constructed over the course of one or two weeks by specialised fishermen called "*rassam*" (Al-Baharna 1986: 18). Such traps in Bahrain are often shaped like an arrowhead, the trap being perpendicular to the shoreline with the pointed end facing out to sea. However, in the UAE a variety of shapes are known, including mainly circular, pentagonal, square, "question mark"-shaped, or "banjo"-shaped traps. Such traps were made traditionally by driving a row of palm fronds and wooden stakes into the mud-sand bottom supported by stones at their base. A frond fence was then placed between these stakes out towards the outer circular/pentagonal enclosure, which in turn surrounded an inner chamber. With the receding of the tide, fish were thus channelled by the wings of the trap into first an outer, then an inner chamber. In the UAE these traps are traditionally used, especially during the summer months, to catch the blackspot snapper (*Lutjanus fulvivlamma*). Other typical kinds of fish caught using "*haddrah*" include needlefish (Belonidae), jacks (Carangidae), seabream (Sparidae), mullets (Mugilidae), barracuda (Sphyraenidae) and rabbitfish (Siganidae). Other bottom species may also be occasionally caught. The modern versions of the "*haddrah*" are usually made with steel or iron poles and wire mesh or nylon netting.

Other variants of tidal barrier traps also exist in the UAE. One is a wide fence of nets linked by wooden posts called "*sikar*" or "*sakkar*". This may be stretched across narrow estuaries or gaps in lagoons. This is particularly

used in the capture of mojarras (Gerreidae) and goldstriped seabream (*Rhabdosargus sarba*). Sometimes a second fence called "*dafaf*" is added behind the "*sakkar*", and this may catch fish like seabream (*Acanthopagrus spp.*) and flathead mullets (*Mugil cephalus*).

As traditional "*haddrah*" were made entirely of organic materials, there is little chance of identifying them in the archaeological record. However, the stone footings supporting the fence-like structure perpendicular to the shoreline leading out towards the main enclosure may still survive.

During April 1995 one of the authors (MB), along with Prof. Ernie Haerincx from the University of Ghent and Liz Popescu (née Shepherd) from the Abu Dhabi Islands Archaeological Survey (ADIAS) team, visited the island of Dalma as part of the ADIAS survey programme. Whilst travelling around the west coast of the island, less than a kilometre south of the municipal waste dump, a series of stone-built fish traps were observed. However, these do not appear to be simply stone footings for where palm frond *haddrahs* originally stood. They have quite solid stone walls constructed from the local beach rock, known locally as "*farush*". As these are located in the present intertidal zone, it is presumed that they are Late Islamic in date. Subsequent enquiries on the island regarding the antiquity of the traps produced no data. A whole series of walls appeared to project out from the shore, some were perpendicular to the shoreline, whilst others formed diagonal or arc-like shapes suggesting that the whole of the local bay was enclosed. Just below the line of the high tide was a large stone circular enclosure about 8m in diameter which had an opening on its seaward side (Beech 2003: 294, Figs.1-2).

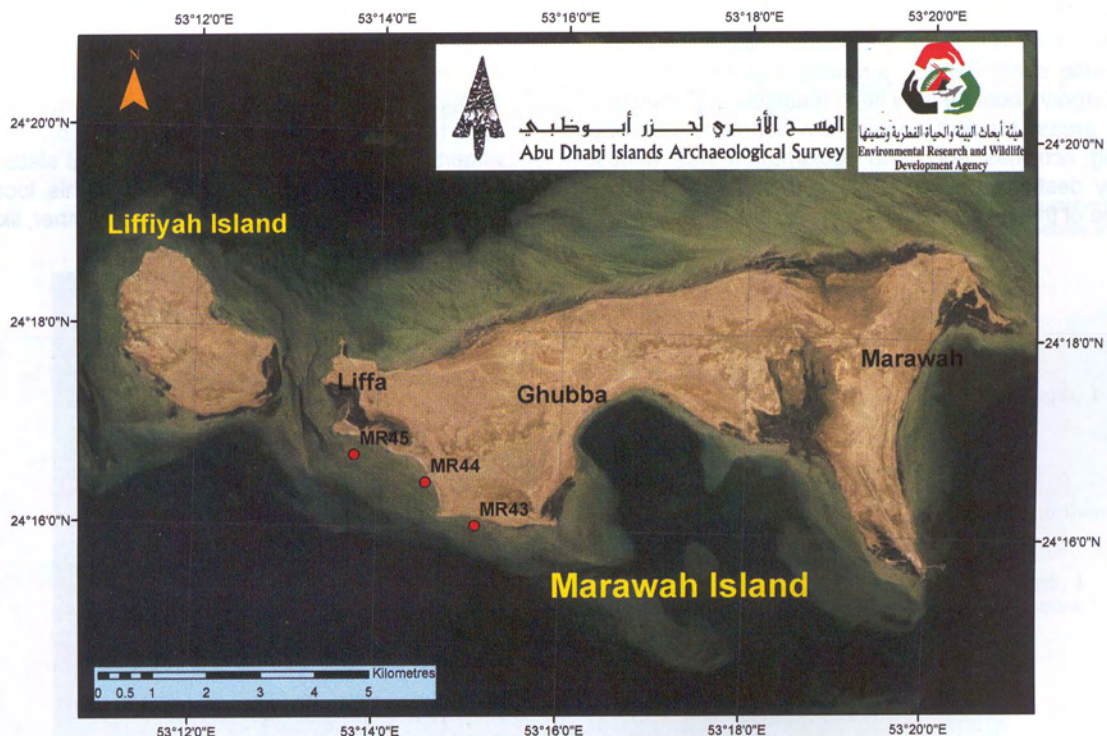


Figure 2. Location of the ancient boat mooring sites (MR43, MR44 and MR45)



Figure 3: General view south-east across site MR43. Tanya Atkinson and Karen Cooper from the ADIAS team are in the distance.

In April 2000 the first author (MB) briefly visited the island of Ghagha in western Abu Dhabi. Here he observed that a small bay on the north-west coast of the island was enclosed by a stone wall projecting in an arc to enclose the whole of the inlet. This appears to be a fish trap of the “*sika*” type but is made out of a wall of beach rocks.

Other fish traps made of stone have also been observed on other islands such as Qarnein and Yasat in the Western Region of Abu Dhabi (Simon Aspinall *pers. comm.*, back cover of this issue). The Qarnein example is located approximately 30 metres offshore, being in the angle of the bay formed by the westward turn of the coastline. It is constructed of a rough line of rocks which have been built in the form of a curve (Hellyer 1998).

These sites are not generally well known in the region largely because they lie in relatively unpopulated, remote areas. Modern coastal development including dredging activities and land reclamation has almost certainly destroyed many sites of this type along the coastline of the Emirates and it has been suggested that

surviving examples of these ancient fish traps should be preserved for posterity (Hellyer and Beech, 2001).

Stone Mooring Sites

In the spring of 2003 the second author (NAS) observed a series of three stone structures located in the intertidal zone on the south-west coast of Marawah island (*Figure 2*). Subsequent visits were made to the site by both authors in June and December 2003. The three structures are described in detail in Table 1. GPS co-ordinates are given in decimal degrees Latitude and Longitude, with WGS84 as the datum.

Site MR43 consisted of two parallel rows of stones (*Figure 3*). Part A to the north was 13.45 metres in length, whilst Part B was only 7.7 metres in length (*Figure 4*). There was a gap of about 8 metres between the two stone alignments (*Figure 5*). The stone alignments were constructed using local slabs of beach rock which had been carried out to this location and carefully placed leaning against one another, like toppled dominoes (*Figure 6*).



Figure 4: View of site MR43, Part B, with Nasser Al Shaiba.

Site MR44 consisted of two rows of stones located 6.6 metres apart (*Figure 7*). Part A was an almost straight row of stones, 8.7 metres in length, oriented N-S (*Figure 8*). Part B was a concave arc of stones, perpendicular to Part A, 12.5 metres in length, oriented NE-SW (*Figures 9-10*). These features formed a similar configuration to MR43 (cf. *Figures 5 and 11*).

Site MR45 consisted of three associated stone features (*Figure 12*). Part A was an almost straight row of 60 stones, 7.2 metres in length, oriented NW-SE. Part B was a curved arc of about 110 stones, 15.2 metres in length, oriented NE-SW (*Figure 13*). Part C was a cluster of stones ca. 2.3 metres in diameter.

These sites are all interpreted by the authors as representing ancient boat mooring sites. So why are these newly discovered stone features not fish traps? Several points seem to suggest that they are not some sort of "haddrah" or "sika". First, they are unlike the Dalma fish traps which generally join up from the present shoreline, and run perpendicular to or obliquely from the shoreline for considerable distances (often 25+ metres).

These Marawah sites stand separately some distance from the modern shoreline, between 120-250 metres out from the modern day high tide mark. The juxtaposition of the main paired walls does not resemble the usual barrier traps, and does not seem functionally to make sense as a fish trap. All three sites have a common feature in that the longer walls are generally oriented NE-SW and are located to the NW side of the complex. This suggests that the walls may have been deliberately constructed at this angle to provide shelter from the prevailing wind direction from the NW. The walls of these structures are quite solidly built and are constructed differently from the fish traps seen on Dalma. Whereas on Dalma misshaped pieces of beachrock were placed on top of one another to form an irregular wall, the examples on Marawah are constructed with large slabs of beach rock laid against one another like leaning dominos (*Figure 6*). Some of these are quite massive suggesting that the aim was to construct a substantial feature immovable by waves and tides.

SITE CODE	E	N	DESCRIPTION
MR43	53.25132	24.26724	Two rows of stones (See <i>Figures 3-6</i>): Part A = an almost straight row of 33 stones, 7.7 metres in length, 1.1 metres wide, and 0.7 metres in height, oriented NE-SW. GPS co-ordinates for its two ends are: E 53.25132, N 24.26716 E 53.25133, N 24.26722 Part B = a curved arc of 70 stones, 13.45 metres in length, 1 metre wide and 0.7 metres in height, oriented NNE-SSW (See <i>Figures 4 and 6</i>). GPS co-ordinates for its two ends are: E 53.25124, N 24.26725 E 53.25133, N 24.26731
MR44	53.24221	24.27437	Two rows of stones located 6.6 metres apart (See <i>Figures 7-11</i>): Part A = An almost straight row of stones, 8.7 metres in length, 0.9 metres wide and 0.6 metres in height, oriented N-S (See <i>Figure 8</i>). GPS co-ordinates for its two ends are: E 53.24221, N 24.27429 E 53.24221, N 24.27437 Part B = Perpendicular to the above row of stones is a concave curved arc of stones, 12.5 metres in length, 0.65 metres wide, and 0.8 metres in height, oriented NE-SW (See <i>Figure 9-10</i>). GPS co-ordinates for its two ends are: E 53.24213, N 24.27439 E 53.24225, N 24.27445
MR45	53.22923	24.27875	Three associated stone features (See <i>Figure 12-13</i>): Part A = an almost straight row of 60 stones, 7.2 metres in length, 1 metre wide and 0.55 metres in height, oriented NW-SE. GPS co-ordinates for its two ends are: E 53.22926, N 24.27870 E 53.22923, N 24.27875 What looks like an old abandoned steel buoy is located at the northern end of this row of stones. Part B = a curved arc of about 110 stones, 15.2 metres in length, 1 metre wide and 0.75 metres in height, oriented NE-SW (See <i>Figure 12</i>). GPS co-ordinates for its two ends are: E 53.22916, N 24.27878 E 53.22924, N 24.27892 Part C = a cluster of stones ca. 2.3 metres in diameter with a height of 0.7 metres. GPS co-ordinates: E 53.22932, N 24.27882

Table 1: Sites MR43, MR44 and MR45 on Marawah

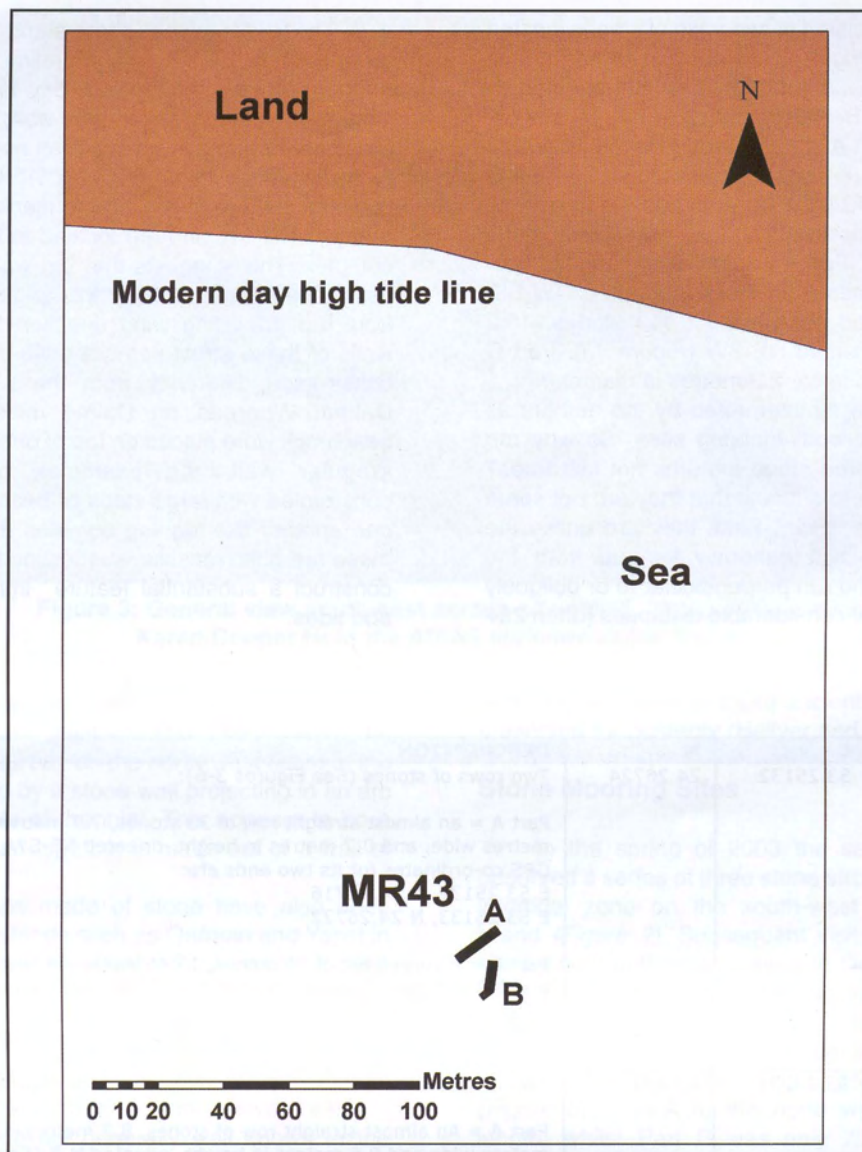


Figure 5: Plan of site MR43.



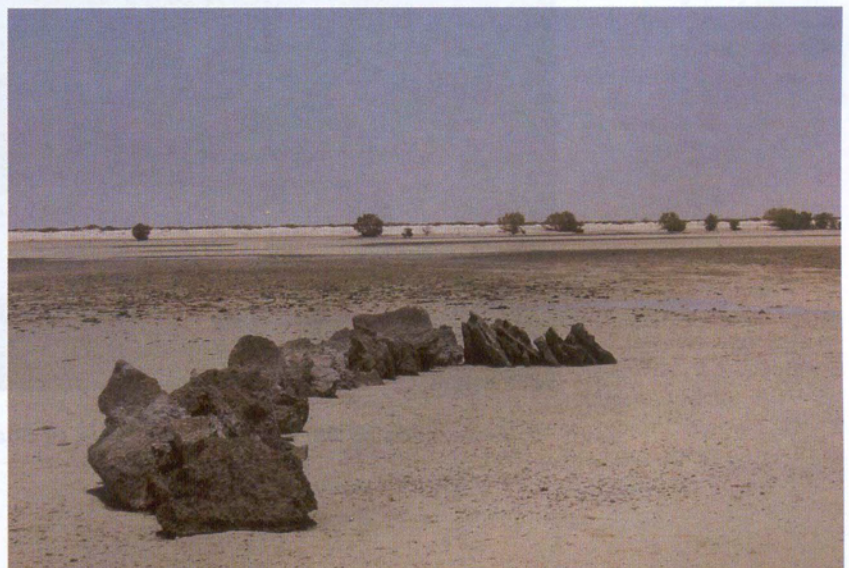
Figure 6. Close-up of part of the structure at site MR43, Part B.

Figure 7. General view of site MR44 looking SW.



Figure 8. View of site MR44, Part A.

Figure 9. View of site MR44, Part B.



It seems likely that these structures may have been some sort of mooring sites for small traditional boats. The second author was informed by Ahmed Hathbour Al-Rumaithi, whose family are from the nearby village of Ghubbah, that these stone structures had been once used by the island community. They had been apparently utilised as mooring jetties by the pearling boats as they sought shelter on the island. Their location on the southern side of the island would have certainly provided excellent shelter from the fierce north-westerly ("shamal") winds.

Stone Jetties on Abu al-Abyadh

Similar man-made jetties have been identified by ADIAS on the island of Abu Al-Abyadh. These were described as follows:

"At least four probable man-made jetties have been located, two at Site ABY 30, and at Sites ABY 41 and ABY 42, with a further possible structure at ABY 18. All of these are at least 10m long, and so would have been well suited to the mooring of traditional boats such as "houre", "baggarah" and large fishing vessels" (Hellyer & Hull 2002: 31-32).

Site ABY 18 (E 53.87556, N 24.26262) comprised a sparse scatter of pearl oyster (*Pinctada radiata*) shells, an extensive scatter of Late Islamic pottery, a hearth and an adjacent rock-built jetty (Hellyer & Hull 2002: 33).

Site ABY 30 (West end = E 53.73931, N 24.23588; East end = E 53.74094, N 24.23551) consists of two lengths of arranged, locally derived stones, around 80 metres apart and each extending from natural outcrops on the shoreline out into the sea for c.20 m. They are each c.1.0m wide, around 3-5 courses high and c.1.0 m in elevation (Hellyer & Hull 2002: 35).

Site ABY 41 (E 53.70345, N 24.21661) is a small jetty observed offshore just to the west of Khor Abu Al Abyadh. It is not visible at high tide. It is a slightly curvilinear arrangement of local stone blocks (typically 0.5m across), forming a feature c.40m long x c.1m wide. This feature extends from a rock outcrop and runs in an approximately east-west direction, and thus parallel to the shoreline (curving slightly towards it), at a distance of around 25m from it (Hellyer & Hull 2002: 36).

Ali Mattar al-Rumaithi, a UAE national who spent much of his childhood on the island, remembers such types of sites being used as jetties for small local craft (Hellyer & Hull 2002: 35).



Figure 10. View of site MR44, Part B, with Nasser Al Shaiba and Simon Aspinall.

Conclusions

The newly discovered ancient mooring jetties on Marawah will now be protected within the Marawah Marine Protected Area and represent excellent examples of such sites, intimately connected with the maritime heritage of the UAE.

Several of those noted above are not visible at high tide such as the fish traps on Dalma and stone jetties on Abu Al Abyadh, and further surveys of the archaeology of the intertidal zone should be undertaken. This is particularly relevant to the shallow waters of the Abu Dhabi coastline. Many sites may have been overlooked during previous surveys if coastal areas are not surveyed at low tides then sites can be missed. Those on Dalma and Abu al-Abyadh were missed during the initial surveys carried out on the islands.

Dating of these sites is difficult. However, they presumably date to a period when sea levels had reached roughly their present level, i.e. to the later Islamic period, or to the last couple of hundred years or so. Archaeological sites on the coast of Marawah in the vicinity of the sites on this island have pottery from this period (King 1998).

The authors would be grateful for information concerning any further sightings of man-made stone structures in the intertidal zone. These should be reported to the Abu Dhabi Islands Archaeological

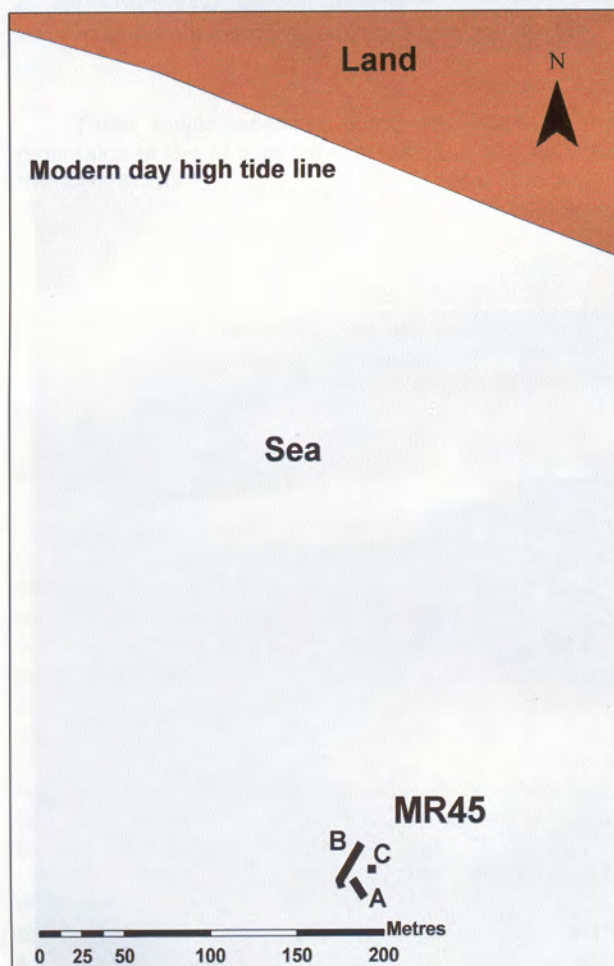


Figure 12. Plan of site MR45.

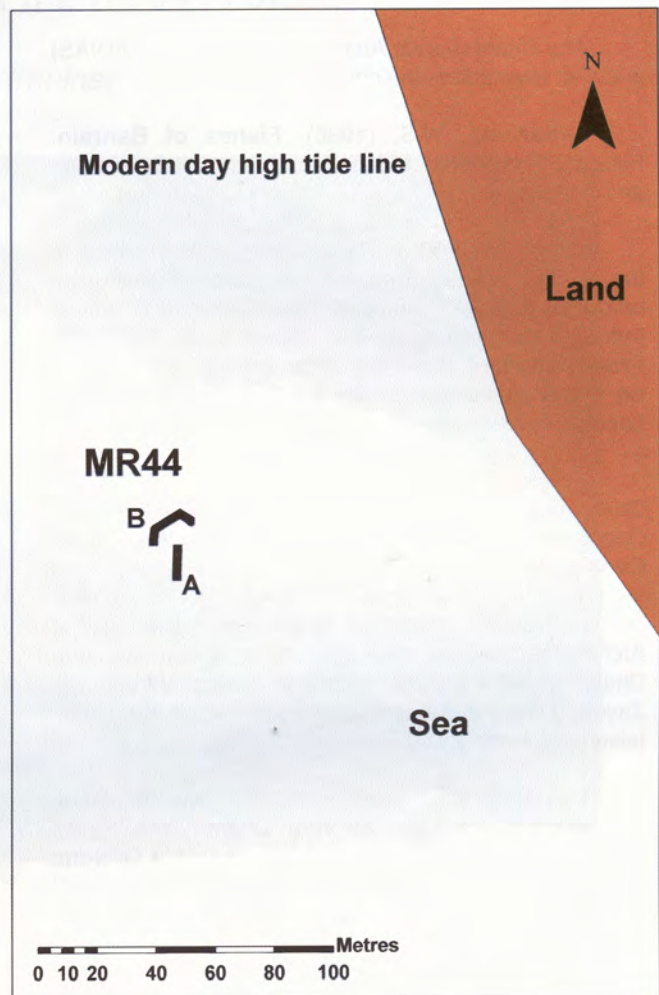


Figure 11. Plan of site MR44.

Survey (ADIAS), P.O. Box 45553, Abu Dhabi, United Arab Emirates – tel: +971 (0)2 6934515 – fax: +971 (0)2 6810008 – email: adiaz@erwda.gov.ae – website: www.adiaz-uae.com. Reports should preferably include photographic evidence and the GPS co-ordinates in the following format, Eastings and Northings in decimal degrees, with WGS84 as the datum setting.

All information submitted will be incorporated into the Archaeological Sites Database managed by ADIAS. This forms a component of the Abu Dhabi Environmental Database being developed by the Environmental Research and Wildlife Development Agency (ERWDA) in Abu Dhabi.

Acknowledgements

Thanks go to Simon Aspinall, Tanya Atkinson and Karen Cooper, all of ADIAS, who assisted the authors with the recording and photography of the Marawah boat mooring sites. Thabit Al Abdessalaam (Director of the Marine Environment Research Centre) and Ashraf Al-Cibahy (Head of Marine Protected Areas) from ERWDA and Peter Hellyer (Executive Director, ADIAS) and Simon Aspinall (Environmental Studies Unit, ADIAS), all kindly provided comments on an early draft of this paper.

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Figure 13. View of site MR45, Part B.