TRIBULUS

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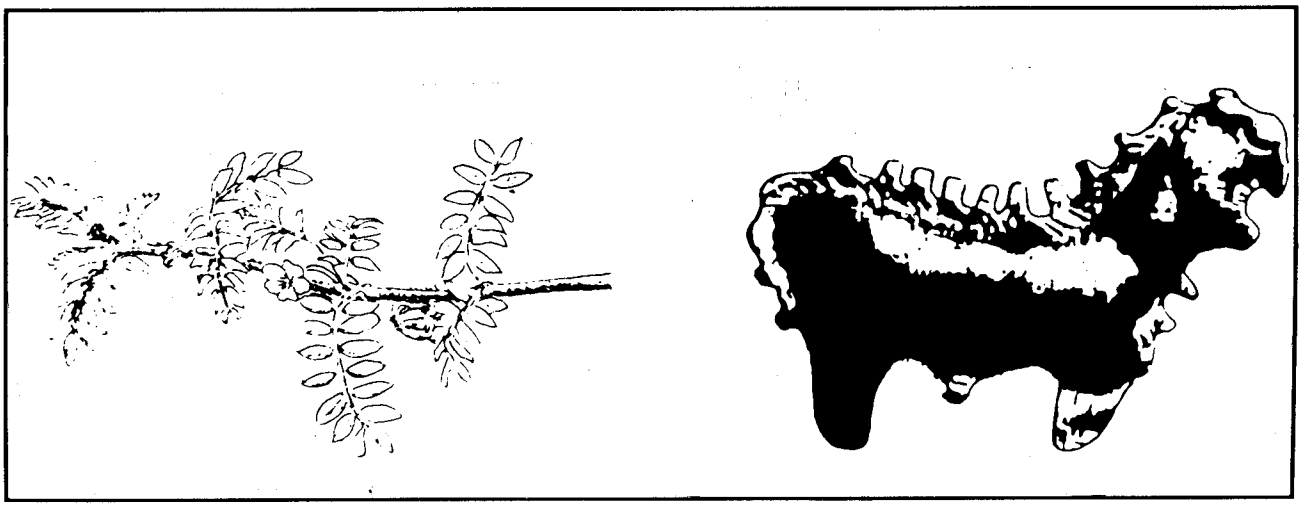
NOTES FOR CONTRIBUTORS

TRIBULUS is the name of the Bulletin of the Emirates Natural History Group. The Group was founded in 1976, and over the next fourteen years, 42 issues of a duplicated Bulletin were published. The revised format of TRIBULUS, introduced in1991, permits the inclusion of black and white and colour photographs, not previously possible.

TRIBULUS is published twice a year, in April and October. The aim of the publication is to create and maintain in standard form a collection of recordings, articles and analysis on topics of regional archaeology and natural history, with the emphasis focussing on the United Arab Emirates and adjacent areas. Articles are welcomed from Group members and others, and guidelines are set out below. The information carried is as accurate as the Editorial Committee can determine, but opinions expressed are those of the authors alone.

Correspondence and enquires should be sent to:

The Editor,
TRIBULUS,
Emirates Natural History Group,
P.O. Box 2380,
Abu Dhabi - U.A.E.



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 typed, on one side only, and double-spaced, and may be submitted in either English or Arabic. A short abstract should precede the article, with the address(es) of the author(s) at the end. For Arabic contributions, a short summary in English, of not more than 200 words, should also be supplied.

Photographs may be submitted and should be either glossy black-and-white prints or colour slides, which should be clearly captioned. Line drawings and maps 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 Arabic names should also be supplied.

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Cover illustrations:

English: A **Sooty Falcon** at its nest, one of the UAE's Red Data List birds.

Picture by Simon Aspinall

Arabic : Tombs from the Wadi Suq period overlooking Khor Fakkan.

Picture by Sabah Abboud Jassim

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 24, without whom publication in this format would be impossible.

We also acknowledge the support and encouragement of our Patron, H.E. Sheikh Nahyan bin Mubarak al Nahyan, the U.A.E. Minister of Higher Education and Scientific Research.

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Editorial

In the last issue of ***Tribulus*** Simon Aspinall made an eloquent plea for a network of protected areas in order to maintain the national biodiversity of the UAE. With much of the basic recording data now in place as a result of years of dedicated effort, not least by members of the ENHG, it is time to take stock of what we mean exactly by the term 'biodiversity.'

The World Conservation Union (IUCN) "Guide to the Convention on Biological Diversity" separates the notion of an all-embracing sum of ecosystems, species and genetic materials from that of the variability among them. After all, the former is hardly followed in modern agricultural practices, where the trend has been to reduce overall biodiversity in favour of selection of genes to produce monoculture crops in non-diverse ecosystems.

The IUCN argues that it is better to divide the term into its separate components — ecosystem diversity, species diversity and genetic diversity. By doing so it is possible to set clearer objectives for each. Simon Aspinall is in effect pleading for representative examples of different ecosystems in the UAE to be protected. With the Arabian Leopard Trust Marijcke Jongbloed is seeing to ensure that a particular species is not lost for ever due to human action. And the National Avian Research Centre is working on conserving inherited characteristics of species such as the Houbara Bustard. The Convention of Biological Diversity brings these concepts together in its three main aims — conserving the diversity of life, ensuring that natural resources are used sustainably, and ensuring that the uses of diversity are fair for everybody.

The Convention wording allows each country to decide for itself how to implement biodiversity in practice. The population of the UAE has risen dramatically in recent years, and with it man's impact everywhere in such a small country. Dunes are brushed aside to level land for farms and housing, new roads crisscross the desert and all the time there is the pressure of recreation on both land and sea. Hence in the UAE there is a need to promote *in situ* conservation wherever possible, and to preserve components of biodiversity which are under threat. This is precisely what Simon Aspinall, Marijcke Jongbloed, Richard Hornby and Benno Boer among many others are doing. As a Group we shall continue to observe and record but there is now a more urgent need for action to ensure that elements of biodiversity remain in this country for the foreseeable future.

The UAE is still a young country with a great potential, with its varied ecosystems and some areas relatively unscathed by the presence of man. It is time to think how we want to visualise the country's future — not only a land of cities, freeways and tourist resorts, but a land which satisfies the needs of an industrialised and urbanised population while at the same time incorporates a balanced and sustainable use of available resources.

There are clear signs that this is one of the Government's priorities, and the ENHG and sister bodies in the UAE can help as benign pressure groups, fostering interest and awareness of the country's biodiversity in all its forms. We are fortunate that nobody here in the UAE is any longer dependent on purely natural resources for daily life. Areas can thus be set aside for conservation purposes without posing a threat to the livelihood of any local community. At the same time local communities should be welcomed into a partnership with officials and scientists to help manage such habitats.

This issue continues to present a broad spectrum of heritage and natural history interests. The Index to the first five Volumes of ***Tribulus***, contained in this issue, will give an idea of our breadth of interest.

Beginning with archaeology, we focus on recent work on the island of Balghelam, close to Abu Dhabi, where Group members have also been studying the local natural history. The work on the island by the Abu Dhabi Islands Archaeological Survey has concentrated on the Late Islamic period, which has received little attention in studies into the country's past.

Also on archaeology, Dr. Sabah Jassem's article on Sharjah Emirate gives an update on excavations at various sites last winter. Most work was carried out on tombs from the Second Millennium BC, although work in Sharjah city also revealed two 'Ubaid sherds of the 5th Mill. BC were found, indicating that the area also figured in Gulf trade during that period. It is particularly pleasing not only to be able to publish a report from the Sharjah Directorate of Antiquities, but also to have the paper in both English and Arabic. More contributions in Arabic will be welcomed.

Of course, no issue of ***Tribulus*** is complete without something on birds, and Richard Hornby and Simon Aspinall give us their Red Data list, using internationally-recognised criteria to determine status. Such criteria are a useful tool which could well be adapted for other fields, such as botany and mammals.

A.R. WESTERN

Excavations on Balghelam Island — a preliminary report

by Salvatore Garfi

Introduction and Acknowledgements

This brief report is a summary of archaeological fieldwork carried out by the Abu Dhabi Islands Archaeological Survey (ADIAS) **[1]** on the island of Balghelam, north east of Abu Dhabi, between 20 January and 21 February 1996. Permission to work on the island was kindly granted and facilitated by its owner, Sheikh Surour bin Mohammed al Nahyan, Chamberlain of the Presidential Court of the United Arab Emirates and Chairman of the Abu Dhabi Water and Electricity Department.

The work described herein was undertaken as a direct result of a survey carried out in 1994 **[2]** by ADIAS which highlighted two areas of the south eastern part of the island as deserving further, more detailed archaeological investigation. These areas appeared to include evidence for water management on the island, and the remains of habitation sites. This report is only a preliminary synopsis of the fieldwork carried out in January and February this year. A more detailed archaeological report describing the results of the examination of the area showing evidence of water management will be compiled separately.

With the agreement of Sheikh Surour, a further short season of fieldwork will be undertaken on the habitation sites early in 1997, following which a detailed report on the two seasons of examination of this area will be compiled, this preliminary report being intended simply to give an introduction to the results.

The archaeological fieldwork was planned by Mr. Peter Hellyer, Co-ordinator of the Abu Dhabi Islands Archaeological Survey, and directed by Mr. Salvatore Garfi. Working with Mr. Garfi in the field were Messrs. Jakub Czastka and Alexander Wasse. Mr. Neil Ashcroft was loaned to the project by the Geodetic Engineering Department of the Abu Dhabi Company for Onshore Oil Operations (ADCO) to carry out a topographic survey of the eastern end of the island as part of the season's investigations. Labour for the excavations was provided by the workforce of the Abu Dhabi Municipality resident on Jazirat Balghelam.

Financial and logistic support was provided by a number of local companies and institutions, including ADCO, the Abu Dhabi National Oil Company for Distribution (ADNOC-FOD), British Petroleum, the Al Fahim Group, Dhabi Contracting, Ewbank Preece, the Abu Dhabi Hilton, Emirates Insurance Company, Al Wimpey laboratories and Emirates PhotoMarketing (Kodak).

Above all, the Abu Dhabi Islands Archaeological Survey wishes to thank Sheikh Surour, owner of Jazirat Balghelam, for his kindness in supporting and facilitating this fieldwork, and for his keen interest in the archaeology of the United Arab Emirates. Thanks are also due to his Private Office and to Mr. Martin Corrado, with whom we liaised throughout the duration of our stay on the island.

The Fieldwork Aims

The aims of this year's fieldwork, in accordance with the objectives of the project proposal submitted to Sheikh Surour in October 1995 **[3]**, were: 1) to continue the archaeological survey of Jazirat Balghelam, carried out in 1994, by identifying sites in those areas of the island not previously assessed; 2) to undertake archaeological excavations in at least two areas earmarked as a result of the fieldwork in 1994 as being worthy of further, detailed investigation, **[4]**; and 3) to prepare a topographic map of the archaeological features visible on the eastern end of the island, wherein the areas selected for excavation are located.

— تقرير موجز عن أعمال التنقيب التي تمت في بداية ١٩٩٥ بواسطة بعثة مسح الآثار بجزر أبوظبي، والتي تمت على مواقع الآثار الإسلامية بجزيرة بلغليم في شمال شرق أبوظبي.

The Survey

In the 1994 survey 11 'sites' or archaeological features or groups of features were noted and described. They were given sequential numbers with the prefix 'BG,' designating the island of Balghelam, and they were listed and described in the report submitted to Sheikh Surour in January 1995 by Peter Hellyer *et al.* In this year's fieldwork, a further 10 sites were located, all of which were occupation areas or oyster shell middens, primarily along the northern and southern coasts of the island, and to the east of the headland of Ras Yah. From pottery identified on the new sites, which included imported Persian glazed wares dated to the Seventeenth or Eighteenth Centuries AD, all were comparable in date with the Late Islamic occupation previously identified. The newly identified sites will be described in detail in the fuller reports to be compiled upon completion of the short second field season, while details of Sites BG-1 to BG-11, summarised from the 1994 survey report, are attached to this Report as an ***Appendix.***

The Excavations

The 1994 preliminary survey had brought to light three particular areas or features worthy of archaeological excavation. They were a presumed settlement or 'village' at site BG-6, made up of substantial sub-circular sand and stone mounds outlining depressions, with a visible well and probable water catchment system at their northern limit. To the immediate south and east of these features, and still recorded as part of BG-6, there was an area of hearths and low mounds.

After excavations were undertaken in these areas, a further area was selected for excavation at Site BG-5, more than 75 metres to the north east. Site BG-5 consisted of hearths and low mounds positioned above a relict shoreline. **[5]**.

One of the surprises of this year's fieldwork was the realisation that the presumed settlement site made up of sand and stone mounds was not a small 'village' or cluster of simple stone structures, as was postulated during the 1994 survey, but was, instead, a well field of probably more than 11 wells. In fact the well still visible at the northern limit of the sand and stone mounds adjacent to the track, which had initially drawn attention to the site, was probably the very last well in use on Balghelam prior to the immediate past.

Site BG-6: The Well Field

The well field covers an area of circa 30 m. E-W by 40 m. N-S, and lies immediately south of the track running from East to West along the southern limit of the island. The irregular mounds of sand and sandstone which make up the site can reach a height of approximately 1 metre above the present ground surface, and appear to outline shallow depressions. At the northwestern limit of these mounds, there is a slightly curved drystone alignment of stones which strikes out in an approximately north west direction for 70 m.

After the heavy rains of January 1996, it was confirmed that this stone delineation was a very effective water retaining wall, as was presumed to be the case during the 1994 survey. Water collected in a pool on the slightly sloping ground to the north of the well site, where it soaked into the ground or partially drained into the one clearly visible, though filled in, well on the site.

The well field was explored through the excavation of three trenches, or excavation areas, referred to as Areas (or trenches) I, II and III.

Area (or trench) I was excavated in two stages. First, a north to south 2 x 20 m. trench was laid out along the eastern limit of the sand and sandstone rubble mounds. It was difficult to make out features in this initial limited excavation area, so the trench was widened to the west by 3 m. to a width of 5 m. By widening the trench, it became evident by the end of the excavation that the mounds of sand and rubble which made up the surface remains on the site were, in fact, spoil heaps from the repeated clearing out and re-digging of the wells. Five wells were excavated in the trench, but none of them were cleared to their full depth, since most of them were heavily undercut, making them unsafe. The diameter of the tops of the wells varied from 0.8 m. to more than 4 m. in diameter.

The largest well was located at the southern end of the trench, where water was reached at a depth of 3 m. from the present ground surface. Repeated clearing and re-digging of the wells was probably responsible for the various well diameters recorded. The local sandstone bedrock is very soft, but its top 10 to 30 cms. is quite hard and crystalline. It is quite likely that whenever wells needed to be cleaned out, to remove drift sand, for example, it would have been very easy to dig into the soft mass of sandstone making up the wells' sides, thus leaving an overhanging ledge of hard crystalline sandstone which would subsequently collapse either from its own weight or from the activities of people lifting water from the wells. The collapsed crystalline sandstone would then break into pieces into the wells, which in turn had to be cleared out, thus adding sandstone rubble to the accumulating sand mounds making up the surface features of the site. In fact, the excavating of Area (trench) III exposed a collapsed well which illustrated this phenomenon clearly.

Area (trench) II was laid out to 2.5 x 3.0 m. so as to excavate the one well visible on the site at the start of the fieldwork in January. The diameter of the well at its top is less than 1m and it was excavated only to a depth of roughly 3 m. its sides were irregular, showing signs of being re-cut and cleaned out.

Area (trench) III was laid out to the west of both Areas I and II. This was an exploratory trench, only 1.2 m. wide and 4.7 m. long, positioned approximately east to west across a ring of sand and sandstone rubble, and through the depression in the middle. The sole aim of this trench was to acquire an illustrative section through a relatively large well, which it successfully did. The well exposed had a diameter of 3.25 m. and had obviously collapsed. It was afterwards filled by drift sand, but was subsequently re-excavated with a diameter of 1.7 m.

Between Areas I,II and III, a total of seven wells were excavated. When added to the additional four depressions visible amongst the sand and rubble mounds on the site, this puts the number of wells on the site as at least eleven. Very little dating evidence came to light during the excavations of these wells, but two potsherds, both from deposits sealing wells in Areas I & III are datable to the 18th or 19th Centuries AD. This means that substantial well digging and maintenance is likely to have taken place on the island of Balghelam prior to this period, as well as during it, and, to some extent, into this century.

Site BG-6, The Hearths and Low Mounds:

There is a swathe of hearths and low mounds which begins directly to the east of Area (trench) I, extending more than 30 m. to the south, and spreading to the west for over 250 m. This swathe of features is positioned over what appears to be a relict shoreline and consists of small stone-lined rectangular hearths, simple circular hearths, pottery and shell scatters in the far west of the swathe and low mounds **[6]**. Similar spreads of features have been observed on almost all of the Abu Dhabi islands surveyed by ADIAS over the last few years. Their ubiquitousness was the reason for their inclusion in the season of fieldwork, while they will also be the focus of fieldwork during the short season in early 1997.

An area directly south of Area I was initially selected, consisting of three hearths and a relative concentration of sandstone fragments. A second area under 25 m. to the east was also selected which included a low stony mound. These areas were numbered Area IV and Area V respectively.

Area (trench) IV was laid out on an east-west axis, perpendicular to, and 30 m. south of, Area 1. Its overall dimensions were 9 m. E-W with a maximum of 7m N-S. On the compacted desert surface in this area, three hearths were visible as well as a spread of sandstone fragments. The surface of the ground around these features was trowelled to see if there were any remains of past 'occupation' surfaces, but none were visible. The only remnants of occupation were the hearths and stone fragments themselves.

Two of the hearths were rectangular. The northernmost of the three was 0.9 x 0.5 m., stone lined with vertical slabs 5 to 8 cms. thick and cut into the surrounding nat-

ural deposits by 0.37 m.. Approximately 5 m. south-southeast from this hearth was another rectangular hearth, 0.7 x 0.6 m., again lined with vertical stone slabs, but only cut into the earth to a depth of 0.2 m., and lined at the bottom by stones which were blackened by fire. Less than 2 m. to the northeast of this second rectangular hearth was a small circular hearth with no stone lining. It was 0.8 m. in diameter and approximately 0.1 m. deep. it seems that this last hearth was literally scooped out of the compacted desert surface, as opposed to being squarely cut out and lined, as had been the other two hearths. Such a hearth was described as 'ephemeral' by the 1994 survey [7].

Approximately 4 m. to the east of these hearths was a tumble of sandstone rubble, measuring 2.0 m. N-S and 1.5 m. E-W, and appearing vaguely semi-circular with an opening to the east. Upon excavating a windblown deposit from around the rubble, it seems that the stones could have been part of a crude stone barrier around a slight depression, probably caused by people occupying the feature and using it as a windbreak.

Area V was a 5 x 5 m. square laid out 23 m. due east of Area I. It was positioned so as to surround a low stone mound 3.5 to 5 m. in diameter, which was one of three mounds east and southeast of Area I. The top of the mound, only 18 cms. above the surrounding ground, was covered by an insubstantial concentration of sandstone fragments. Upon removing these, however, and trowelling away the desert surface, it became clearly evident that there was a stone-lined pit in the centre of the mound.

The pit was sub-rectangular in shape, 1.1 m. E-W by 1.4 m. N-S, 0.60 m.deep, and lined with sandstone slabs of various sizes, 8 to 15 cms. thick. The bottom of the pit had a stony, sandy fill which was mixed with much carbon, and the slabs making up the side of the pit had experienced extensive burning.

Around the feature was an accumulation of sand mixed with carbon. One of the strata making up this accumulation of material was a deposit of small gastropods. This feature has been interpreted as a large hearth, but its precise nature and use cannot be determined at present.

Site BG-5, Further Hearths and Low Mounds

Site BG-5 has been summarily described by the 1994 survey, (see *infra*, p. 9). It consists of a further swathe of hearths and low-lying mounds extending northwards, for all intents and purposes, from Area V in site BG-6 to an area cleared for falcon trapping which is approximately 200 m. north-northeast of site BG-6.

Two areas were investigated in site BG-5, Area VI, more than 10 x 15 m. in area, and Area VII, approximately 5 x 5 m. square, around 30 m. north of Area VI. These two areas were opened up during the last week of the first field season on Balghelam, when it was considered prudent that more of the hearths and mounds present in this general, southeast part of the island be investigated.

Area VI was only partially excavated. The rest of the area, however, was trowelled and clearly revealed a total of eight hearths or fireplaces. Seven of the eight seem to be stone-lined, with three of these appearing to be rectangular or sub-rectangular in plan. It is also quite likely that one of these could be similar to the deep hearth excavated in Area V.

Spreads of sand mixed with burnt material (carbon) are associated with some of the hearths, one of which had eggshell fragments in its fill. A striking feature of the hearths is that they seem to be grouped in pairs, except for one at the northern extent of the area, and one of the hearths of one pair which is juxtaposed with a third, smaller hearth. The smallest of the hearths is 0.4 m. in diameter, while the largest could have a maximum width of 1 m.

A small excavation was carried out along the eastern limit of Area VI where two probable wall alignments, under 1 m. apart, were visible on the ground surface. Upon excavation, a third wall fragment was revealed, equidistant between the two. The lengths of these three wall fragments are no longer than 2.6 m., and are in a roughly north-south alignment.

They overlie a 'soil-like' deposit which was filled with many deteriorating potsherds (probably due to a high salt content in the ground) with no diagnostic features, although one with finger-impressed decoration can probably be dated to within the Late Islamic Period (i.e. the 15th to 19th Centuries). About 2 m. north of these wall alignments there is what seems to be a dump of small gastropods over a sandy deposit mixed with ash.

Around 30 m. to the north of Area VI is the last area which was investigated during this season of fieldwork, Area VII. This area was laid out so that a mound very similar to that in Area V could be investigated.

Upon trowelling clean the desert surface of the area, the outline of a large, roughly circular stone-lined pit was visible. Upon excavation, its diameter was 1.3 m. and depth 0.5 m.

Its fill was made up of sand overlying a highly burnt deposit, while the sides of the hearth also showed extensive signs of burning, as was the case with the hearth in Area V.

The size of these hearths complicates their interpretation, and at present, it is possible only to make guesses as to their purpose [8].

Conclusion

As stated at the beginning of this preliminary report, the foregoing is only a summary or synopsis of the January and February 1996 fieldwork undertaken on Jazirat Balghelam by the Abu Dhabi Islands Archaeological Survey. A further season of work will take place early in 1997. In all probability, none of the recorded and excavated features pre-date the Late Islamic Period, but the ubiquitousness of the hearths, including the mounds, and the shell middens noted in the survey of 1994 and in this year, as well as the well field of at least eleven wells, with the associated water catchment feature, indicate that Balghelam was by no means a barren island from around the Sixteenth Century onwards. The features excavated and recorded suggest, indeed, a continual presence of people on the island. This is in keeping with other findings by ADIAS on other islands off the coast of Abu Dhabi, both close inshore, like Balghelam, and further out, where similar remains of human occupation have been observed that are believed provisionally believed to date from prehistoric times until the Late Islamic period.

The absence of finds on Balghelam which clearly predate this Late Islamic period has yet to be explained by archaeological investigation, although, in view of the extent of earlier occupation on a number of other islands, particularly to the west of Abu Dhabi island, as well as evidence of occupation during the early centuries of the First Millennium AD at Ras Bilyaryar in the Sheleala area, not far from Balghelam, it is likely that Balghelam was also used during this period.

The findings of the season on Balghelam add to a picture that is slowly emerging which suggests that the islands of Abu Dhabi make up a land-and-sea-scape wherein people in the pre-modern period exploited and managed the available marine and terrestrial resources in either fixed settlements or seasonal campsites. These were probably centred on water procurement sites like the well field on Balghelam, which could have served not only Balghelam itself but other nearby islands. Such well fields would have been as important to island communities as oases and well sites would have been to desert pastoralists, and it is worth noting that evidence of other water procurement sites has been identified on a number of other islands relatively nearby, such as Futaisi and Bu Khushaishah.

The excavations on Balghelam have been of considerable importance in the overall scheme of the fieldwork carried out by ADIAS since 1992. They have allowed us to examine in more detail certain types of features which are visible on most of the Abu Dhabi islands visited by the survey, and have helped in their interpretation. The short further season of fieldwork on Balghelam in early 1997 should permit ADIAS to make further sense of the features so far recorded, and to see whether their spatial and temporal distribution can shed light on the way of life of the past inhabitants of Abu Dhabi's coast and islands.

As stated earlier, more detailed excavation and survey reports will be submitted subsequently after completion of the second short excavation season. These will be in two parts, the first covering the well field site, and the second the results of the excavations of the hearths and low mounds on Sites BG-5 and BG-6, together with the results of the further survey, both being illustrated.

APPENDIX

Preliminary Gazetteer of Sites

Summary of sites identified during initial survey visits to Balghelam in 1994, and initially described in Hellyer, P., Czastka, J. & Aspinall, S. (January 1995) *An Introduction to the Archaeology and Natural History of Jazirat Balghelam.*

BG-1 : Site 1: Open Mosque

GPS Co-ordinate: 40R 02 - 53 - 666 E
27 - 19 - 141N

Immediately to the west of the causeway linking Jazirat Balghelam with Jazirat Umm Al Barak, a sandy track turns south along the eastern edge of Balghelam. Approximately 75 metres along the track, at the apex of a point where it divides into two, are three vertically inserted slabs of beach rock, abutting each other, and aligned with a slight curve. They stand to a maximum height of 0.7 metres. These possibly represent the remains of a *qibla* wall or roofless mosque.

BG-2 : Site Two : Raised Circular Mound and Stone Wall

GPS Co-ordinate as above.

Lying 31 metres west of the ?mosque is a cluster of several features in an area of low sandy terrain, with bedrock outcropping in places. First is a raised circular mound, 4.0 metres in diameter, consisting of shelly sand and sandstone rubble. Adjoining the mound on its north side is a single course drystone wall, running approximately 11 metres on a north-south alignment.

BG-3 : Site 3: Rectangular Hearths

GPS Co-ordinate as above.

Approximately 70 - 75 metres south west of the ?mosque, are a cluster of four rectangular hearths and several possible raised mounds. A small amount of Late Islamic pottery, mainly of a red coarse ware and a dark brown coarse ware, was found on the surface nearby, although it was not necessarily associated with the features. Prior to commencement of the January/February 1996 excavations, at least three further rectangular hearths were located in this area, two of which lay below the raised shoreline, suggesting that they were perhaps of later date than those on higher ground.

BG-4: Site 4: Raised Circular Mound and Pottery Scatter

GPS Co-ordinate: 40 R 02 - 53 - 767E
27 - 18 - 372N

Situated in a sandy area on the south west of the island, overlooking a very shallow inlet, is a raised circular mound, approximately 7.0 metres in diameter, composed of shelly sand, and standing between 0.4 to 0.5 metres above the surrounding surface. The top of the mound has a (falcon?) perch, consisting of 10-12 sandstone fragments, standing to a maximum height of 0.35 metres. On the west side are several areas of dark grey discolouration of the natural shelly sand, representing ash residues. At the northwestern edge of the mound is a roughly rectangular feature.

Approximately ten metres south of the mound is a localised pottery scatter. The pottery consists of 10 sherds of dark reddish brown Late Islamic ware, probably the remains of a single pot.

BG-5 : Site 5: Raised Shoreline with Associated Archaeology

GPS Co-ordinate: 40 R 02 - 53 - 655E
27 - 18 - 571N

(Partially excavated: January/February 1996)

Taking the route along the coastal track from the Open Mosque, (Site BG-1, *above*), and approximately 75 metres north east of the Well and Settlement Area, (Site BG-6, *below*), near the southern coastline of Balghelam is an area of raised bedrock approximately 2.0 to 3.0 metres above sea level, the edge of which is orientated along a rough north-south line, taking a sharp right at its southern extremity, about 30 metres inland from the coastline, to run east-west (see Site BG-6).

Taking the north-south line, the outcrop runs for some 240 metres, and is visible as a discontinuous line of sandstone rubble. At its northern end, the area has been cleared, for the placing of a spring trap to catch falcons. This area contains several dark grey patches and scatters of disturbed stones, the remains of former hearth structures. The features located on the ridge in-

cluded 26 rectangular hearth features, 5 ephemeral hearth features, seven raised circular mounds and four pottery scatters.

The rectangular features range in size from about 0.7 metres by 0.5 metres to 1.5 by 1.0 metres and are comprised of vertically inserted slabs of sandstone. The 'ephemeral' hearth features consist of localised concentrations of sandstone fragments, averaging 0.7 metres in diameter. Superficial surface scrape of these features reveals grey ashy deposits. The raised circular mounds are composed of sandstone rubble mixed with wind-blown sand. They average 2 to 3 metres in diameter and are 0.3 to 0.4 metres above the surrounding ground level. The pottery scatters are primarily localised concentrations of coarse red ware or buff olive-green ware, of presumed Late Islamic date.

As well as the features mentioned above, an isolated example of what could possibly be a water catchment system was located, composed of two drystone rubble walls inclined at angles into a series of gullies, with a third wall found some 15 metres 'downstream' of the other two.

BG-6: Site 6: Well field and settlement

GPS Co-ordinates: 40 R 02 - 53 - 432E (Well Site)
27 - 18 - 476N
40 R 02 - 53 - 425E (SE Point of Settlement)
27 - 18 - 476N

(Partially excavated: January/February 1996)

The main settlement area on Balghelam identified during survey lies close to the southern coast of the island, stretching from the beginning of the mangrove-fringed low tidal lagoon at the eastern end to a point where the coastline turns roughly south-westwards. Inland of, but parallel to, the present-day coastline is a slightly higher ridge, an extension of that mentioned above, (Site BG-5).

Approximately 400 metres west of the settlement site, the low line of coastal dunes is interrupted, and there is evidence of a former inlet, now largely *sabkha*, the entrance of which, judging by the presence of flotsam, is occasionally flooded at extreme high tides. A small portion of the site lies beyond the inlet.

As well as the archaeology described below, there are some half-dozen raised circular mounds immediately to the east of the *sabkha*-filled inlet mentioned above and to the south of the track. These features are mentioned here for the sake of completeness, but have not been recorded precisely.

The archaeology present on the Settlement Site can be divided into three categories.

A: Well field

B: Pottery, Hearths and Shell Scatters

C: Raised Circular Mounds, Rectangular Hearths and 'Ephemeral Hearths.'

Each category is discussed separately below.

A: Well Field (GPS 1 & 2)

Initially identified (Hellyer *et al.*, [1995]), as a possible settlement with a well, this area has been identified as a well field, following the early 1996 excavations. *(See excavation report, above).*

B: Pottery, Hearths and Shell Scatters (GPS as above)

Although the area of the 'Well Field' is largely devoid of artefact scatters, the area running 250 metres to the west and south-west has an abundance of pottery, and also hearths and shell scatters, many in association with each other, the main concentrations of which are found on the edge of the outcrop of bedrock where it abuts the present-day coastline.

The hearths differ in form from the rectangular ones found in association with the raised shoreline, (Site BG-5), or in the immediate locality surrounding the well field They are more 'evanescent' in nature, consisting of roughly circular alignments of rocks, on average 0.7 to 1.0 metres in diameter. Some four such hearths were found, all in association with pottery and shell scatters.

The pottery is characteristic of the Late Islamic period, consisting principally of unglazed wares, and is of four main types: a coarse red ware, a coarse red ware with black body fabric, (including the 'Julfar-type'); buff olive-green ware, and lightly-glazed green-brown ware. Fourteen localised scatters of pottery were found, many of them alongside both hearths and shells, the latter dominated by one species, Oyster, **Pinctada radiata**, although **Terebralia sp.** and gastropods were also noted.

C: Raised Circular Mounds, Rectangular Hearths and 'Ephemeral' hearths, (GPS as above).

Adjacent to the Well Field two, possibly three, raised circular mounds were located, 12 rectangular hearths and six 'ephemeral' hearths.

BG-7: Site 7: Shell and Pottery Scatter

GPS Co-ordinate : none available

Along the beach running immediately west from the Ras Yah headland, two small scatters of shell, mainly Oyster, **Pinctada radiata**, were noted. Several further small scatters were noted up to thirty metres inland. In association with the shell scatters inland were numerous sherds of Late Islamic pottery, including a red-brown coarse ware and a finer buff ware.

BG-8: Site 8: Graveyard

GPS Co-ordinate: 40 R 02 - 53 - 099E
27 - 19 - 284N

Immediately inland of the track running along the north side of Jazirat Balghelam, and approximately half way between the Ras Yah guesthouse and the causeway to Umm Al Barak, is an Islamic cemetery containing six graves. The two to the west were better preserved, showing headstones and footstones, and an outline around the edge. The other four graves, although no longer so well preserved, were also clearly distinguishable.

BG-9: Site 9: Shell, Pottery and 'Ephemeral' Hearths

GPS Co-ordinate as above

Immediately inland from the cemetery, and also stretching along the edge of the track towards Umm Al Barak for a distance of approximately 200 metres was a scatter of coarse red ware and coarse brown ware sherds. Dark grey discolourations of the sand - the location of simple ephemeral fireplaces - were visible close by.

Adjacent to the track, between the cemetery and the causeway, are at least three separate small scatters of pearl oyster **Pinctada radiata**, shells, as well as clams and other shells, including gastropods.

BG-10 : Site 10: Raised Circular Mounds and Rectangular Hearths

GPS Co-ordinate: as above

Approximately forty metres south west of the western end of the Cemetery is a scattered group of at least four features , including a collapsed circular mound and three disturbed rectangular features, possibly hearths. All are located close to an outcrop of sandstone that may represent a relict shoreline, (as is the case with Site BG-5, for example).

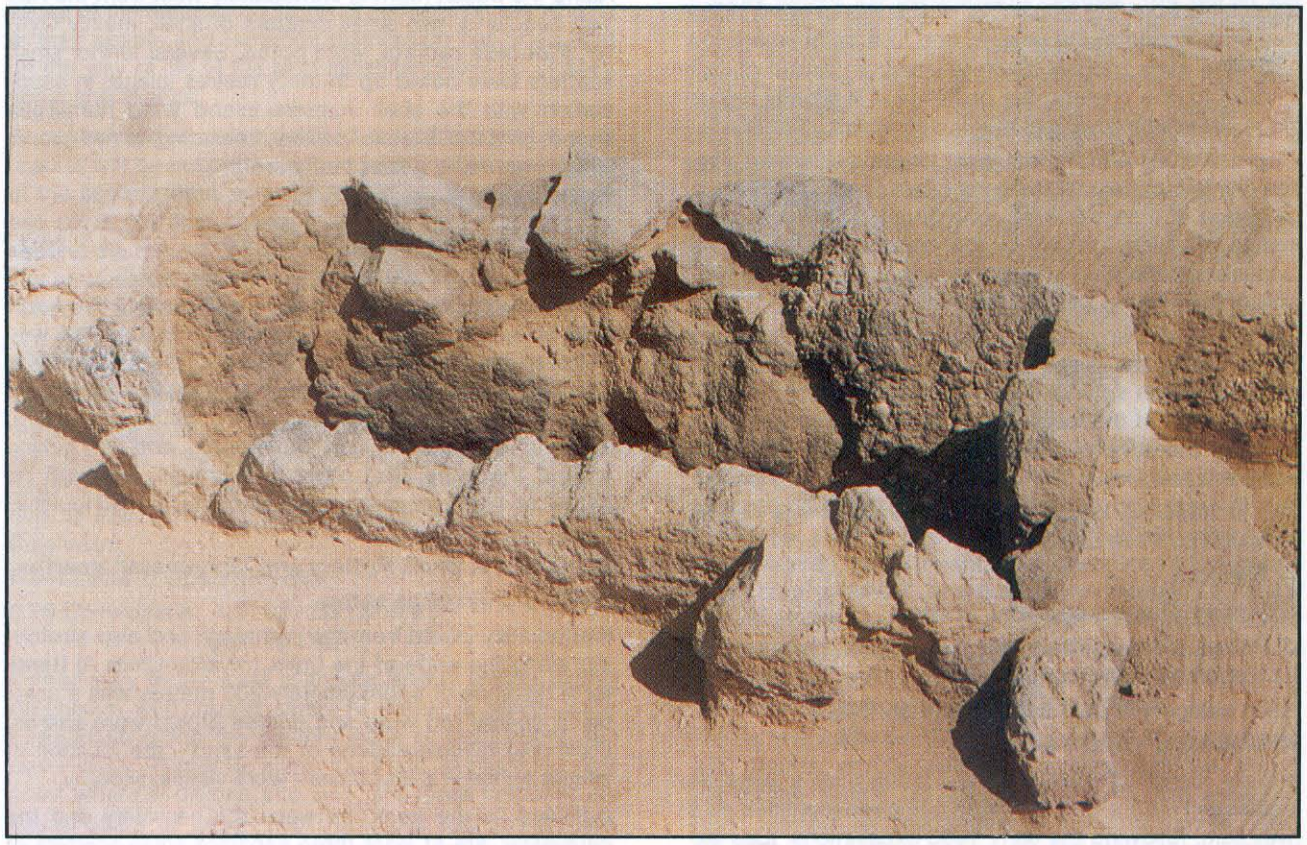
BG-11: Site 11: Rectangular Hearth

GPS Co-ordinate: not available

On the central part of the higher ridge running to the western tip of the island at Ras Balghelam, roughly opposite the Ladies' Resthouse, a rectangular hearth, of single slabs of beach-rock was noted and photographed in 1993, but has not subsequently been re-examined.

1. The Abu Dhabi Islands Archaeological Survey was established on the instructions of President His Highness Sheikh Zayed bin Sultan al Nahyan in 1992, and operates under the patronage of His Highness Sheikh Mohammed bin Zayed al Nahyan. It is directed by Dr. G.R.D. King of the Department of Art and Archaeology of the School of Oriental and African Studies, University of London; its Co-ordinator is Mr. Peter Hellyer.
2. Hellyer, P., Czastka, J. and Aspinall, S. (January 1995), *An Introduction to the Archaeology and Natural History of Jazirat Balghelam, Abu Dhabi, UAE.* A report to HH Sheikh Surour bin Mohammed al Nahyan. The Abu Dhabi Islands Archaeological Survey Project and the National Avian Research Centre.
3. Hellyer, P. (October 1995), A proposal for detailed survey and excavation of archaeological sites on the island of Balghelam, Abu Dhabi. Presented to HH Sheikh Surour bin Mohammed al Nahyan. Abu Dhabi Islands Archaeological Survey Project.
4. *ibid. p. 1*
5. Geographical Positioning System (GPS) co-ordinates for these sites are: Site BG-5: (40R) 02 53 665 E, 27 18 571N; and for Site BG-6: (40 R) 02 53 432E, 27 18 476 N, taken at the site of the visible well to the north of the presumed settlement or 'village,' and (40 R) 02 53 425 E, 27 18 476 N, taken at the apparent South East limit of the 'village.' These GPS readings were taken in 1994 with a hand-held Magellan 1000 Global Positioning System, which has an accuracy of only 70 - 80 metres. These readings are therefore only rough indications of location. An initial description of these sites can be found in Hellyer,P. *et al.*, (January 1995), *Op. cit.* pp.6-9., while a summary is included as an Appendix to this report.
6. *ibid*, pp. 7-9
7. Hellyer, P. (October 1995), *Op.cit.* p.1

Salvatore Garfi, BA MAAIS MIFA
Abu Dhabi Islands Archaeological Survey,
P.O.Box 45553, Abu Dhabi, U.A.E.



An excavated hearth on Balghelam. — *Picture ADIAS*

Excavations in Sharjah 1995-1996

by Dr. Sabah Abboud Jassim

The archaeological team of the Directorate of Antiquities of Sharjah's Department of Culture and Information began its 1995-1996 winter season on November 18 1995. The initial plan of work for the season was designed to include excavations and surveys in Khor Fakkan, Mileiha and Jebel Buhays, in order to complete work commenced in earlier seasons.

ـ تقرير موجز عن نتائج التنقيب عن الآثار خلال شتاء ١٩٩٥ ـ ١٩٩٦ والتي قامت بها إدارة آثار الشارقة. النص العربي موجود في الصفحة (٣٢).

ABU SHAGHARA

While the team was preparing to begin work in Khor Fakkan, His Highness Dr. Sheikh Sultan bin Mohammed al Qassimi, Supreme Council member and Ruler of Sharjah, instructed the team to carry out further surveys and excavations in the Abu Shaghara area of the city of Sharjah. In accordance with these instructions, intensive surveys, with limited excavations, were carried out in several areas during a period of one week. No buildings or other indications of permanent settlement were found.

However, a number of finds were made, of which the most important were two sherds of pottery with coloured decoration which were identified as being of the 'Ubaid period, in the Fifth Millennium BC. The discovery of the two sherds complemented the discovery of the previous season of 'Ubaid sherds during excavation of a shell midden in the Hamriyyah area and close to the Sharjah - Ras al Khaimah highway, around 12 kilometres north east of the city of Sharjah.

Taken together, the discoveries were of some significance as they provided further evidence that the Sharjah area, like some other parts of the southern Arabian Gulf, had been involved in commercial and other contacts with Mesopotamia during the Fifth Millennium BC.

Such relations continued in subsequent periods.

A team from the French Centre National des Recherches Scientifiques, CNRS, had previously carried out excavations in the Abu Shaghara area, (then described as the Qassimia area), in the mid-1980s, making a number of finds dated to around the Fifth Millennium BC, but had not found any of the typical 'Ubaid pottery.

KHOR FAKKAN

The work of the Sharjah local archaeological team during the previous season in the Khor Fakkan area had concentrated on work around the summit of a small mountain known as Hill Four, in which a total of 34 graves constructed of stone had been excavated. A number of important finds were made during the course of that season, which are now on display in the new hall of the Sharjah Archaeological Museum.

The plan of work for the 1995-1996 season including extensive excavation on top of another small mountain, Hill Two, adjacent to the Port of Khor Fakkan, and directly opposite the container terminal, as well as excavations at the foot of Hill Two and a third small mountain, Hill Three. The plan of work followed the identification during earlier surveys of archaeological sites on a number of the small mountains in the Khor Fakkan area.

The work on Hill Two took place in an area where a number of stone cairns had been identified. A total of 32 tombs were excavated, all of which had their entrance on the southern side, and which lay in a line in a north-east to south west direction.

Some of the tombs were small, suggesting that they were for the interment of children. Others appeared to be of a size designed to accommodate one or two adults, which was confirmed by excavation, while there were also a number of large cairns which were presumably designed for multiple interments.

Excavation of Tomb No. 22 uncovered two skeletons, lying beside each other and on their backs, a male, 175 cm. in height, and a female, 165 cm. in height. In other tombs, the skeletal material was disturbed.

Although there was only a limited number of artefacts recovered from within the tombs, the material will be of considerable value in understanding the period. Based upon a number of diagnostic items found in the graves, they have been ascribed a date in the Second Millennium BC, in the Wadi Suq period.

After completion of the excavations on the hill top, the team carried out a detailed investigation of areas at the base of the hill, where a number of important finds were made, including the remains of stone houses. Unfortunately, however, part of the hill had been destroyed by rock blasting prior to the study.

While the main team was working on Hill Two, another small team was assigned to survey the northern site of Hill Three, opposite Hill Two. The crown of this hill had previously been destroyed by bulldozers, and the team suspected that it had previously been the site of a tomb or tombs, as was the case on other hills nearby. The team therefore approached the relevant local authorities to request a cessation of bulldozing on the eastern side of the hill. An immediate and positive response to the request was received.

Excavations at the base of the hill uncovered a large building with a number of different sized chambers and courtyards.

A number of large pottery vessels were found in some of the rooms, while other artefacts indicated that the occupants had engaged in fishing for food. A date during the Wadi Suq period, in the Second Millennium BC, has been ascribed to the site. Excavations in Khor Fakkan ended on January 25 1996.

Tomb No. 22 at Khor Fakkan.

MILEIHA

On January 27, the team moved to Mileiha and to Jebel Buhays for a third season of work. In accordance with the plan of work for the season, sites at Mileiha were re-examined, but there were no plans for extensive excavations, as it was intended to concentrate on Jebel Buhays. A number of sherds of pottery and some bronze artefacts were recovered.

JEBEL BUHAYS

In the first season in this location, 31 tombs and other archaeological sites had been identified at the foot of Jebel Buhays, which had been ascribed a date of between 2,000 BC - 1,000 BC. Artefacts from the excavations are already on display in the Sharjah Archaeological Museum.

The new season was launched with excavation of a

number of further sites at the food of the mountain, and, in all, 14 sites were examined during the season. Finds indicated that the area had been extensively occupied. Large amounts of pottery were recovered, as well as dozens of bronze arrowheads, copper spearheads and other weapons, as well as gold and silver jewellery. The finds were ascribed to the Wadi Suq period, (the first three quarters of the Second Millennium BC).

During 1995, a collective grave containing over a hundred skeletons had been identified at Jebel Buhays, covering an area of around 60 sq. metres. Following trial trenches in the adjacent area, it appeared probable that further burials existed.

With the approval of His Highness Dr. Sheikh Sultan bin Mohammed al Qassimi, a team of anthropologists from Germany's University of Tubingen, led by Dr. Hans-Peter Uerpmann, was invited to join the Sharjah Directorate's team to study the skeletal material.

The excavations showed that some skeletons had been buried in a flexed position, and that secondary burials in the tomb had also occurred. Some of the skeletons were complete, and there appeared to be some variation in burial practices.

In the individual tombs, the burials appeared to have taken places with the knees flexed, with the upper part of the body and the face facing either left or right. Some tombs were for individual burials, while in other cases, two interments were discovered.

In one case, there were four skeletons, two of males, one of a female, and the fourth of undetermined sex.

In the main grave, all the burials appeared to have taken place with ornaments or jewellery, which included bracelets, armlets and anklets, made of stone, shell or pearls. Of particular importance was the discovery of a female skeleton which was heavily adorned with jewellery and other decorations.Among her jewellery were over 300 beads, including pearls, one of which was found upon her forehead, indicating that it had probably been affixed to her hair.

In the smaller, secondary graves, the bodies were buried without ornaments, and the partial cremation of some bodies was noted.

Archaeological Surveys

During the course of the season, the archaeological team of the Directorate of Antiquities continued surveys for previously unrecorded sites. A number were identified in the mountains surrounding Khor Fakkan, of which numerous petroglyphs were of particular interest. These were recorded and photographed for further study.

In the area of Mileiha and Jebel Buhays, the remains of a settlement were identified adjacent to Jebel Faiyah. Samples of pottery were collected for further study, while a first season of excavation is planned for the 1996-1997 season.

Artefacts collected during the season are being conserved, drawn, photographed and studied in preparation for the publication of a detailed scientific report.

Dr. Sabah Abboud Jassim,
Directorate of Antiquities,
Department of Culture and Information,
P.O.Box 5119, Sharjah, U.A.E.

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Red Data List for Birds of the United Arab Emirates

by Richard Hornby and Simon Aspinall

ـــ قائمة بالطيور المهددة بالإنقراض في دولة الامارات.

The status of birds in UAE has been reviewed and related to criteria used in other recent publications on the status of birds, particularly that for Yemen (Porter, 1993), Jordan (Porter, 1995) and UK (Gibbons *et al, in prep).* Though it is desirable to standardise criteria as much as possible, it is advisable to tailor them for each national Red Data list, while still remaining objective, if it is going to prove useful in directing the attention of conservationists to the species at greatest risk. The criteria which can be used depend on the state of knowledge within the country itself and within the world range of each species.

For the Red Data list for Jordan it was possible to use the Review which had been carried out by Birdlife International, 'Birds in Europe. Their Conservation Status,' (Tucker and Heath 1994), as many European breeding birds pass through Jordan on migration. In the case of UAE, however, most migrant species come from breeding grounds in Asia where information on the status is often poorly known or less readily available.

In considering the threat to birds in UAE it is clearly pertinent to give a lot of weight to the status of the species (and in some cases subspecies) in the Arabian Peninsula, which is, to us, a sensible and defensible geographical unit. We have therefore found it necessary to slightly modify otherwise internationally recognised criteria for the status of threatened birds. There is relatively little information on the current status of birds in Arabia and we suspect that several other species should be added to Criterion 3, Threatened in Arabia; breeding popula-

tion of Osprey and Sooty Falcons would be obvious candidates. For the purpose of this paper we consider Arabia to extend as far north as the southern borders of Iraq and Jordan.

The criteria we have used are as follows, in declining order of priority for nature conservation internationally:

1. **Globally Threatened, or Near Threatened.**
   Species which are facing a high risk of global extinction in the wild in the medium term future, as defined in 'Birds to Watch 2' (Collar *et al*, 1994).
2. **Small World Range ('Restricted Range').**
   Species whose breeding range is confined to Arabia or the coasts of the north-west Indian Ocean.
3. **Threatened in Arabia.**
   V: vulnerable – species considered vulnerable are those which depend on a very small number of sites which are known to be threatened in some way. D: declining – thought to have suffered a decline in range or numbers, in Arabia, of over 50% in the last 25 years.
4. **Threatened in UAE**
   Species which are vulnerable (V) in UAE because of their dependence on a small number of sites or on a habitat type which is known to be threatened in some way. Species which are declining (D) are thought to have suffered a decline in range or numbers, in UAE, of over 50% in the last 25 years.
5. **Rare Breeder**
   Species are listed in this category if they are believed to have an established UAE breeding population of less than 100 pairs.
6. **Important Rare Birds of UAE**
   These are species which are threatened or declining in all or a large part of their range in Arabia, or they are species with a small world range and important populations in Arabia. However, they occur in small numbers in UAE and it seems improbable that any action in this country would make any significant contribution to their conservation.
7. **Non-threatened**
   Species which occur in significant numbers in UAE, either as passage, wintering or breeding birds, and whose conservation status, in UAE, Arabia and globally, is not considered unfavourable.
8. **Pioneer Species**
   This category covers those species which are naturally establishing a breeding population for the first time in UAE, generally in response to the creation of man-made habitat in UAE.

Coverage of the lists

We have not listed any species which: (a) only occur in UAE as vagrants or in trivial numbers on migration, (b) have established breeding populations in UAE as a result of introductions by man, or (c) are associated with man and have breeding populations of at least 10,000 pairs.

In the lists which follow the status of the species in UAE is indicated by the following:

P: passage. W: winter. B: breeding.

Population status is indicated by: V: vulnerable in UAE. and D: declining in UAE.

Figures after species names refer to the number of breeding pairs in UAE (Aspinall, 1996). These remain best estimates for a number of species.

The categories are not all mutually exclusive, even within the UAE. Species can occur in more than one category (see Table 1), but they are only listed once, in the highest category in which they appear. The conservation status within UAE can, of course, differ from the conservation status in Arabia or globally.

The Lists

Restricted range species in other categories are denoted by the symbol †

1. Globally Threatened, or Near Threatened.

†Socotra Cormorant	B	D	32,085-34,285
Spotted Eagle	PW		
Lesser Kestrel	P		

Ferruginous Duck, Imperial Eagle, Corncrake, Sociable Plover and Cinereous Bunting, also regarded as Globally Threatened (Collar *et al* 1994) all visit the UAE but only in trivial numbers.

2. Small World Range.

Red-billed Tropicbird	B	DV	70-90
Crab Plover	B	V	335-400+
Sooty Gull	B	DV	235
Saunders' Little Tern	B	V	500-1000
White-collared Kingfisher	B	V	44-55
Arabian Babbler	B	D	2000-3000+

3. Threatened in Arabia.

Egyptian Vulture	B	V	(?10-50)
Lappet-faced Vulture	B	V	(?0-1)
Houbara Bustard	WB	D	(?0)
Booted Warbler	B	V	5-20

4. Threatened in UAE.

Osprey	B	D	70+
Sooty Falcon	B	V	14-25
Black-winged Stilt	B	V	100-300
Broad-billed Sandpiper	PW	V	
Cream-coloured Courser	B	D	10-100
Swift Tern	B	V	1,326
Lesser Crested Tern	PB	V	23,000-24,500
†White-cheeked Tern	PB	V	23,500-25,000
Bridled Tern	PB	V	42,000-45,000
Chestnut-bellied Sandgrouse	B	D	100-1000
Pharaoh Eagle Owl	B	D	10-50
Lesser Short-toed Lark	B	V	10-100
Booted Warbler	B	V	5-20
†Pale Rock Sparrow	P	V	

5. Rare UAE Breeder (not already named above).

Long-legged Buzzard	1-5
Bonelli's Eagle	10-50+
Kestrel	50-100
Barbary Falcon	10-100
Caspian Tern	1+
Cuckoo	10+
Striated Scops Owl	10-100
Blue-cheeked Bee-eater	20-100
European Bee-Eater	10-50
Hoopoe	10-100
Bar-tailed Desert Lark	5-10
Lesser Short-toed Lark	10-100
Rufous Bush Robin	50-100
†Hooded Wheatear	10-50
†Pale Rock Sparrow	10-100
Trumpeter Finch	10-100

6. Important Rare Birds within UAE.

Indian Pond Heron	W
Honey Buzzard	PW
Griffon Vulture	PW
Lanner Falcon	P
Saker Falcon	PW
Great Knot	PW
Great Snipe	P
Pintail Snipe	W

†Grey Hypocolius	P	
†White-throated Robin	P	
†Finsch's Wheatear	P	
†Eastern Pied Wheatear	W	
†Upcher's Warbler*	P	
†Menetries Warbler*	PW	
†Desert Lesser Whitethroat*	W	
†Plain Leaf Warbler	W	
Lesser Grey Shrike	P	
Masked Shrike	P	
Black-headed Bunting	P	

* These three species probably occur in UAE in significant numbers, and the survival of these populations in the country, either wintering or on passage, may be significant to the conservation of the species.

7. Non-threatened in UAE.

Little Grebe	B	10-100
Black-necked Grebe	W	
Great Cormorant	W	
Night Heron	W	
Green-backed Heron	B	200-500
Cattle Egret	W	
Western Reef Heron	B	300-1,000
Great White Egret	W	
Grey Heron	PW	
Purple Heron	PW	
Spoonbill	W	
Greater Flamingo	PW	
Marsh Harrier	W	
Pallid Harrier	PW	
Montagu's Harrier	P	
Kestrel	PW	
Chukar	B	100-1,000
†Sand Partridge	B	1,000-10,000
Collared Pratincole	P	
Little Ringed Plover	PB	50-300
Ringed Plover	PW	
Kentish Plover	PWB	1,000-3,000
Lesser Sand Plover	PW	
Greater Sand Plover	PW	
Pacific Golden Plover	PW	
Grey Plover	PW	
Red-wattled Lapwing	B	100-500
Sanderling	PW	
Little Stint	PW	
Curlew Sandpiper	PW	
Dunlin	PW	
Bar-tailed Godwit	PW	
Whimbrel	P	
Curlew	PW	
Redshank	PW	
Greenshank	PW	
Green Sandpiper	PW	
Wood Sandpiper	PW	
Terek Sandpiper	PW	
Common Sandpiper	PW	
Turnstone	PW	
Red-Necked Phalarope	PW	
Pomarine Skua	PW	
Arctic Skua	P	
Great Black-headed Gull	W	
Black-headed Gull	W	
Slender-billed Gull	PW	
Lesser Black-backed Gull	PW	
Yellow-legged Gull	PW	
Gull-billed Tern	P	
Sandwich Tern	PW	
Common Tern	P	
Whiskered Tern	P	
White-winged Black Tern	P	
Lichtenstein's Sandgrouse	B	100-1,000+
Turtle Dove	B	100-1,000
Little Owl	B	300-1,000+
Common Swift	P	
Pallid Swift	PB	1,000-10,000
Little Green Bee-eater	B	1,000-5,000
Blue-cheeked Bee-eater	P	
European Bee-eater	P	
Indian Roller	B	
Hoopoe	P	
Black-crowned Finch Lark	B	5,000-10,000+
Desert Lark	B	5,000-10,000+
Hoopoe Lark	B	10,000-25,000+
Short-toed Lark	P	
Sand Martin	P	
Pale Crag Martin	B	1,000-10,000
Swallow	P	
Tawny Pipit	PW	
Long-billed Pipit	B	100-1,000
Red-throated Pipit	PW	
Water Pipit	W	
Yellow Wagtail	P	
White Wagtail	W	
†Yellow-vented Bulbul	B	5,000-10,000
Rufous Bush Robin	P	
Bluethroat	PW	
Black Redstart	W	
Isabelline Wheatear	PW	
Pied Wheatear	W	
Desert Wheatear	W	
†Red-tailed Wheatear	W	
†Hume's Wheatear	B	1,000-10,000
Graceful Warbler	B	10,000+
Scrub Warbler	B	100-1,000+
Marsh Warbler	P	
Clamorous Reed Warbler	PB	250-750+
Olivaceous Warbler	P	
Desert Warbler	W	
Chiffchaff	PW	
Purple Sunbird	B	5,000-10,000+
Isabelline Shrike	PW	
Great Grey Shrike	PWB	5,000-10,000+
Brown-necked Raven	B	500-1,500+
Starling	P	
Yellow-throated Sparrow	B	1,000-5,000+
Indian Silverbill	B	1,000-10,000
House Bunting	B	1,000-5,000+
Ortolan Bunting	P	

8. Pioneer Species

Little Bittern
Night Heron
Grey Heron
Greater Flamingo
Quail
Water Rail
Moorhen
European Roller
Short-toed Lark
Reed Warbler
Olivaceous Warbler
Starling
Spanish Sparrow
Corn Bunting

Discussion

We have been guided by the global and Middle Eastern conservation status of species in various publications and have had to make very few alterations as a result of our own experience or recent updating. One exception to this, however, is Socotra Cormorant, which is the most threatened of the colonial seabirds nesting on Gulf islands. This species breeds in only 13 or 14 extant colonies, of which only one or two are outside the Gulf. Ex-

perience has shown that breeding populations on islands are very susceptible to disturbance or large-scale development. None of the UAE's islands in the Gulf have been afforded formal protection and the significance of these breeding birds is often not realised. Construction work on islands is still continuing in UAE, as is the off-road use of four-wheeled drive vehicles.

At least five major colonies of Socotra Cormorant have been lost in recent decades. This is partly as a result of development, mostly oil-related, but also persecution. The Socotra Cormorant is the only species breeding in UAE not to have been afforded legal protection from hunting. It is a very unpopular bird because of the perceived competition with fisheries and because of the smell from breeding colonies. It would appear that the colony of Socotra Cormorants on Sinaiya Island, which was the largest in UAE, failed to breed at all in 1995, probably as a result of people driving through the colony at a critical time in the breeding cycle. The dependence on a very small number of sites makes this species very vulnerable, certainly meriting the status of Globally Near Threatened.

The Pale Rock Sparrow is in the curious position of being listed as Non-threatened as a breeding species in UAE, but threatened as a passage bird. This is because the breeding habitat in mountain wadis does not appear to be limiting but the passage birds feed on fodder fields known to be treated with pesticides which are not subject to strict control. Certain other species have shown evidence of recent declines, in all probability pesticide related, particularly Turtle Dove, which could prove to be a useful indicator species.

Habitats

The 26 different species occurring in the first four categories, i.e. those which indicate a degree of threat other than that from rarity alone, are listed in Table 1. This also shows the principal habitat type occupied by each species in UAE. The major threats, in no particular order of importance, are: development and reclamation; human disturbance; land use changes; overgrazing (by camels, goats and sheep) and rangeland mismanagement; lowering of the water table by groundwater abstraction; oil or other pollution; introduction of mammalian ground predators (particularly cats on islands; competition with alien species; persecution, and non-sustainable harvesting.

Table 1. Threatened Birds of UAE, and their Habitats

Species	Criterion	Habitat
Red-billed Tropicbird	2, 4	Islands
Socotra Cormorant	1, 3, 4	Islands
Egyptian Vulture	3	Mountains
Lappet-faced Vulture	3	Mountains
Spotted Eagle	1	Coast
Osprey	4	Islands
Lesser Kestrel	1	Farmland and plantation
Sooty Falcon	4	Islands
Houbara Bustard	3, 4	Desert
Black-winged Stilt	4	Inland wetland
Crab Plover	2, 3	Islands, intertidal
Broad-billed Sandpiper	4	Coast-intertidal
Cream-coloured Courser	4	Desert
Sooty Gull	2, 4	Islands
Swift Tern	4	Islands
Lesser Crested Tern	4	Islands
White-cheeked Tern	4	Islands
Bridled Tern	4	Islands
Saunders' Little Tern	2, 4	Islands
Chestnut-bellied Sandgrouse	4	Desert
Barn Owl	4	Farmland and plantation
Pharaoh Eagle Owl	4	Desert
White-collared Kingfisher	2, 4	Coast-mangroves
Booted Warbler	4	Coast-mangroves
Arabian Babbler	2	Acacia savanna
Pale Rock Sparrow	4	Mountains

The distribution between the habitats, of the species in the first four categories of threat, can be summarised as follows:

Islands	11
Coast (including mangroves and intertidal mud)	4
Desert	4
Mountains	3
Farmland and plantation	2
Inland wetland	1
Acacia savanna	1

This clearly supports the view that the priority for conservation measures to help birds in the UAE is to concentrate on islands and coastal habitats. Not only do these habitats support large numbers of threatened species, but it is also on the islands and the mainland coast that the rate of development is greatest. Although several islands and areas of coastal mangrove receive a measure of protection, this is generally informal and non-statutory. Sooty Falcons generally either breed on uninhabited islands or remote parts of large islands where there is little disturbance. They are generally intolerant of man and several breeding sites are known to have been lost as a result of development or disturbance. It will be difficult to protect these populations and the trend is clearly to develop uninhabited islands for residential and recreational use.

There is a need for a review of key sites for nature conservation, leading to a network of Protected Areas, as recommended by Scott (1995) and Aspinall (1996). At present the responsibility for nature conservation lies to a large extent with each individual Emirate. Clearly the coast and the islands would merit a high priority in any federal review.

The inaccessibility of the mountains confers a reasonable degree of protection, although persecution is a threat to all predators and to species such as Sand Partridge and Lichtenstein's Sandgrouse which are particularly vulnerable at drinking sites. The continuing trend of movement of people from the mountains to the coast, and the abandonment of some of the high altitude seasonal villages, should prove beneficial to birds. The reduction of the present very high numbers of goats in the mountains would be very helpful to virtually all the threatened bird species which occur there. Reducing the goats would increase the biomass of vegetation from which it would be reasonable to expect increases in populations and diversity of mammals, reptiles and invertebrates. Such changes would increase the food resource available for birds.

There is a rapid rate of development in both the desert and the *Acacia* savanna. The habitats are being affected by new roads, pipelines, power lines, boreholes and agricultural and forestry projects. The area of 'wilderness'

is steadily being reduced, and this will be to the detriment of species which are intolerant of human disturbance, such as Houbara Bustard and Pharaoh Eagle Owl. Overgrazing, lack of regeneration and habitat deterioration are believed to be the reasons for the declines in Yellow-throated Sparrow and Arabian Babbler.

It is suspected that the mountain foothills and the Acacia savanna may be more important for passage and wintering species than is currently recognised, because large areas are difficult of access and are not well studied. The three warblers marked with an asterisk in Category 6, which are all Restricted Range Species (Evans 1994) may be present in internationally important numbers. Similarly, many of the species in Category 7, e.g. at least 25 species of waterfowl, occur at levels greater than 1% of the Middle East population. The same could apply to some other widespread wintering passerines, e.g. Desert Warbler and Desert Wheatear (Osborne *et al* 1996). Future research, survey and monitoring efforts aim to target passerines to a much greater extent.

Conclusion

It is hoped that the listing of species in this paper will help to focus the attention of conservationists in UAE to the species and habitats which are most under threat. It is also hoped that the paper will provide a useful contribution to the dissemination of knowledge on the status of birds in Arabia.

Acknowledgements

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Dr. R.J. Hornby
P.O. Box 45900
Abu Dhabi, UAE

S.J. Aspinall
NARC, P.O. Box 45553
Abu Dhabi, UAE

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Sheikh Zayed Falcon Release Project

A Saker falcon is released into the Himalayas in April 1996 as part of the Sheikh Zayed Falcon Release Project.

In April 1996, a total of 85 falcons, of which 60 were **Sakers** *Falco cherrug* and 20 were **Peregrines** *Falco peregrinus*, were released in the Gilgit area of northern Pakistan in the second of two release programmes organised within the framework of the Sheikh Zayed Falcon Release Project.

The Project,which commenced in 1995, when over 100 birds were released in the Kharan district of Pakistan's province of Baluchistan, was conceived as a way of studying the ability of birds used for falconry to re-adapt to life in the wild and of studying migration and breeding patterns.

This year's 85 birds had previously been used by UAE President His Highness Sheikh Zayed bin Sultan al Nahyan for falconry during the winter months. Prior to the creation of the Project, falcons that were no longer required were released at the end of each season, but without any scientific monitoring of the release. For the last two years, however, Sheikh Zayed has insisted that the annual release should be designed in a scientific way, so as to collect as much scientific data as possible.

Prior to release, each falcon is trained and fed up, while each bird is also fitted with rings and microchips, so that, if recaptured or otherwise recovered, during the autumn falcon trapping season in Pakistan, for example, there is a chance of identifying the bird.

In each of the two releases, a small number of birds were fitted with satellite transmitters, to permit their movements to be tracked. While not all of the transmitters have worked successfully, data from the 1995 release in Baluchistan showed birds moving northwards into Afghanistan. Of the birds released in 1996, one moved northwards over the Himalayas into western China before the transmitter ceased functioning. A second bird moved further, into southern Russia, before returning to the Altai Mountains in eastern Kazakhstan. By the time the transmitter ceased functioning in September, the bird had commenced its southwards migration, back towards Pakistan.

Within the UAE, the Sheikh Zayed Falcon Release Project is co-ordinated by the National Avian Research Centre, part of Abu Dhabi's Environmental Research and Wildlife Development Agency, with the participation of the Abu Dhabi Falcon Hospital, at Al Khazna, while the Project co-operates in Pakistan with the Worldwide Fund for Nature (Pakistan) and the Falcon Foundation (Pakistan).

Peter Hellyer

NOTES AND QUERIES

The National Avian Research Centre invertebrate collection

Knowledge about the terrestrial invertebrate fauna of the UAE is very much in its infancy and reliable information is hard to find. Very few books to identify specimens seen in the desert or collected from the region, are available and there has also not been, until recently, any accessible reference collection. Although Arabian invertebrates, including some from the UAE, are to be found in certain of the world's larger museums such as the British Museum (Natural History), there has not been until the last few years much interest in establishing local collections. For example, the UAE University Natural History Museum has no invertebrate section, although it has valuable collections of vertebrates and also houses the National Herbarium. One noted regional exception is, of course, the well known Muscat Natural History Museum in Oman which, not only has extensive collections of insects and other invertebrates, but has also had much of this material identified by specialists from around the world. Luckily, things are now changing for the better in the UAE and the opening of the new Natural History Museum at Sharjah may eventually allow for an extensive invertebrate collection for display to the general public. Another such collection is now available for scientific study and is located at the National Avian Research Centre (NARC) Research Station in the desert near to Sweihan.

The primary interest of NARC is in the avifauna of the UAE and in particular the Houbara Bustard *Chlamydotis undulata,* a species that has been traditionally hunted by the Bedouin using falcons. In its efforts to learn more about the Houbara, its conservation and its management, NARC undertakes various programmes of ecological research. One of these has included studies of the bird's diet and in particular, the importance of invertebrates in that diet. The material collected during these studies forms the basis of the NARC Invertebrate Collection. The composition of the collection reflects the main collecting strategies that were adopted in the ecological studies. This was undertaken largely by the use of baited pitfall traps set up in areas of desert known to be frequented by Houbara, but also included some collecting of nocturnal flying insects at mercury vapour lamps. The material mainly consists of preserved specimens (both dry set insects and arachnids in spirit) many of which have been expertly determined, but a proportion of specimens has neither yet been preserved nor determined and this material is stored frozen for future examination.

The set specimens of insects are housed in a museum-type entomological cabinet and in a series of storage boxes. The main orders represented are as follows:

Odonata - Dragonflies and Damselflies - (Family: Libellulidae, Aeshnidae, etc.)

Orthoptera - Crickets and Grasshoppers - (Family: Acrididae, Tettigoniidae, Gryllidae etc.)

Mantoidea - Praying Mantises and Ground Mantises - (Family: Mantidae)

Hemiptera/Heteroptera - True Bugs - (Family: Pentatomidae, Lygaeidae etc.)

Hemiptera/Homoptera - Cicadas, Planthoppers and Aphids - (Family: Cicadidae etc.)

Neuroptera - Antlions and Lacewings - (Family: Myrmeleontidae, Nemopteridae etc.)

Lepidoptera - Moths and Butterflies - (Family: Cossidae, Sphingidae, Lasiocampidae, Geometridae, Noctuidae etc.)

Hymenoptera - Bees, Wasps and Ants - (Family: Sphecidae, Scoliidae, Eumenidae etc.)

Coleoptera - Beetles - (Family: Carabidae, Tenebrionidae, Elateridae, Buprestidae, Scarabaeidae, Dynastidae, Curculionidae etc.).

The material preserved in spirit is housed in a large laboratory cupboard and includes many examples of arachnids, including a good variety of both scorpions and spiders from the UAE. This collection may, therefore, be of medical importance and of interest to health workers researching into toxic animals of the region.

The collection occupies part of a laboratory in the Department of Ecology at NARC's Sweihan Research Station. Arrangements can be made for study visits to be made by genuine scientists with an interest in insects and other invertebrates of the UAE. However, at the present time, the Department has no full-time curator for the collection. Visitors, therefore, are very much likely to be on their own and, as such, are asked to assist in the care and curating of the collection in order to preserve it for future scientists. In this respect, help would also be appreciated in expanding the collection. This could be accomplished in two ways. First, visiting scientists might like to deposit some examples of their own material in the collection or, alternatively, anyone is invited to provide specimens for inclusion in the collection. These should generally be in good condition and accompanied by all necessary collecting data (collector's name, locality, date etc.). Secondly, there is a need to arrange for the permanent preservation of the material at present held in frozen storage. This would require examination, unfreezing, setting or transfer to spirit as well as the labelling of specimens. These are time-consuming activities and any help would be gratefully received and acknowledged.

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Professor John Cooper
Programme Manager
National Avian
Research Centre
P.O. Box 9903
Sweihan, U.A.E.

Dr. Michael Gillett
Department of Biochemistry
Faculty of Medicine &
Health Sciences
UAE University
P.O. Box 17666, Al Ain

An arboreal snake, *Psammophis schokari schokari* (Forskal, 1775), in Al Ain and Buraimi

According to Gasperetti (1988), snakes in general are nowhere common in Arabia. Personal experience tends to confirm this and I doubt that I see more than one snake for every ten or twelve trips that I make into desert or mountain countryside. However, one does not have to leave Al Ain to come across snakes and I am occasionally contacted to identify or advise on snakes seen in gardens. One recent example was a relatively large (840mm total length) and harmless specimen of *Spalerosophis diadema cliffordi* (Schlegal, 1837) that was killed as it climbed a wall in a garden near the Al Jahili district. However, the snake that I see myself most often in Al Ain and Buraimi is *Psammophis schokari schokari* **(Forskal, 1775),** an essentially arboreal snake. The scientific name is a mismatch of Greek and Arabic — *Psammophis* means "sand snake" and schokari is a Latinised derivative of an Arabic word "shigari" meaning "arboreal" or "of the tree" (Gasperetti 1988). Although photographs of this snake in a terrestrial setting have been published by Jongbloed (1991) and captioned: "hissing sand snake" (*Psammophis Schokari*), it is normally seen in trees and bushes. One large example that I saw at Ain al Faydah in March 1994 was on the ground, but as I approached, it fled upwards into a palm tree and was not seen again. I have seen other examples in the Muwaiji district of Al Ain (Oct. 1995) and twice in Buraimi oasis (Sep. 1991 and May 1996).

Psammophis schokari occurs from W. Africa across N. Africa, the Middle East, Arabia, Sudan and Somalia and as far east as NW, India and Nepal. Gasperetti cites numerous records from all over Arabia including many locations in both the UAE and N. Oman. However, none of these are from Al Ain or Buraimi; nevertheless the sightings mentioned here suggest that, although perhaps not actually common, it is at least widespread in the Al Ain area. It is a diurnal snake and prays mainly upon birds and lizards. It belongs to the opisthoglyphous section of the family **Colubridae**, which includes snakes which have grooved, poison-conducting teeth towards the back of the upper jaw. There is very little information concerning the composition or potency of the venom of these snakes. Therefore, although bites to humans are unlikely, in the absence of any precise toxocological information, *Psammophis schokari* should be treated with the respect that it undoubtedly deserves and avoided as being potentially dangerous.

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Michael P.T. Gillett
Department of Biochemistry
Faculty of Medicine and Health Sciences
UAE University
P.O. Box 17666 - Al Ain, U.A.E.

A large blister beetle *Mylabris maculiventris* Klug, 1845 from Al Ain and neighbouring Oman (Coleoptera: Meloidae)

Blister or oil beetles **(Family: Meloidae)** are typical insects of arid and semi-arid countryside and excluding butterflies and moths, are perhaps the most colourful of the insects found in such environments. As with many other brightly coloured insects, the contrasting patterns of black markings on a red or yellow background found on many meloids advertises the fact that they are poisonous. The poison which they contain is cantharidin, a severe vesicant or blistering agent. It occurs throughout the beetle's body, but is especially prevalent in the droplets of oily 'blood' which the insects exude from their body joints if they are molested. The fact that these insects may be injurious to both man and domestic stock has given them medical and veterinary importance and some of them may also be of economic importance (Gillett, 1992).

Chance encounters with these insects in 1992 and 1993 suggested to us that they might be of particular medical importance in the Al Ain region of the UAE and in neighbouring Oman because the numbers both of species and of individuals could be large. Furthermore, some species of these beetles appeared to be very common in areas often visited by families with small children such as Al Ain Zoo, Ain al Faydah and various picnic spots around Al Ain and Buraimi. These considerations led to the setting up of a small project to survey these insects in the region during 1994 and 1995. Unfortunately, 1994 turned out to be a year in which meloids were extremely scarce, if not virtually absent from the region. However, 1995 turned out to be a more normal year for these beetles, whilst in 1996 they were especially abundant. Altogether, about twenty species have now been recorded from the region, although not all have yet been determined. The beetles have been found in most areas where natural vegetation occurs and many species frequent flowers. In this respect, some species are found on many types of plants. One such as the widespread *Cylindrothorax angusticollis suturellus* (Haag-Rutenberg, 1880) which occurs on *Acacia tortilis, Aerva javanica, Convulvulus sp., Echinops sp., Euphorbia larica* and many other flowering herbs and shrubs. However, other species are confined to a single plant, such as the tiny *Lyttonyx bicolor* (Walker, 1887) found only on *Erucaria hispanica*, a spring ephemeral. Although oil beetles are apparently diurnal, a few specimens of common species such as *C. augusticollis*, have been found at night beneath artificial lights, suggesting that the insects may disperse to some extent during darkness.

In a typical year, the first blister beetles begin to appear

in early March and numbers of species and of individuals reach a peak in April. By mid-May, the beetles have normally completely disappeared. There is one exception to this springtime-only occurrence of oil beetles around Al Ain and this concerns the largest species yet recorded from the region. *Mylabris maculiventris* Klug, 1845 is a rare species in the Al Ain region. It reaches a length of 27mm or more and is coloured black with two broad pale yellow transverse bands on the wingcases (*see* Kaszab, 1983: Plate 2. Fig. 15). *Mylabris* is quite a large genus and has been sub-divided such that *M. maculiventris* is assigned to the sub-genus *Euzonabris,* a group of essentially African species, characterised by their large size. A first sighting of this oil beetle in the region was made in early May 1993 near Mahdah. Oman, when one was spotted high up in a flowering *Acacia tortilis* (Leguminosae) where it was feeling on the blossom. This particular specimen escaped capture and no others were seen by us until April 1995 when three specimens were taken on low bushes of *Tavernia cuneifolia* (Leguminosae), where they were apparently feeding upon the foliage. All were taken within a hundred metres or so of the tree where the first one had been seen nearly two years previously. Despite many more searches, no further specimens were found that spring. It was, therefore, very surprising when the species turned up again much later in the same year at two different localities and on a plant belonging to a different family. One was captured and at least two others were seen feeding on the flowers of *Zizyphus spino-christi* alongside the road at Jebel Huwayyah (Buraimi, Oman) on November 1st 1995. A second was captured next day on flowers of the same plant near to the Hili district of Al Ain. Surprisingly, none of the common Al Ain oil beetles such as *C. angusticollis or Mylabris bipunctata* Olivier, 1811 have been found at this time of the year.

In the past, species of *Mylabris* were used as the main pharmaceutical source of cantharidin, partly because the beetles themselves contain large amounts of the material and partly because certain species of them could be collected in large numbers. Cantharidin may make up as much as 0.5% of the living weight (1.3% of dry weight) of an oil beetle. Because of its large size, *M. maculiventris* may, therefore, represent a relatively dangerous beetle since the cantharidin content of a single individual could easily excede the reported lethal dose for man (Gillett, 1994).

Just why *M. maculiventris* should have an extended season as an adult in comparison with the other local species is not known. The beetle is an Ethiopian element in the Arabian fauna and is known from both sides of the Red Sea. There are records which show it flying in January, April and November in Saudi Arabia (Kaszab, 1983) and March and April in Oman (Schneider, 1991). The present records are, therefore, consistent with these and show a modest increase in the known distribution of the species, the nearest previously recorded locality being Muscat.

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Michael P.T. Gillett
Department of Biochemistry
Faculty of Medicine & Health Sciences
UAE University
P.O. Box 17666- Al Ain, UAE

James E.D.T. Gillett
16, Dominic Drive
Kings Norton
Birmingham
B30 1DW
U.K.

ENHG Meetings - January to June

15 January	:	AGM & Wildlife of the Rocky Mountains, by Steve James
22 January	:	Baalbek, by Ibrahim Zakhour
5 February	:	Wildlife of Saudi Arabia, by Frederic Launay
26 February	:	Members' discussion meeting
5 March	:	The beginning of Navigation and Civilisation, by Dr. Thor Heyerdahl
19 March	:	Recording threatened and endangered plants in Great Britain & Ireland, by Rosemary Fitzgerald
2 April	:	Filming Sooty Falcons in Bahrain, by Yusuf Thakur
16 April	:	A Tour of the Universe, by David MacNaughton
7 May	:	An Update on the Abu Dhabi Islands Archaeological Survey Project, by Peter Hellyer
21 May	:	Two expeditions to Everest, by Rosalind Buckton
4 June	:	Seashells of Bahrain, by Stephen Green
18 June	:	Photography, by Shantha Weerasinghe

RECORDERS' REPORTS

Archaeology

With last winter's lengthy archaeological season having been more or less covered up to the end of April in the last issue of ***Tribulus***, there is little to report for the last few months in the way of fieldwork, since no lengthy summer excavations were carried out.

The only fieldwork of any significance was a survey of the island of Futaisi, adjacent to Abu Dhabi, carried out by the Abu Dhabi Islands Archaeological Survey at the request of Sheikh Hamad bin Hamdan al Nahyan, as part of baseline studies prior to the inauguration of the new Futaisi Golf and Country Club.

The survey produced little in the way of surprises, with extensive evidence of Late Islamic occupation comparable with that found on other islands both close to Abu Dhabi, like Balghelam, and further afield, like Merawah or the two Yasats. One can't help wondering just how much archaeology there was on Abu Dhabi island itself before the construction of recent years got under way!

One aspect of Futaisi's archaeology of interest, however, was further evidence of the collection and management of fresh water resource, with a couple of large cisterns being noted. Contrary to the impression that Abu Dhabi's islands were largely bereft of fresh water, ADIAS teams have found wells, cisterns and water collection systems on almost every island of any size that they've visited, and the subject is to be further addressed in future research.

Another brief survey of one of Abu Dhabi's little-known traditional buildings, the summer house of the late Sheikh Shakhbut bin Sultan al Nahyan, was also carried out at the request of Information and Culture Under Secretary Sheikh Abdulla bin Zayed al Nahyan.

Further to the excavations in summer 1995 at Abu Dhabi Airport, to which many Group members lent a hand as volunteers, (for which, again, many thanks), a final report on the pottery from the site has been submitted. Despite the lack of large structures, the site has proved to be of very considerable importance. Besides its use during the Late Stone Age, the pottery shows that it was also used in the early Third Millennium BC, (c. 3,100 - 2.700 BC), and then flowered during the Umm an Nar period, (c. 2,700 - 2,200 BC). It went out of use shortly after that, but was then again occupied in the first centuries of the First Millennium AD, (c. 0 - 200 AD).

With the help of Group Corporate member the Abu Dhabi Company for Onshore Oil Operations, ADCO, a full report on the excavations is being prepared for Sheikh Hamdan bin Mubarak al Nahyan, Chairman of the Abu Dhabi Civil Aviation Department, who funded the dig.

In his capacity as Co-ordinator of ADIAS, your Recorder attended the annual Seminar of Arabian Studies in London in July, and is pleased to report that the United Arab Emirates, as usual, figured prominently in the discussions, with virtually a whole day being given over to papers about the UAE.

Hussein al Naboodah of the Emirates University dealt with the traditional fortified architecture of Al Ain, a useful further contribution to studies of the UAE's more recent military buildings, (*see Kennet, D. [1992]. The Towers of Ras al Khaimah,* **Tribulus Vol. 2.2**).

Walid Yasin al Tikriti of the Department of Antiquities and Tourism in Abu Dhabi's Eastern Region reviewed recent work in and around the Al Ain area, including three seasons of work at the Hili 17 site, dated primarily to the Iron Age, and results of work on another Iron Age site near Qarn Bint Saud, where a large house of around 200 sq. metres was discovered as well as a *falaj*. He also reported the discovery of another Iron Age site in the desert at Wadi Hammam, 25 km north of Al Ain and east of Sweihan, suggesting the probable existence of a previously unidentified cross-desert route to Dubai. From the University of Sydney, Peter Magee reported on two seasons of excavations at the Iron Age site of Muwailah, near Sharjah International Airport, while Michel Mouton from France delivered a paper on work on the Iron Age sites on the Al Madam Plain, also part of Sharjah.

Carl Phillips, from London's Institute of Archaeology, provided an overview of pre-historic settlement in Ras al Khaimah's Wadi Qawr and Wadi Munay, from the Umm an Nar period to the Iron Age, while Rob Carter, also from the Institute of Archaeology dealt with work on a large mound in Kalba which, although partly obscured by gravel deposits brought down from the mountains by rainfall, appears to have been similar to Umm al Qaiwain's Tell Abraq, and to have been occupied from the Umm an Nar period until at least the Iron Age. Kalba is clearly one of the major sites in the country, and a full publication of results should add significantly to our understanding of settlement patterns from the Third to First Millennia BC.

Again from France, Sophie Mery reported to analysis of pottery from the great North tomb at Hili A, from where a total of 295 skeletons.

Finally, building upon his recent work in Fujairah, Dan Potts from the University of Sydney provided an important overview of the copper industry in the Emirates, including sites in Fujairah and southern Ras al Khaimah, and citing Carbon 14 datings that suggest the industry changed and evolved from the early Third Millennium BC until at least as late as the Fifteenth or Sixteenth Centuries AD, much later than had previously been realised.

The United Arab Emirates remains one of the most active countries anywhere in Arabia in archaeological terms. The forthcoming winter season should, once again, see extensive work being undertaken throughout the country, a summary of which will appear in the spring 1997 issue of ***Tribulus***.

PETER HELLYER,
ENHG Recorder & Co-ordinator,
Abu Dhabi Islands Archaeological Survey

May 1996

Migration on the mainland virtually dried up during May as the heat build up quickly to a yearly peak, assisted by calm almost windless conditions throughout the month.

Some of the more interesting May reports include a sighting of 7,000 **Socotra Cormorants** at Umm al Qaiwain on 31st, a late **Honey Buzzard** over Bateen gardens in Abu Dhabi on 17th, a **Golden Eagle** near Ruwais on 12th (fifth record) and a **Little Crake** also near Ruwais on 8th (17th record). Four **Cream-coloured Coursers** were at Jebel Ali on 24th while a **Black-winged Pratincole** reported near Ruwais on May 4 would be the fourth record if accepted. Six **Avocets** appeared to be preparing to nest at the man-made Al Ghar lake sanctuary near Abu Dhabi in mid-month, a possible first UAE breeding record for this species. A late **Pacific Golden Plover** was at Khor Dubai on 29th and a **Little Gull** at Sila on 2nd was only the second record. A pair of **Desert Eagle Owls** were found with young near a quarry in open desert near the Dubai sewage works on 18th. A male **Namaqua Dove** at Hamraniyah on 30th was the country's 12th record. A **Common Rosefinch** was at the Emirates golf course on 15th while at least 20 pairs of **Pale Rock Sparrows** were found nest-building in the foothills south of Hadf (in the Omani Wilayat of Mahdah), an interesting record of this very scarce and infrequent breeding visitor.

Meanwhile Das Island hosted a number of interesting late migrants, including a **Richard's Pipit on 26th,** a **Barred Warbler** (the only one reported this year) on 26th, up to two **Red-backed Shrikes** on 23rd & 24th and a **Rose-coloured Starling** on 28th.

June 1996

The most exciting find of the month were two **Shikras** near Zabeel Palace in Dubai on 27-28 June, first records for the UAE. Except for a small population in Yemen and southern Saudi, these little-known hawks are very rare in Arabia and these birds probably originated in northern Iran, but could conceivable have nested in the UAE this year. Of other nesting records 20 **Avocets,** including four juveniles, were found at Al Ghar lake on 22 June, the first UAE breeding record, while a pair of **White-tailed Plovers** with two well-grown young found at Ramitha lagoons on 17th were finally put on the UAE breeding list after weeks of speculation.

A **Collared Pratincole** at Hamraniyah and two **Red-necked Phalaropes** at Jazeerah al Hamra on 21 June were surprise summer finds. A **Little Swift** seen flying amongst a **Pallid Swift** colony around an apartment block in Ras al Khaimah on 8 June, was only the 11th record. At the Fujairah National Dairy Farm at Dibba about 120 **European Bee-eaters,** including young, came to roost on 14 and 21 June, the largest ever summer flock, probably dispersed from breeding grounds in Oman.

Ras al Khaimah proved to be the most interesting area to find birds during the month, with at least two pairs of **European Rollers** found on 21st, one in a new breeding atlas square in Khatt, while a colony of about 9 pairs of **Spanish Sparrows** were occupying the *Washingtonio* palms on the airport roundabout. **Long-billed Pipits** were found at a new site in Masafi and on the cliffs around Wadi Shih reservoir in Khor Fakkan on 13th & 14th June respectively. A flock of 35 **Pale Rock Sparrows** were also seen at Wadi Shih, and had probably nested nearby.

Particularly high temperatures exceeding 44°C (with 50°C inland) were noted between 5-7th and 27-28th. This dry heat was often accompanied by strong easterly winds and was usually followed by a cloud build-up over the mountains. Al Ain area experienced thunderstorms early in the month, influenced by the monsoon over the Arabian Sea.

Sea-watching off the East Coast was interesting on at least one weekend visit, when up to 204 **Persian Shearwaters** were seen off Aqqah 13 & 14 June, the second largest ever flock recorded. The most common other species was **Bridled Tern,** often over 200 visible on the horizon at any one moment.

July 1996

With low humidity on several days, the temperature reached a high of 46°C, locally in Dubai on the 8th, settling down to a fiery 44°C from 9th-17th, a result of the very hot and dry south-east wind associated with a low pressure system over the Empty Quarter.

A special effort had to be made to find interesting birdlife, particularly to study the habits of some of the hardy local breeding species. At a known desert site near Ghantoot a pair of **Bar-tailed Desert Larks** were still holding territory on the 4th and had probably nested nearby, while hundreds of **Black-crowned Finch Larks** were moving in flocks of up to 20 birds in search of food. **Hoopoe Larks** were present in good numbers too, the result of last year's good rainy season in the desert. Up to two **Shikras** were still present in the Zabeel area for most of the month while the well-watched pair of **Brahminy Mynahs** in a Zabeel garden produced 3 fledged young on the 6th, the first proven breeding record of this recently introduced species.

A **Griffon Vulture** seen flying over Abu Dhabi on the 26th was an extraordinary record. The Al Ain camel track probably had **Short-toed Larks** breeding again this year, with large numbers and much activity noted on the 27th and two **Montagu's Harriers** on the 30th. Wetland sites produced some of the most interesting birds, with Ramtha yielding a **Black-necked Grebe,** two **Squacco Herons,** over 200 **Black-winged Stilts** and an early **Red-necked Phalarope** on the 9th, a **Little Bittern** at Ain al Faydah on the 27th, 12 **Crab Plovers,** 2,000 **Redshank** and a **Spotted Redshank** at Al Jazeerah Khor on the 1st and a **Collared Pratincole** and three **Pacific Golden Plovers** at the Emirates golf course on the 25th. Some good birds were being recorded in Ras al Khaimah, with a **Short-toed Eagle** on 31st, two very rare **Spotted Sandgrouse** on the 4th, a **European Nightjar** on the 9th and an **Egyptian Nightjar** on the 23rd. Amongst early passerine migrants recorded were **Rose-coloured Starlings** at the Emirates golf course and Das Island on the 26th and an **Isabelline Wheatear** at Al Ain on the 27th. Three **Black-headed Buntings** were on Das from the 29th and a **Red-headed Bunting** was there on the 31st (only the 3rd UAE record).

August 1996

High temperatures, calm conditions and surprisingly low humidity featured for most of August. The thermometer hovered between 38-42°C on most days, peaking at 47°C for a few hours in Dubai on the 15th.

Some notable early migrants occurred on Das Island, including up to two **Citrine Wagtails** from the 3rd, one or two **Upcher's Warblers** from the 1st, a **Woodchat Shrike** on the 12th, a **Desert Wheatear** on the 20th and a **Yellow-browed Warbler** (the earliest ever) on the 22nd. Record numbers of **Black-headed Buntings** and **Rose-coloured Starlings** were also reported from Das, with numbers of the latter also turning up in flocks of up to 20 birds at sites on the mainland from mid-month. The earliest ever **Citrine Wagtail** was seen at Ruwais on the 1st and single **Lesser Grey Shrikes** were there on 30th and 31st. At Sila a new site for **Spotted Sandgrouse** was discovered on the 9th, with up to 100 birds coming to drink most mornings. This species has never before been reported in such numbers. Huge numbers of terns were discovered in the dredged lagoons between Dubai and Sharjah from the end of the month, with 4,500 **Lesser Crested Terns** there on the 23rd and 3,600 **Common Terns** there on 26th.

A **Caspian Plover** was at Abu al Abyadh on the 16th, a **Water Rail** was at Ramtha reeds (possibly having nested there) on the 15th. Other early interesting migrants were a **Cuckoo** at the Emirates golf course on the 20th, up to 20 **European Starlings** at the Zabeel fish ponds from the 21st, 20+ **European Rollers** and another **Namaqua Dove** at Sila on the 9th and single **Great Reed Warblers** at Kalba, Abu Dhabi and Das Island from the 22nd.

September 1996

While temperatures continued to steadily decline, humidity levels rose above average on several days, and by the last few days of the month fog hung over the coastal zone for a couple of hours after sunrise. Temperatures ranged between 37°C and 41°C, with highs of 44 being quite normal inland throughout the month. While flooding occurred on the East Coast on the 22nd, only scattered clouds were seen over a very dry Dubai at the same time.

There were still loads of interesting wetland species to be found, with a **Squacco Heron** at Zabeel on the 28th, one or two **Glossy Ibis** at Ruwais and the Zabeel fish ponds throughout the month and a steady, though rather meagre, flow of **Garganey** most days at favourable sites. An early **Gadwall** was interesting at Zabeel on the 28th, while an even more early (and more interesting) **Ferruginous Duck** was there from the 25th. A **Spotted Crake** provided interest there from 24th-28th.

An exceptional 18 **Montagu's Harriers** were at the Al Ain camel track on the 27th, a **Long-legged Buzzard** was at Qarn Nazwa on the 30th, while four **Bonelli's Eagles** were quite a spectacle at the Fujairah National Dairy farm on the 10th. A **White-tailed Plover** at Qurrayah on the 11th and two at Al Ain compost plant on the 27th were good reward for the long day's motoring to both of these out-of-the-way places. A **Caspian Plover** was at Sila on the 6th. A **Pintail Snipe** at Dibba on the 10th was the first of the season, while another was at the Emirates golf course on the 17th, the beginning one hopes, of the winter influx. A probable northern **Great Skua** on Kalba beach on the 11th would be only the 3rd record if accepted. Marsh terns proved tantalising, with several 'Black Tern' false alarms, which all turned out to be **Whiskered Terns** in their rather confusing 1st winter plumage, often flying with **white-winged Black Terns,** both interesting migrants in their own right.

Two **Bar-tailed Desert Larks** and were at Sila on the 6th and 15 **Citrine Wagtails** were in Abu Dhabi city on the 20th. **Red-tailed Wheatears** had returned to the foothills by the 27th and a pair of wintering **Eastern Pied Wheatears** were back in place at Qarn Nazwa on the 30th. An early **Yellow-browed Warbler** (25th record) was still on Das Island on the 16th and two **Masked Shrikes** were on Das Island on the 16th.

Observers: Simon Aspinall, John Bannon, Phil Brett, Dave Bradford, G. Clarkson, Michael Dryden, J & E Djerf, H.H & H. de Haag, H. Hendricks, C. Holt, B. & W. Holt, A. Forsten, Martin Garner, Abdul Hakim, Peter Hellyer, Steve James, Marijcke Jongbloed, Sylvia Khabian, O. Karhu, Carolyn Lehmann, *Limosa Holidays, Naturetrek, Natur-studienreisen*, T. Numminen, P. & M. Rathbone, D. Oelkers, Colin Richardson, Alec Rollo, P. Rusanen, Len Reaney, Erik Sarney, M. & D. Saunt, M. Sipponen, Paul Sharman, Alison Simms.

Colin Richardson,
Emirates Bird Records Committee,
P.O. Box 50394, Dubai.

Corporate Members of the ENHG

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