

# Abu Dhabi Islands Archaeological Survey Project

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### *New C14 results from Rufayq prove Iron Age Occupation of Abu Dhabi's Western Islands*

Radiocarbon dating of charcoal from four hearth sites on the island of Rufayq, east of Abu al-Abyadh, have proved for the first time the presence of occupation on the western islands of Abu Dhabi during the local Iron Age.

The hearths, Sites RU-2.2, RU-2.3, RU-5.1 and RU-5.2, were first identified by ADIAS during a baseline study of the area, carried out by ADIAS for the Abu Dhabi Company for Onshore Oil Operations, ADCO, in late 1998.

Studies of pottery in the vicinity of the RU-5 site suggested the possibility of occupation during the early First Millennium AD, and ADCO's Safety and Environment Department then agreed last year to fund radiocarbon dating of charcoal from four hearths.

Charcoal samples were collected last summer by ADIAS Academic Director Dr. Geoffrey King, field archaeologist Philippa Loates and ADIAS Executive Director Peter Hellyer. These were then shipped, with the help of ADIAS sponsor British Petroleum, to the Scottish Universities Research and Reactor Centre, SURRC, in Glasgow, UK, for dating. This process was finished in December.

Simplified results for the four hearths were as follows:

RU-2.2 2790 +/- 70 BP (Before Present)

RU-2.3 2890 +/- 110 BP

RU-5.1 2800 +/- 50 BP

RU-5.2 2480 +/- 60 BP

BP (Before Present) is defined for the purpose of conventional radiocarbon dating programmes, as being 1950 AD, with the +/- factor representing the margin of error. Thus the first three hearths all broadly fall within the period 940 to 840 BC,

with the fourth site dating to around 530 BC.

The first three sites can, therefore, be assigned to the Iron Age II period, which lasted from c. 1100 BC to 600 BC, with the fourth site falling into the Iron Age III period, between 600 BC and 300 BC.

Although a burial from the Iron Age has previously been identified at Bitashar, several kilometres inland from Jebel Dhanna, in the west of Abu Dhabi Emirate, these results from the Rufayq hearths are the first evidence so far of occupation on the western islands during the Iron Age. Although not unexpected, this evidence fills in the last remaining major gap in the sequence of occupation of the islands from the Late Stone Age, around 7500 BP, until the present.

During survey work on the coast and islands of Abu Dhabi, ADIAS has identified several hundred hearths, some in groups of half a dozen or less, and some in much larger groups, the largest of which is at Site MR-9 on the island of Marawah, which has over 150 hearths. Carbon 14 (radiocarbon) dating has previously been carried out on hearths from Marawah and from Balghelam, to the east of Abu Dhabi, and has produced a range of dates from around 2000 BC to 200 AD. Until now, however, there has been a gap during the Iron Age period. Thus the Rufayq hearths also help to fill in this blank in our knowledge of the occupation of the islands, and show that the same types of hearths continued to be used over a period of more than 2000 years.

Further studies of the hearths of Abu Dhabi's islands is planned, while ADIAS is now working with ADCO to ensure that protection is given to the important Rufayq sites.

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## ***Phase Two work on Sulphur Mines at Jebel Dhanna completed***

by **Daniel Hull**

ADIAS fieldwork conducted at Jebel Dhanna, between 27th November and 10th December 2000, continued the process of examining an extensive series of sulphur mines, initially recognised during archaeological reconnaissance in 1998. The work was carried out with the support of ADCO, who also commissioned the 1998 baseline study of the area.

Five sets of mines were found to be still in existence, comprising a total of over one hundred individual shafts. These shafts vary a great deal: some are circular with a diameter of around a metre, while some are thin clefts or trenches up to twenty metres in length. Their depth is variable also. Some are as little as half a metre, whereas some extend much further into the *jebel*, and are at least nine metres deep.

Tool marks still visible around the sides of the shafts suggest they were dug out by hand, using a metal, pick-like tool. Scatters of sulphur crystals are visible on the surface, especially within the large spoil heaps which surround each of the mine complexes, but also *in situ*, lying within the jagged sandstone which makes up the upper strata of the *jebel*.

Evidence of occupation, presumably left by those who dug the mines, is abundant, with the foundations of stone structures, mostly circular in shape, situated around the outside of each of the mine complexes. It seems likely that the Jebel Dhanna mines were in use for some time, because some of these structures appear to have been occupied, but were partially covered by spoil when new shafts were opened up, and further structures constructed elsewhere. Many of these structures have features which appear to be hearths in their centre.

Pottery, all of Late Islamic date, is present within and around many of these buildings, suggesting that the mine workers actually lived, rather than merely sheltered, on the fringes of the mines themselves.

This is supported also by at least two examples of elaborate water catchment systems, consisting of a series of depressions cut out of the rock and surrounded by walls, forming pools in which rain water could be captured and collected.

Although sulphur has a range of uses, notably for human and animal medicine, the scale and date of the mining complexes at Jebel Dhanna suggest

that they were dug in order to obtain sulphur for use as a constituent part of gunpowder, and therefore may have been exploited following the entry of European shipping into the Gulf from the sixteenth century.

Published studies of the British and Dutch archives dealing with the region do not appear to mention the existence of a sulphur industry at Jebel Dhanna, and it may be that the mines in question were managed as part of Portuguese activity in the area from the early sixteenth to the seventeenth centuries. Further research has still to be done to gather references to such an industry from the Portuguese National Archive, and assistance has been sought from the Portuguese-based oil company, Partex, a shareholder in ADCO, in obtaining access to data from Lisbon.

Participants in the November/December fieldwork were Simon Aspinall (ADIAS Environmental Studies Unit), Stephen Rowland (field archaeologist) and Daniel Hull (field director), while logistics support, including transport and accommodation at Jebel Dhanna was provided by ADCO.

A third phase of archaeological fieldwork is provisionally planned at Jebel Dhanna for next month. This will seek to confirm, through analysis of pottery as well as radiocarbon dating, the suggested date of the mines. It will also concentrate on excavating some of the structures already mentioned, in order to ascertain details about the living conditions, diet and activities of those dug the mines.

A paper on the results of the three phases of work will be presented by Daniel Hull to the First Emirates Archaeological Conference in Al Ain in April.

## ***New Sites found at Ra's Bilyaryar***

Ra's Bilyaryar is a headland, extending from a point on the mainland of Abu Dhabi c.60km north-east of Abu Dhabi island. Previous ADIAS fieldwork in the area identified a site on the headland (Site RB-1), dating to the early First Millennium AD, with additional evidence of occupation during the Late Islamic period. This was, at the time of discovery, the first early First Millennium AD site found on the coast and islands of Abu Dhabi, although several further sites have since been identified, including one on the island of Abu Dhabi itself.

A further survey of an area of sand dunes on the inland edge of coastal *sabkha* flats,

approximately 1.5 km. south-east of RB-1 was undertaken on 26th January by Peter Hellyer and Daniel Hull and five further archaeological sites were discovered and described with their GPS location being recorded. The new sites, Sites RB-2 to RB-7, appear to be occasional camp-sites, perhaps related to camel-herding, during the Late Islamic/Recent period.

The range of dunes on which the sites were identified is well-vegetated, and anecdotal information suggests that the area was used in the past for the grazing of camels following winter rains. The presence of the remains of recent camel-herding camps, including one with a water tank still present, (Site RB-4), indicates that this usage of the area continues, albeit perhaps less extensively.

The presence of Late Islamic pottery, including well-known wares such as Julfar ware, buff incised ware and 'Chocolate-Chip' ware is interpreted as evidence that this herding and grazing activity also took place prior to recent development of the UAE.

This area was first examined in early 1995, at which time the presence of ceramics was noted, but not formally recorded. In the period 1995-2001, extensive disturbance has occurred, including bulldozing and extraction of aeolianite and mud from the *sabkha*, and further disturbance is considered likely.

More archaeological sites of an ephemeral nature may be present on other parts of the dunes which were not examined during the brief survey, but it is provisionally suggested that these, if they exist, are also most probably of Late Islamic/Recent date.

The RB-2 to RB-7 sites may be loosely associated with the Late Islamic phase of occupation of Site RB-1 on the coastline, with its evidence of the exploitation of marine resources (molluscs and marine mammals).

They provide useful confirmation of anecdotal information relating to the use of this part of the coastal zone by local inhabitants during the Late Islamic period, and although they add little new information to the archaeological record of Abu Dhabi, apart from their geographical location, their discovery offers further evidence that many so far undetected sites are waiting to be identified, particularly in the coastal zone.

Details of the sites will be included in the ADIAS Sites Register and will also be incorporated into the new Abu Dhabi Environmental Database, being established by the Environmental Research and Wildlife Development Agency, ERWDA (*see separate story*).

## ***Archaeological Sites to figure in ERWDA's new Abu Dhabi Environmental Database***

Over the course of the next few months, ADIAS will be working with ERWDA, and other organisations and departments in Abu Dhabi, on the establishment of an Environmental Database for the Emirate.

The project, being administered by ERWDA as part of its mandate to develop and manage an environmental strategy for Abu Dhabi, is designed to bring together data from as many parties as possible that can be incorporated into the same general database.

In view of the recognition that archaeological sites are part of the national cultural heritage and also provide useful information about aspects of the Emirate's ecology in the past, ADIAS has agreed with ERWDA to provide simplified data on all of its sites for inclusion in the database. ADIAS and other bodies providing data will, however, retain control over their data.

As previously noted in the *Occasional Newsletter*, ERWDA is also providing ADIAS with access to its GIS mapping facilities, and has also provided us with office and storage space at Maqta, giving ADIAS its first dedicated office accommodation.

## ***ADIAS at Al Ain Conference***

As reported in the last *Newsletter*, the First Emirates Archaeological Conference is taking place in Al Ain from 15th-19th April. Under the sponsorship of Deputy Prime Minister H.H. Sheikh Sultan bin Zayed Al Nahyan, it is being organised by the Zayed Centre for Heritage and History in association with the Department of Antiquities and Tourism in the Eastern Region and the Ministry of Information and Culture.

Several of the speakers at the conference are currently or formerly associated with ADIAS, including Dr. Geoffrey King, Beatrice de Cardi, Mark Beech, Robert Carter, Elizabeth Shepherd, Joe Elders, Heiko Kallweit, and Daniel Hull, all of whom will deliver papers related to ADIAS work.

Any ADIAS sponsors wishing to have more information about the conference, or to be invited, should contact Peter Hellyer, either at the ADIAS address or at the Ministry of Information and Culture (P.O.Box 17, Abu Dhabi, e-mail: [extinfo2.mic@uae.gov.ae](mailto:extinfo2.mic@uae.gov.ae)).