

TRIBULUS



Bulletin of the Emirates Natural History Group

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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 in 1991, permits the inclusion of black and white and colour photographs, not previously possible.

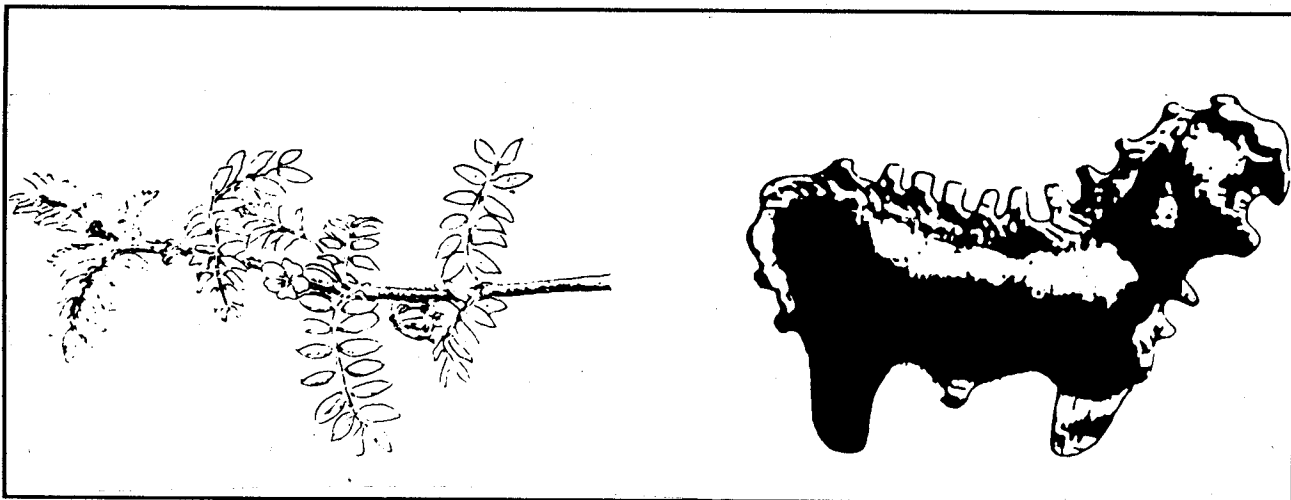
TRIBULUS is published twice a year, in April and October. The aim of the publication is to create and maintain in standard form a collection of recordings, articles and analysis on topics of regional archaeology and natural history, with the emphasis focussing on the United Arab Emirates and adjacent 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.

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

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

Manuscripts should be 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: Houbara, *Chlamydotis undulata* (NARC)

Arabic : *Acanthodactylus boskianus* (Dr. R.J. Hornby)

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

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

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Editorial

This issue of *Tribulus*, marking the beginning of our sixth year of publication, takes on a distinctly conservation orientated tone, but one which adds, too, to the collection of scientific information about the Emirates that is now becoming available.

Following on from the important papers by Michael Gillett in recent issues on beetles and butterflies, Group Chairman Richard Hornby has put together the first detailed list of the amphibians and reptiles known to exist in the Emirates. There is, of course, much more work to be done in this field, for the status of many of the species he mentions is but little known, but it is nice to note that much of the early work on which he has based his list was done by one of the Group's founder-members, JNB 'Bish' Brown, back in the 1970s and 1980s.

One of the objectives of the Group when it was founded was to stimulate the collecting of recordings of plants, birds, reptiles and other animals, in the recognition that while such records would be those of amateur enthusiasts rather than of professional scientists, they would prove to be of value to professionals like Richard Hornby in later years.

The influence of professionalism can also be seen in Hornby's report on the census of Mountain Gazelles mounted by the country's three natural history groups in the Jebel Ali/Sweihan area in March; the first such exercise carried out in the UAE, and in his detailed summary of the status of the country's mammals.

Thanks to the work of dedicated birdwatchers and ornithologists, many of them Group members, there has long been a checklist of the birds of the UAE, first published in Vol. 1.2 of this journal in 1991, and most recently updated in a publication issued by the Emirates Bird Records Committee earlier this year, which is reviewed elsewhere in this issue.

Now, thanks to Gillett and Hornby, this journal has been able to publish the first scientific checklists of the country's butterflies, amphibians, reptiles and mammals, a significant step forward in making data about our national wildlife available for others to build upon.

There has also, of course, been a substantial amount of work done on the flora of the Emirates, most significantly by *Tribulus* founder and Chief Editor Rob Western.

He would be the first to concede, however, that there is more work to be done in the field. The detailed paper by Benno Boer of the National Avian Research Centre and a team from Germany's University of Osnabruck not only adds to our knowledge of the distribution of the country's flora, but also adds two new species to the national list.

Such data, whether on plants, animals, birds or other members of the animal kingdom, is essential if it is to be

possible for priorities for conservation to be drawn up. Unless the bio-diversity of the Emirates is properly studied and recorded, it is impossible to be certain that everything that should be protected is receiving the attention it deserves.

Fortunately, the studies that have already taken place, often related mainly, though not exclusively, to bird life, have helped to identify some areas that qualify for protection.

Following on from a recent paper on important wetland areas on the country's East Coast, Simon Aspinall contributes a proposal for a list of over 40 protected areas throughout the country.

At present, only a few areas, like Khor Dubai, Abu Dhabi's Eastern Lagoon, the Al Ghar Lake and some of the privately-owned offshore islands, enjoy any protection at all, and it is timely to point out that unless a system of protected areas is established quickly, and protected by the appropriate enforcement legislation, much that is valuable in our bio-diversity will be lost.

In some cases, it is possible to identify a particular species of bird, for example, which is viewed as being of such importance that it can serve as a flagship species. Around this protective measures can be thrown that, in turn, help in the protection of other species.

One such is the Houbara, the traditional quarry of Arab falconers, and a scarce migrant to the UAE, although it may once have bred in the deep desert. The Houbara plays a major role in the traditional culture and heritage of the people of the UAE, and has been a focus of attention for the National Avian Research Centre, within the framework of studying the species and breeding it in captivity. The objective is that its long term survival, as well as that of Arab falconry, can be guaranteed. The paper by Tom and Theri Bailey of NARC offers a valuable introduction to the species, very much a flagship species for conservation in the Emirates.

More such flagships will be identified, one hopes, to help in pushing forward conservation issues throughout the country. As we have seen in recent years, the mere passing of legislation, such as that to establish the Federal Environmental Agency, is insufficient. What is required is a determined effort to identify and then to tackle the threats to the UAE's environment and wildlife. If that means, on occasion, battling with other organs of Government, so be it.

Such an effort now seems to be under way in Abu Dhabi, with the recent establishment of the Environment and Wildlife Research and Development Agency, which is charged specifically with protecting wildlife.

Initial signs are that the new Agency may well be able to operate with the political authority which one might have hoped to see in the FEA. We wish them both well. ■

Time for a protected area network in the UAE

by Simon Aspinall

A preliminary assessment of the status of UAE wildlife has now been made with particular reference to birds, mammals, reptiles and flora as well as to specific habitats. Data on many groups is incomplete, but on the basis of our present knowledge we are now in a position to recommend designation of specific areas of the country for differing 'degrees' of protected status. At present only a handful of sites, which cover a tiny fraction of the country, receive formal protection.

The goal proposed by the present paper is the maintenance of the national biodiversity of the UAE at self-sustaining levels and in perpetuity. A successful conservation strategy relies on the establishment of a national protected area network as described below and changes to, or modification and regulation of, landuse practices where large land areas (of land or sea) are involved. Present day landuse policy needs to be evaluated for desert and coastal areas in particular. Species-specific management plans will need to be introduced and restoration programmes are to be advocated in certain instances, if conservation is ultimately to be successful. The introduction of new Federal legislation and use of individual Emiri decrees to protect the integrity of sites are recommended.

The term 'protected area' is used here in its broadest sense. Human livelihood need not necessarily be disrupted in such areas. Allaying perceived fears in the human populace is an important component of early stages in the move to establish protected areas. Management categories devised and recommended by the International Union for the Conservation of Nature, IUCN, and outlined below are those adopted or at least proposed for use in the UAE. In protected areas, only damaging human activities need be curtailed or regulated, whereas alternative activities may arise which more than offset any economic disadvantage accruing from any restrictions introduced. Socio-economic factors will always be examined to find politically acceptable solutions to ecological problems (sustainable utilisation of natural resources therein can continue unabated e.g. fisheries). The fundamental purpose is to work with development and ensure maximum benefits with minimum disruption to the environment.

Federal law dealing with hunting is inadequate to protect wildlife sites, although this was not the original purpose of the legislation, which was simply to protect certain fauna. At present there is no federal legislation specifically dealing with the safeguarding of land for wildlife. Emiri decrees effective in individual Emirates have been used to create several 'protected areas.' Abu Dhabi Eastern Lagoon, the UAE's first true sanctuary, is protected by order of President HH Sheikh Zayed bin Sultan al Nahyan; Khor Dubai sanctuary is protected by order of Dubai Crown Prince and UAE Defence Minister General Sheikh Mohammed bin Rashid al Maktoum

لقد تم مؤخراً الانتهاء من اعداد مسح مبدئي حول وضع الحياة البرية في دولة الامارات العربية المتحدة.. ويساعد هذا المسح على اقتراح مناطق معينة ذات أهمية خاصة وتحتاج للحماية.. هذا المقال يحتوي على قائمة تشمل ٤١ منطقة يمكن حمايتها مبدئياً.

with special penalties for 'infringements' and the Ruler of Fujairah HH Sheikh Hamad bin Mohammed al Sharqi has done likewise for three marine areas on the Gulf of Oman coast. One further marine reserve is apparently in the pipeline for Dubai. HH Dr. Sheikh Sultan bin Mohammed al Qassimi, Ruler of Sharjah, has set up the small 'Desert Park' and other sites within that Emirate are pending designation. The use of Emiri Decree, as an absolute measure, is to be commended. Some areas, including a few Abu Dhabi islands, are also protected by virtue of their ownership (Ruling Family, military & oil field security) and more than one is now managed for wildlife, in both terrestrial and marine situations.

New legislation is undoubtedly required. Amendment to existing legislation is a possibility but entirely new laws would probably be appropriate. The Federal Environmental Agency, FEA, would be the appropriate national body to draw up or oversee drafting of such wildlife legislation on a federal level. Inter-emirate standardisation is certainly required. Designation of any area by Emiri decree would be preferable and indeed more powerful than enactment of any new federal legislation and certainly swifter to achieve. The latter would and should provide a supporting and complementary role and be used for other areas deemed worth of safeguarding or as federal recognition adding weight to the former. As a final recommendation, Environmental Impact Assessment, EIA, should become mandatory; at present only ADNOC has an effective, all the more remarkably, this being voluntary and self-imposed.

Future priorities for research and survey work are presently being drawn up by the newly established Biodiversity Conservation Committee of the Federal Environmental Agency, while the recently established Environment and Wildlife Research and Development Agency (of Abu Dhabi) is also likely to play a role in this field.

Flora and fauna of the UAE

The Biodiversity Committee of the FEA recently reviewed the status and threat to the wildlife of the UAE. What follows is an abridged summary of part of the committee's discussions.

HABITATS/FLORA: Many UAE habitats are recognisably degraded or mismanaged. Desert areas are almost universally overgrazed. Development or the threat of development is almost omnipresent; coastal lands being

especially vulnerable in this respect. Valuable habitats particularly under threat are intertidal areas, mangroves, coral communities, seagrass beds, Gulf islands, *Acacia* savannah and montane communities. Their respective values may be of one or more of the following – commercially exploitable biological resources, landscape and recreational, prevention of soil erosion, mineral/aggregate production, coastal defence and biological nursery areas. The principal threats differ from site to site and prescriptive management will thus depend on individual circumstances.

MAMMALS: Mammals are those typical of Arabia with an Asian element also present. Most mammals found in the UAE are also found over much larger areas of the Arabian peninsula. **Arabian Leopard** *Panthera pardus nimr* and **Dugong** *Dugong dugon* populations are especially significant and 'flagships' for the success or failure of conservation efforts presently underway. Persecution and illegal harvesting, respectively, are major threats to the survival of these two species. The status of many species of mammal is poorly known e.g. bats. Several of the larger species are certainly in danger of becoming extinct in the UAE. e.g. **Arabian Tahr** *Hemitragus jayakari*. (See P. 13)

BIRDS: The UAE is a relatively small country but supports a rich and varied birdlife, due to its biogeographical situation. Breeding bird species are typically Palearctic but with an Indo-Malayan component in the east. The latter is shared, in Arabia, only with northern Oman. Furthermore, the country sits on the west Asian-African flyway for migrating species, shorebirds and other waterfowl, passerines or birds of prey amongst others. For many populations of both breeding and visiting species, the UAE is internationally important. Over 400 species of bird have been recorded in the UAE, of which about 100 have bred.

MARINE REPTILES: Seasnakes and turtles are widespread in the Arabian Gulf. The Gulf waters of the UAE support breeding and feeding concentrations of at least two threatened turtle species. Although collection of data has been largely opportunistic to date, a fuller study is planned. **Green Turtle** *Chelonia mydas* and **Hawksbill Turtle** *Eretmochelys imbricata* are known to breed on several Abu Dhabi islands. There is some illegal harvesting of eggs and full grown animals. Destruction of habitat is an insidious threat to marine communities. (See Page 9)

TERRESTRIAL REPTILES: Most are poorly known or mapped within the UAE. Considerable further study is anticipated. Lizards and snakes ought to receive due representation in a fresh review of desert landuse policy. (See Page 9)

AMPHIBIANS: Although incompletely studied, the use of surface freshwater is dramatically reducing the amount of available habitat for amphibians nationally. This primarily involves the numerous wadi systems of the Hajar. (See Page 9)

FISH: Commercial fish stocks of the Gulf may be being exploited unsustainably. Immediate assessment of stocks is vital. Less is known regarding coral reef communities and about other species, but studies are ongoing e.g. in mountain wadis.

NON-MARINE INVERTEBRATES: Few studies have been undertaken of specific groups and although sim-

ple national or single Emirate lists may exist for some, e.g. butterflies (Gillett 1995) and ants (Tigar & Collinwood 1993), there is certainly a paucity of information on status and distribution at the species level, if the lists are complete even. Professional studies are limited to those of dedicated specialists and to the National Avian Research Centre which is conducting extensive studies of desert invertebrates. Nonetheless, many groups e.g. *Odonata* remain neglected and extra survey effort is recommended in mountain areas in particular.

MARINE INVERTEBRATES: These are mainly tackled at a community or habitat level *cf.* reefs.

PROTECTED AREA MANAGEMENT CATEGORIES DEVISED & RECOMMENDED BY IUCN AND PROPOSED FOR USE WITHIN THE UNITED ARAB EMIRATES.

1. **Strict Nature Reserve**
 - a. **Strict Nature Reserve:** Protected area managed mainly for science.
 - b. **Wilderness Area:** Protected area managed mainly for Wilderness protection.
2. **National Park:** Protected area managed mainly for ecosystem conservation and reaction.
3. **National Monument:** Protected area managed mainly for conservation of specific natural features.
4. **Habitat/Species Management Area:** Protected area managed mainly for conservation through management intervention.
5. **Protected Landscape:** Protected area managed mainly for landscape conservation and recreation.
6. **Managed Resource Protected Area:** Protected area managed mainly for the sustainable use of natural ecosystems.

PROPOSED PROTECTED AREA NETWORK FOR THE UAE

Included here, apart from the site name, is an abridged listing of important wildlife contained in each site/area and recommended conservation management category or categories (*sensu* IUCN, as above). Full accounts of the wildlife known in most of these sites are to be found in Richardson *et al.* 1994 (in Evans 1994) and/or Scott 1995. The proposed protected area network is based on all available wildlife data, although it should be borne in mind that data on many groups is often completely lacking. However, in almost every instance these sites individually reach or exceed the qualifying criteria for international importance for birds alone. Collection of additional information on the wildlife in these sites is continuing and the lack of mention of, for example, coral communities in any of the marine areas named below, should not be taken to imply that it is unimportant — more probably it has simply yet to be surveyed for even a first time.

The following list should not be taken as the final word in site selection. New sites may emerge in due course, following census and survey work. As noted earlier, very few sites presently receive formal protection; any site already officially designated is annotated as such below. Zoning, whereby there is a core area surrounded by two layers, the outermost being a buffer, is standard management practice which permits differing human activi-

ties in each zone concomitant with the prevailing ecological limitations and needs of the wildlife existing there.

1. WESTERN ABU DHABI BORDER ISLANDS (ABU DHABI). 455,000 ha. (including sea area).

Includes N. & S. Yasat*, Ghagha*, Muhaiyimat, Umm al Hatab, Jazirat Na'itah, Kafai and Makhassib. Internationally important seabird colonies, Ospreys and Sooty Falcons, cetacea and coral communities.

Management category: Combination of 1, 4, 5 & 6. Possibly transfrontier.

2. DALMA* (ABU DHABI). 3500 ha.

Breeding Sooty Falcons. Coral communities?

Management category: 3 & 4

3. ABU DHABI'S OFFSHORE ISLANDS (ABU DHABI). 380,000 ha (including sea area).

Includes Dayyinah, Qamein*, Arzanah, Zirku and Das. Nationally and internationally important seabird colonies, turtles and coral communities.

Management category: 1, 3 & 4. Qamein is already fully protected by order of Sheikh Hamdan bin Zayed al Nahyan.

4. SIR BANI YAS SATELLITES*/MERAWAH/KHOR AL BAZM SABKHA, COAST AND ISLANDS (ABU DHABI). 478,000 ha. (including sea area). Includes Juneina, Selaha, 'Ushsh, Umm Amin* and Bu Tinah. Internationally important seabird colonies and other breeding and visiting migrant and wintering waterfowl populations, dugong, turtles and marine communities (e.g. seagrass beds & corals).

Management category: 1 & 6. Bu Tinah is already fully protected by Sheikh Hamdan bin Zayed al Nahyan. Umm Amin is already effectively wardened.

5. RUWAIS REEDBEDS (ABU DHABI). 15 ha.

Nationally important freshwater wetland (artificial).

Management category: 4

ADNOC has agreed to manage this area sympathetically for wildlife.

6. BAYNUNAH* (ABU DHABI). 180,000 ha.

Nationally important wintering migrant bird populations (desert species).

Management category: 1b & 6 (zoned).

7. ABU AL ABYADH*/DHABBIYAH/ABU DHABI COASTAL WETLANDS (ABU DHABI). 263,000 ha. Includes Futaisi, Bahrain/Bu Khushaishah island and area. Internationally important breeding and visiting migrant and wintering waterfowl populations including Crab Plover colony. Also extensive mangrove stands.

Management category: 1, 5 & 6. The Crab Plover colony on Abu al Abyadh is protected by order of Sheikh Khalifa bin Zayed al Nahyan.

Futaisi is managed as a private reserve by Sheikh Hamad bin Hamdan al Nahyan.

8. EASTERN ABU DHABI/RAS GHANADA COASTAL WETLANDS (ABU DHABI). 99,500 ha.

Includes the "Eastern Lagoon" and islands of Sadiyat, Bal Ghelam, Ras Ghurab, Hayl and Ras Ghanadah. Nationally important breeding and visiting migrant and wintering waterfowl populations. Also

mangroves.

Management category: 5 & 6. Note that the Eastern Lagoon is already protected by order of President HH Sheikh Zayed bin Sultan al Nahyan, while Bal Ghelam is managed as a private reserve by Sheikh Surour bin Mohammed al Nahyan.

9. SIR ABU NU'AIR (SHARJAH). 1500 ha.

Internationally important seabird colonies and? marine ecosystem.

Management category : 4 possibly to become 1 later.

10. AL GHAR LAKES (ABU DHABI). 3000+ha.

Breeding Greater Flamingo and breeding and visiting migrant and wintering shorebird populations.

Management category: 4

11. KHOR DUBAI* INCLUDING ZABEEL PONDS* (DUBAI). 2000+ha.

Internationally important visiting migrant and wintering waterfowl and raptor populations.

Management category: 1. The most important part of Khor Dubai is already protected by order of Sheikh Mohammed bin Rashid al Maktoum.

12. MUSHRIF NATIONAL PARK* (DUBAI). 600 ha.

Prosopis woodland flora and fauna reserve with breeding restricted range bird species.

Management category: 2. Note that the site is already protected as a recreational 'National Park.'

13. RAMTHA LAGOONS* (SHARJAH). c. 250 ha.

Internationally important breeding and visiting migrant and wintering waterfowl and raptor populations.

Management category: 4.

14. KHOR AJMAN/KHOR ZAWRA (AJMAN). c 3000 ha.

Nationally important visiting and wintering waterfowl populations.

Management category: 5.

15. KHOR AL BEIDAH*/SINAIYA ISLAND* (UMM AL QAIWAIN). c. 7500 & 1500 ha. respectively.

Internationally important seabird colonies and visiting migrant and wintering waterfowl populations. Also saltmarsh and mangrove communities.

Management category: 6 (zoned).

16. AL JAZEERA KHOR* (RAS AL KHAIMAH). 4600 ha.

Internationally important visiting migrant and wintering waterfowl populations.

Management category: 6 (zoned)

17. DHAYAH/RAMS/GHALILAH/HULAYLA ISLAND (Ras al Khaimah). 19,550 ha.

Nationally important visiting migrant and wintering waterfowl populations. Unique coastal vegetation community.

Management category: 6 (zoned)

18. DIGDAGA-HAMRANIYYAH* (RAS AL KHAIMAH). c. 2000 ha.

Nationally important breeding bird populations and migratory stopover site for endangered and restricted range species. Flora.

Management category: 5

19. DIBBA BAY INCLUDING DIBBA AL HISN (FUJAI-RAH/OMAN). 27,780 ha.

- Nationally important marine area and *Acacia* savannah community.
Management category: 5 & 6.
20. WADI SHIH RESERVOIR (SHARJAH). c. 500 ha.
Nationally important freshwater site.
Management category: 5
21. WADI SAFAD (FUJAIRAH). c. 1500 + ha.
Nationally important freshwater site.
Management category: 5. Part of this site is earmarked for designation as a reserve by Emiri decree.
22. WADI HAYL (FUJAIRAH). c. 500 ha
Nationally important freshwater site.
23. WADI GHAYL (FUJAIRAH). 200 + ha.
Nationally important freshwater site.
Management category: 5
24. MASAFI-TAYYIBAH* (RAS AL KHAIMAH). c. 2000 ha.
Nationally important site for migrant, wintering and breeding bird species.
Management category: 5 & 6
25. KHOR KALBA* (SHARJAH) INCLUDING FUJAIRAH BEACH (FUJAIRAH). 7750 ha. plus Kalba plain extension. Mangrove bird community including endemic subspecies of **White-collared Kingfisher**.
Management category: 1 & 6 (zoned). Possibly transfrontier.
26. HATTA LAKES (DUBAI). 800 + ha.
Nationally important freshwater site.
Management category: 2 & 4.
27. AL MADAM-DHAID PLAIN (SHARJAH/AJMAN/RAS AL KHAIMAH). Biodiversity site. 100,000 + ha.
Nationally important *Acacia* savannah bird community, including restricted range species.
Management category: 5 & 6.
28. QARN NAZWA* (Sharjah). c. 250 ha.
Nationally important breeding and wintering bird communities.
Management category: 1 b & 5.
29. JEBEL HAFIT* (ABU DHABI/OMAN). c. 1600ha. within UAE
Regionally important montane bird community including threatened species.
Management category: 2
30. AYN AL FAYDAH (ABU DHABI). c. 1400 ha.
Nationally important freshwater site.
Management category: 4. Note that part of the neighbouring area is already recognised as a recreational 'National Park.'
- 31-33. GULF OF OMAN MARINE RESERVES OFF DHADNAH, AL AQQA AND FAKEET (FUJAIRAH). (Not mapped).
Marine life including coral communities. Whale/cetacean sanctuary proposed.
Management category: 1 & 2. Note that these three sites have already been established, by Emiri Decree in June 1995.
- 34-39. ABU DHABI DESERT REFUGE/HUNTING AREAS. Site 34 incorporates 'JEBEL ALI SANDS' (DUBAI). Total area undecided. (Not mapped).

- Nationally important biodiversity sites (predominantly sand desert).
Management category: 1b & 6. Possibly transfrontier.
40. HAJAR-SHUMAYLIYAH MOUNTAINS 'NATIONAL PARK' (FUJAIRAH/OMAN) INCORPORATING SITES 20, 21 & 22. 660,000 ha. (Not mapped).
Endangered Arabian montane wildlife including **Arabian Leopard** and **Arabian Tahr**.
Management category: 1b & 2.
41. THE WESTERN RUS AL JIBAL (MUSANDAM), RAS AL KHAIMAH/OMAN. 600,000 ha. (Note mapped).
Endangered Arabian montane wildlife including **Arabian Leopard**.
Management category: 2. Transfrontier reserve.

Sites with an emboldened number appear in the 'Directory of Wetlands in the Middle East' (Scott 1995). An asterisk denotes an Important Bird Area (see Evans 1994), although several of these sites also appear in the former publication. Not that much of sites 1, 2, 3, 4, 7 & 8 is part of a proposed World Heritage Site.

Of the sites and areas identified above, over 50 per cent (21 out of 41 recently visited) are currently being adversely affected in part or in their entirety, whilst others survive under imminent threat of damage from human activities. It is time for these places to receive formal recognition and thus some degree of protection from human depredation. The unique marshland at Dhayah, for example, is being used as a tipping ground for the local marble quarries.

All the above sites are not equal, nor subject to the same level of threat, but important priorities are emerging.

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What sites have been missed or overlooked? Part of the Jiri plain is one candidate which will receive consideration. Can readers suggest additional areas?

RED LIST OF BIRDS BREEDING OR VISITING THE UAE

Selection of species based on criteria drawn up and followed by IUCN and BirdLife International.

SPECIES BREEDING IN THE UAE

Globally threatened species

None

Regionally threatened species or subspecies

Red-billed Tropicbird	<i>Phaethon aethereus indicus</i>
Socotra Cormorant	<i>Phalacrocorax nigrogularis</i>
Egyptian Vulture	<i>Neophron percnopterus</i>
Lappet-faced Vulture	<i>Torgus tracheliotus</i>
Sooty Falcon	<i>Falco concolor</i>
Houbara	<i>Chlamydotis undulata macqueenii</i>
White-collared Kingfisher	<i>Halcyon (Todirhamphus) chloris kalbaensis</i>

Species occurring in UAE at greater than 1% level of breeding population of the Middle East and considered at risk (populations known to be declining, population small or restricted to few sites).

Osprey	<i>Pandion haliaetus</i>
Crab Plover	<i>Dromas ardeola</i>
Sooty Gull	<i>Larus hemprichii</i>
Swift Tern	<i>Sterna bergii</i>
Lesser Crested Tern	<i>Sterna bengalensis</i>
Saunders' Little Tern	<i>Sterna saundersi</i>
Booted Warbler (Arabia)	<i>Hippolais (caligata) rama</i>

SPECIES VISITING THE UAE

Globally threatened species

Lesser Kestrel	<i>Falco naumanni</i>
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Threatened or declining species

Greater Spotted Eagle	<i>Aquila clanga</i>
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Species occurring in numbers greater than 10% of the biogeographical population

Broad-billed Sandpiper	<i>Limicola falcinellus</i>
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(For status of mammals, amphibians and reptiles, see separate papers by Dr. Richard Hornby in this issue, Pages 9-14)

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A Checklist of Amphibians and Reptiles of the UAE

by Richard Hornby

There are no popular identification guides to amphibians and reptiles of the UAE and no checklist is available. This makes it relatively difficult for the amateur to develop expertise in the subject and to record species in a reliable and useful manner. Further difficulties are caused by changes in nomenclature and inconsistencies in the use of English names. This paper is offered in the hope that it will assist standardisation in the use of names and encourage the study of herpetology in UAE.

The most authoritative and comprehensive accounts of reptiles of Arabia are by E.N. Arnold (1986), which deals only with lizards, and Levison *et al.* (1992), which deals with all groups. These works both provide identification keys and systematic lists, and indicate whether species have been recorded in the United Arab Emirates (or, earlier, in the Trucial States). Neither of these works are readily available to the amateur, and neither are up to date.

The most active herpetologist in UAE was the late JNB 'Bish' Brown, who collected a lot of information about

هذه الورقة تقدم أول قائمة علمية للبرمائيات والزواحف يتم رصدها في دولة الامارات الى جانب الاوضاع الحالية لهذه الأنواع، وتم اعداد هذه القائمة بناء على عمليات مسح اجريت مؤخراً بالإضافة الى عمليات الرصد التي تمت خلال السنوات القليلة الماضية.

the status and distribution of species. Sadly, his only publications on this subject, before his untimely death in 1995, were a few brief items under the title Recorders' Reports, in *Tribulus* (Brown, 1991 and 1992). Fortunately, however many of his notes are held in the Library of the Emirates Natural History Group, and have proved very useful in the production of this checklist.

Information on the status of desert reptiles was greatly improved by the survey carried out for the National Avian Research Centre in Abu Dhabi Emirate, over the

winter of 1991/92. The main purpose of the survey was to locate Houbara Bustards (*Chlamydotis undulata*), but the opportunity was taken to find and identify all vertebrate and plant species throughout the desert of Abu Dhabi. Much of the work on reptiles was done by Sherif Baha el Din who already had a lot of expertise on reptiles of the Middle East. Animals were found both in systematic transect walks and in night-time searches. The results of the survey have just been published (El Din, 1996). This includes information from some useful follow-up studies by Patrick Osborne of NARC, some details of which have already appeared in *Tribulus* (Osborne, 1993 and 1994).

The NARC survey increased the number of species recorded in the UAE and vastly expanded the number of records and the known distribution of many terrestrial species. It was restricted, however, to the Emirate of Abu Dhabi and was virtually confined to desert habitats. The main exception was the foothills of Jebel Hafit, south of Al Ain, where a few additional species were found.

Bish Brown's notes in the ENHG Library contain useful records of sea snakes and turtles. Aspinall (1995) confirmed the UAE status of species in these groups. Both Aspinall and Baldwin (1995) believed that the Olive Ridley Turtle was a rare visitor to UAE waters, at least in the Gulf of Oman, but there were no positive records until April 1996, when an adult brought in by fishermen from Dubai waters (in the Arabian Gulf) was identified by Dr Mohammed Reza Khan, Director of Dubai Zoo. This timely occurrence has allowed me to include the

species in this new list.

The checklist contains 67 species, of which 20 are endemic to Arabia. Two of the species are toads, 5 are turtles, 39 species are lizards, 13 are terrestrial snakes and 8 are sea-snakes.

Annotations have been added to give an approximate indication of status within the UAE, using only the crude scale – 'abundant, frequent, occasional, rare,' with 'locally' where appropriate. Habitat preference is also indicated in very general terms.

Our knowledge of desert reptiles has been boosted considerably by the NARC survey of Abu Dhabi Emirate. Unfortunately, however, there is a marked dearth of herpetologists in the UAE at present, and very little fresh information is appearing. There is a particular need to improve our knowledge of the herpetofauna of the mountains, mountain wadis and foothills. The list indicates that no fewer than 21 species of lizard and snake are associated with mountains, rocks, wadis or stony deserts. This excludes the species associated with walls, buildings and cultivations. There is, therefore, an important element of the fauna of the UAE about which rather little is known and much less has been published. It will be very difficult to arrange protection for the species and their habitats until this has been rectified.

In the checklist which follows synonyms have been included not as an attempt at taxonomic comprehensiveness but rather to assist the beginner in the avoidance of nomenclatural pitfalls.



Spiny-tailed agamid, *Uromastix microlepis*, or 'dhub.' — S. James

Table 1. Checklist of the Amphibians and Reptiles of UAE

English Name	Habitat	Status in UAE	Nocturnal /Diurnal	Recorded by NARC in Abu Dhabi survey	Remarks/synonyms	
Class Amphibia (Amphibians)						
Bufoidae (Toads)						
*Bufo arabicus	Arabian Toad	Wadis	o	D/N	No	This was previously included within <i>Bufo orientalis</i>
Bufo dhofarensis	Dhofar Toad	Wadis, plains, plantations	r	N	No	
Cheloniidae and Dermocheloniidae (Sea Turtles)						
Chelonia mydas	Green Turtle	Seagrass beds	lf		No	First positive record - Dubai, April 1996.
Eretmochelys imbricata	Hawksbill Turtle	Pelagic	r		No	
Caretta caretta	Loggerhead Turtle	Pelagic	r		No	
Lepidochelys olivacea	Olive Ridley Turtle	Pelagic	r		No	
Dermochelys coriacea	Leatherback Turtle	Pelagic	r		No	
Agamidae (Agamid lizards)						
Agama flavimaculata	Jayakar's Agamid	Stony desert/foothills	f	D	Yes	= <i>Trapelus flavimaculatus</i>
Agama sinaita	Blue Rock Agamid	Mountains	o	D	Yes	= <i>Pseudotrapelus sinaitus</i>
Phrynocephalus arabicus	Yellow Toad-head	Soft sand	f	D	Yes	
Phrynocephalus maculatus	Banded Toad-head	Gravel plains	r	D	Yes	
Uromastyx microlepis	Spiny-tailed Agamid	Gravel plains, Scrubby desert	lf	D	Yes	= <i>U. aegyptius microlepis</i> . 'Dhab.'
Gekkonidae (Geckoes)						
*Asaccus gallagheri	Dwarf Gecko	Mountains	r	?	No	= <i>Phyllodactylus gallagheri</i>
Phyllodactylus elisae		Rocks, caves, houses	r	?	No	The Oman/UAE populations may be a separate (endemic) species.
*Bunopus spatularis		Mountains	r	?	No	Two subspecies, <i>spatularis</i> and <i>hajarensis</i> are believed to occur.
Bunopus tuberculatus	Stone Gecko	Desert, coast	a	N	Yes	= <i>Bunopus abudhabi</i>
Cyrtodactylus scaber	Wall Gecko	Rocks, walls	lf	N	No	= <i>Stenodactylus scaber</i>
Hemidactylus flaviviridis	Yellow-bellied House Gecko	Houses	lf	N	No	
Hemidactylus persicus	Persian Gecko	Mountains	r	N	No	
Hemidactylus turcicus	Turkish Gecko	Rocks, trees, walls	lf	N	Yes	
*Pristurus celerrimus		Mountains	r	?	No	
*Pristurus minimus		Sandy desert	r	D/N	Yes	
Pristurus rupestris	Dwarf Rock Gecko	Trees/rocks/walls	f	D	Yes	
Ptyodactylus hasselquistii	Fan-footed Gecko	Mountains/walls	lf	N	Yes	
Stenodactylus arabicus		Soft sand	r	N	Yes	= <i>Trigonodactylus arabicus</i>
*Stenodactylus doriae	Desert Gecko	Soft sand	o	N	Yes	= <i>Ceramodactylus doriae</i>
*Stenodactylus khobarensis	Khobar Gecko	Coastal	r	N	Yes	= <i>Pseudoceramodactylus khobarensis</i>
*Stenodactylus leptocosymbotes	Big-headed Gecko	Stony desert	o	N	Yes	
*Stenodactylus slevini	Big-headed Gecko	Stony desert	lf	N	Yes	
Teratoscincus scincus	Scaly Gecko	Grassy dunes	r		Yes	= <i>Stenodactylus scincus</i>
Lacertidae (Lacertid lizards)						
Acanthodactylus boskianus	Striped Sand Lizard	Desert, wadis, coast	r	D	No	
*Acanthodactylus gongrorhynchatus	Fringe-toed Lacertid	Sandy desert	f	D	Yes	= <i>A. scutellatus</i>
*Acanthodactylus haasi	Haas's Spiny-footed Lizard	Sandy desert	r	D	Yes	
*Acanthodactylus opheodurus	Spiny-footed Lizard	Gravel plains	r	D	Yes	
*Acanthodactylus schmidtii	White-spotted Lizard	Soft sand	a	D	Yes	= <i>A. cantoris schmidtii</i>
* - endemic to Arabia, a - abundant, f - frequent, o - occasional, r - rare, l - locally						

* - endemic to Arabia, a - abundant, f - frequent, o - occasional, r - rare, l - locally

English Name	Habitat	Status in UAE	Recorded by Nocturnal /Diurnal	NARC in Abu Dhabi survey	Remarks/synonyms
*Lacerta cyanura	Blue-tailed Lizard	Mountains	r	D	No
*Lacerta jayakari	Jayakar's Lacertid	Mountains	r	D	No
*Meselina adramitana	Desert Race-runner	Sand, gravel	o	D	Yes
*Meselina brevirostris	Short-nosed Desert Lizard	Gravel, coast	o/r	D	Yes
Skinks					
Ablepharus pannonicus	Snake-eyed Skink	Mountains	r	?	No
Chalcides ocellatus	Ocellated Skink	Coastal, cultivations,	o	D	Yes
Mabuya tessellata		Mountain foothills	r	?	No
*Scincus mitranus	Eastern Sand Skink	Soft sand	f	D	Yes
*Scincus scincus conirostris	Sandfish	Sandy desert	r	D	Yes
Varanidae (Monitor Lizards)					
Varanus griseus	Grey Desert Monitor	Gravel plains, scrub, foothills	o	D	Yes
Amphisbaenidae (Amphisbaenians)					
Diplometopon zarudnyi	Arabian Worm lizard	Sandy desert	lf	N	Yes
Serpentes (Snakes).					
Typhlopidae and Leptotyphlopidae (Thread Snakes)					
Ramphotyphlops braminus	Blind Snake	Cultivation	r	N	No
Leptotyphlops macrorhynchus	Thread Snake	Stony desert	r	N	Yes
Boidae (Boas)					
Eryx jayakari	Sand Boa	Sandy desert	o	N	Yes
Colubridae. (Colubrids)					
Coluber ventromaculatus	Hardwicke's Rat Snake (Whip Snake)	Coastal	r	D/N	No
Coluber rhodorhachis rhodorhachis	Wadi Racer	Wadis with water	lf	D	No
Lytrochilus diadema	Leaf-nosed Snake	Sand etc	o	N	Yes
Malpolon moilensis	Arabian Rear-fanged	Gravel plains	lf	D	Yes
Psammophis schokari schokari	Variable (Hissing) Sand Snake	Desert, wadis, trees	lf	D	Yes
Spalerosophis diadema cliffordii	Clifford's Snake	Oases, cultivations	r	D/N	No
Viperidae (Vipers)					
Cerastes cerastes gasperetti	Sand (Horned) Viper	Sandy desert	f	N	Yes
Pseudocerastes persicus	False Horned Viper	Sandy desert	r	N	No
Echis carinatus sochureki	Saw-scaled Viper	Rocks, scrubby desert	lf	N	Yes
Echis coloratus	Carpet Viper	Mountains	lf	N	No
Hydrophiidae (Sea Snakes)					
Hydrophis ornatus	Reef Sea-snake	Pelagic?	r		No
Hydrophis cyanocinctus	Annulated Sea-snake	Shallow water	o		No
Hydrophis lapemoides	Arabian Gulf Sea-snake	Shallow water	o		No
Hydrophis gracilis	Graceful Sea-snake	Shallow water	r		No
Hydrophis spiralis	Yellow Sea-snake	Prefers deeper water	r		No
Pelamis platurus	Yellow-bellied Sea-snake	Pelagic	o		No
Lapenis curtus	Shaw's Sea-snake	Shallow water	o		No
Enhydrina schistosa	Hook-nosed Sea-snake	Shallow water	r		No

* - endemic to Arabia, a - abundant, f - frequent, o - occasional, r - rare, l - locally

* - endemic to Arabia, a - abundant, f - frequent, o - occasional, r - rare, l - locally

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A Red List of Mammals for the United Arab Emirates

Richard Hornby

One of the first tasks of the new UAE Biodiversity Conservation Committee was to review the conservation status of the country's mammals. This list is the result of their deliberations and includes all the mammal species, which in the opinion of the Committee, have definitely occurred within the area of the United Arab Emirates since the year 1900. The most authoritative work on the status of mammals in Arabia is Harrison and Bates (1991), which has proved an invaluable reference.

The species have been allocated to the IUCN Red List Categories (IUCN 1994), which are defined below. There are further qualifying criteria based on population size, distribution and rates of decline, on which to base the allocation to categories. For most species the lack of reliable data in UAE precluded rigidly objective application of the criteria. The list of species and allocation to categories reflects the views of members of the UAE Biodiversity Conservation Committee but final responsibility rests with the author.

The Red List Categories are intended primarily for application at the global level but IUCN are keen to see them applied nationally and they have prepared Draft Guidelines for Applying the IUCN Red List Categories at the National Level. This document was used in the consideration of mammals of UAE.

Within each category the species are listed in taxonomic order, following the Checklist of the Mammals of Arabia (Nader 1990).

هذه الدراسة تحتوي على قائمة بالثدييات التي تم رصدها في دولة الامارات الى جانب وضعها الحالي بما في ذلك الأنواع المنقرضة أو تلك التي تستدعي جمع المزيد من المعلومات حولها. وتتوافق هذه القائمة مع الأصناف التي تم رصدها في القائمة الحمراء الصادرة عن الاتحاد العالمي للحماية.

Extinct

A taxon is extinct if there is no reasonable doubt that the last individual has died.

None

Extinct in the Wild

A taxon is Extinct in the Wild when it is known only to survive in captivity or as a naturalised population well outside the past range.

Wolf	<i>Canis lupus arabs</i>
Striped Hyena	<i>Hyaena hyaena</i>
Arabian Oryx	<i>Oryx leucoryx</i>
Wild Goat	<i>Capra aegagrus</i>
Nubian Ibex	<i>Capra ibex</i>

Critically Endangered

A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the

immediate future.

Ratel	<i>Mellivora capensis</i>
Arabian Leopard	<i>Panthera pardus nimr</i>
Sand Gazelle	<i>Gazella subgutturosa marica</i>
Arabian Tahr	<i>Hemitragus jayakari</i>
Finless Porpoise	<i>Neophocaena phocaenoides</i>

Endangered

A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.

White-tailed Mongoose	<i>Ichneumia albicauda</i>
Gordon's Wildcat	<i>Felis silvestris gordonii</i>
Sand Cat	<i>Felis margarita</i>
Dugong	<i>Dugong dugon</i>

Vulnerable

A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.

Egyptian Fruit Bat	<i>Rousettus aegyptiacus</i>
Long-eared Hedgehog	<i>Hemiechinus auritus</i>
Rueppell's Fox	<i>Vulpes rueppellii</i>
Blanford's Fox	<i>Vulpes cana</i>
Caracal Lynx	<i>Felis caracal schmitzi</i>
Mountain Gazelle	<i>Gazella gazella cora</i>
Indo-Pacific Humpback Dolphin	<i>Sousa chinensis</i>

Conservation Dependent

A taxon is Conservation Dependent when it is the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories, above, in a period of five years.

None

Near Threatened

A taxon is Near Threatened when it does not qualify for Conservation Dependent but is close to qualifying for Vulnerable.

Egyptian Hedgehog	<i>Hemiechinus aethiopicus</i>
Lesser Jerboa	<i>Jaculus jaculus</i>
Egyptian Spiny Mouse	<i>Acomys cahirinus</i>
Bottle-nosed Dolphin	<i>Tursiops truncatus</i>
Risso's Dolphin	<i>Grampus griseus</i>
False Killer Whale	<i>Pseudorca crassidens</i>

Least Concern

A taxon is Least Concern when it does not qualify for Conservation Dependent or Near Threatened.

Brandt's Hedgehog	<i>Hemiechinus hypomelas</i>
Cape Hare	<i>Lepus capensis</i>
Cheeseman's Gerbil	<i>Gerbillus cheesemani</i>
Libyan Jird	<i>Meriones libicus</i>
Sundevall's Jird	<i>Meriones crassus</i>

Black Rat	<i>Rattus rattus</i>
Brown Rat	<i>Rattus norvegicus</i>
House Mouse	<i>Mus musculus</i>
Red Fox	<i>Vulpes vulpes</i>

Data deficient

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.

House Shrew	<i>Suncus murinus</i>
Muscat Mouse-tailed Bat	<i>Rhinopoma muscatellum</i>
Naked Bellied Tomb Bat	<i>Taphozous nudiventris</i>
Trident Leaf-nosed Bat	<i>Asellia tridens</i>
Persian Leaf-nosed Bat	<i>Triaenops persicus</i>
Sind Serotine Bat	<i>Eptesicus nasutus</i>
Kuhl's Pipistrelle	<i>Pipistrellus kuhlii</i>
Arabian Pipistrelle	<i>Pipistrellus arabicus</i>
Hemprich's Long-eared Bat	<i>Otonycteris hemprichii</i>
Baluchistan Gerbil	<i>Gerbillus nanus</i>
Wagner's Gerbil	<i>Gerbillus dasyurus</i>
Spotted Dolphin	<i>Stenella attenuata</i>
Spinner Dolphin	<i>Stenella longirostris</i>
Common Dolphin	<i>Delphinus delphis</i>
Sperm Whale	<i>Physeter macrocephalus</i>
Fin Whale	<i>Balaenoptera physalus</i>
Bryde's Whale	<i>Balaenoptera edeni</i>
Humpback Whale	<i>Megaptera novaeangliae</i>

Note that the Cheetah *Acinonyx jubatus*, the Rock Hyrax *Procavia capensis* and the Dorcas Gazelle *Gazella dorcas* have been omitted from the list. It is quite probable that they formerly occurred in the wild in what is now the UAE, but we have been unable to find any reliable evidence to support this.

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A Census of Mountain Gazelles

by Richard Hornby

Background

Most of the larger mammals of the UAE have suffered drastic declines in recent decades, with several species now believed to be extinct. One welcome exception is the Mountain Gazelle (*Gazella gazella cora*) which is known to survive both in the mountains of the northern Emirates and in the desert of Abu Dhabi and Dubai. They are more frequently seen in the desert than in the mountains but this may have more to do with the terrain than the actual numbers. The taxonomy of gazelles in the Middle East is complex and confusing, but is now being clarified with the help of genetic studies. The gazelles we are concerned with here have in the past been called Arabian Gazelle (*Gazella gazella arabica*) but this is now considered to be synonymous with *G.g. cora* (Harrison and Bates 1991). The gazelles in the mountains are smaller and darker than those in the desert but they are believed to be of the same subspecies. To avoid confusion we should call them all Mountain Gazelle.

As so little was known about this important population of gazelles, the Committee of the Emirates Natural History Group decided that a co-ordinated census of Mountain Gazelles in the desert would be a very useful exercise. Experience over the last year had provided some information on the best areas for gazelles, but nothing was known about their numbers or overall distribution. From casual observations the density of gazelles in the mountains appears to be lower than that in the desert and it was considered that the logistics of trying to organise a ground census of gazelles in the mountains were sufficiently formidable as to preclude this possibility.

Methods

On 21 March 1996 members from the three Natural History Groups, Abu Dhabi, Dubai and Al Ain, got together at the Al Shatie Palace Hotel, Ras Ghantoot, on the eve of the census. Participants were given instructions, safety notes, maps showing their assigned route, and a full briefing session. A lecture on Arabian gazelles was given by Jelle Boef, a visiting expert on this subject.

About 85 people took part in the census, driving in the desert from soon after 07.00 to approximately 16.00 hrs on 22 March. The study areas for the census was the area of desert bounded by the Abu Dhabi to Dubai road, the Jebel Ali to Madam road, the Dubai to Al Ain road and the Al Hayer - Sweihan - Abu Dhabi road. This is an area of a little over 3,000 square kilometres, or about 3.6% of the area of the United Arab Emirates. About 40% of the area is in Abu Dhabi Emirate and

هذه الورقة تقدم موجزاً لسبل ونتائج مسح الغزلان الجبلية «الظباء» والذي أجري في مارس الماضي في مناطق سويحان وجبل علي والجابر. وتشير نتائج المسح الى زيادة أعداد هذه الغزلان نتيجة للقانون الصادر في هذا الصدد والذي يمنع صيد هذه الفصيلة.

60% in Dubai Emirate.

The census was carried out by driving a series of parallel routes, following the lines of the dunes to simplify the driving, from West Southwest to East Northeast. For safety reasons, each route was covered by a pair of 4wd vehicles which kept together, each with 2 to 4 people on board. Every pair of vehicles had at least one mobile phone and eleven of the pairs had a Global Positioning System. People were instructed to keep in touch by phone with a rescue team which was standing by, but which fortunately did not have to rescue anyone. In fact the telephone reception in the area was found to be generally poor.

Pairs without a GPS had to navigate by compass. Each pair was assigned a Starting-point, a Mid-point and an End-point. They were instructed to drive between the points at a speed which would enable them to arrive at the Sweihan Rest House by 15.30-16.00 hrs, after finishing their census routes. They were advised to follow tracks wherever possible to limit the impact on desert flora and fauna and also to permit greater speed, which increases the probability of taking a gazelle by surprise. The participants were also instructed to make frequent stops in order to scan with binoculars from good vantage points.

There were a total of seventeen routes, which were on average separated from each other by about 4 kilometres. As there were only fourteen pairs of vehicles, the three pairs who drove the northernmost transects also drove the three southernmost transects, these latter from east to west.

All details of gazelles seen, plus tracks and droppings were entered onto a special recording form. Participants were instructed to record the numbers of gazelles seen, their location (by GPS co-ordinates where possible), the time, and distance travelled from the start of the transect.

Results

Most of the teams saw at least one gazelle and one saw

as many as twelve. All were believed to be Mountain Gazelle. The results are given in Figure 1. The twenty-one locations marked represent sightings of individuals and groups of up to six. The census results support previous observations that indicated that the greatest density of gazelles occurs in a central area but that they are also to be found in lower numbers well outside this central core.

The total number of gazelles seen on the census was 53, but as three of these could have been double counted by teams F and G, this figure should be reduced to 50. There was an unexpected bonus at the end of the day when someone being taken back to the Al Shatie Palace Hotel spotted two more gazelles only 100 metres from the main road, between Samha and Ras Ghantoot. This was well away from where any others had been seen earlier in the day, so we can safely say that 52 different animals were counted on the day.

Fresh tracks were seen in many places, sometimes many kilometres from where the nearest gazelle was seen. In fact the total area shown to be used by gazelles is very large – 75 km across by about 40 km wide. It must be clear that gazelles are utilising virtually the entire study area with the exception of the immediate vicinity of camel camps, plantations and palm groves. The latter are mainly on the eastern edge, adjacent to the Dubai to Al Ain road. On the whole the

gazelles were not particularly nervous, sometimes stopping to look at the vehicles for a few seconds at a distance of 2-300 metres before taking off. This suggests that they are not being hunted and have become relatively tolerant of man.

The majority of the gazelles seen were not reliably sexed, because of the inexperience of the observers and the distance at which many of the gazelles were seen. All that can be said about the groups seen are that there were five single males, three single females, eight individuals seen of unknown sex, one pair (male and female), four pairs of gazelles of unknown sex and seven groups of more than two. The largest group seen was six. Only one presumed juvenile was seen, with what was taken to be an adult male and female.

Conclusion

If we extrapolate to cover the area of land which was not covered by any route, and the amount of dead ground, we can safely say that the total number of gazelles seen will represent a maximum of one third of the actual number present. In other words there has to be at least 150 gazelles present in the study area and the figure could be significantly higher. As there are now virtually no natural predators of gazelles in this area, it is reasonable to hope that the numbers will increase towards the carrying capacity of the land. It is probable that the major limiting factor for this population of



A Mountain Gazelle, *Gazella gazella cora*, seen during the March 1996 survey. — S. James

gazelles is competition for food from camels and goats. One of the objectives of the census was to determine the maximum range of the Mountain Gazelle population. Another was to carry out a count in a systematic manner which could be repeated. Both objectives were successfully accomplished. By carrying out a similar exercise every few years it should be possible to monitor the strength and distribution of the population.

Acknowledgements

I would like to thank all the people that took part in the census, many of whom helped in various ways behind the scenes. Martin Parker and Charles Turner were very helpful in co-ordinating the involvement of people from Dubai and Al Ain. I would also like to thank Jelle Boef for coming to the UAE to give us the benefit of his advice and for his knowledge and enthusiasm for Arabian gazelles.

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Fig. 1 Results of the Census of Mountain Gazelles on 22 March 1996

Transect	Leader	Males	Females	Unknown	Total
A	Feulner	1			1
B	Verhage	1	1	1	3
C	Laubach		1		1
D	Walford			3	3
E	Chalmers			11	11
F	Buckton			12	12
G	Quested	3	3	4	10
H	Turner			4	4
I	Bowles	1	2		3
J	Dibb				0
K	Thornewell	1	3		4
L	Bird				0
M	Benge				0
N	Parker				0
O	Feulner				0
P	Verhage			1	1
Q	Laubach				0
		7	10	36	53

Double counting of up to 3 gazelles is suspected between teams F and G.

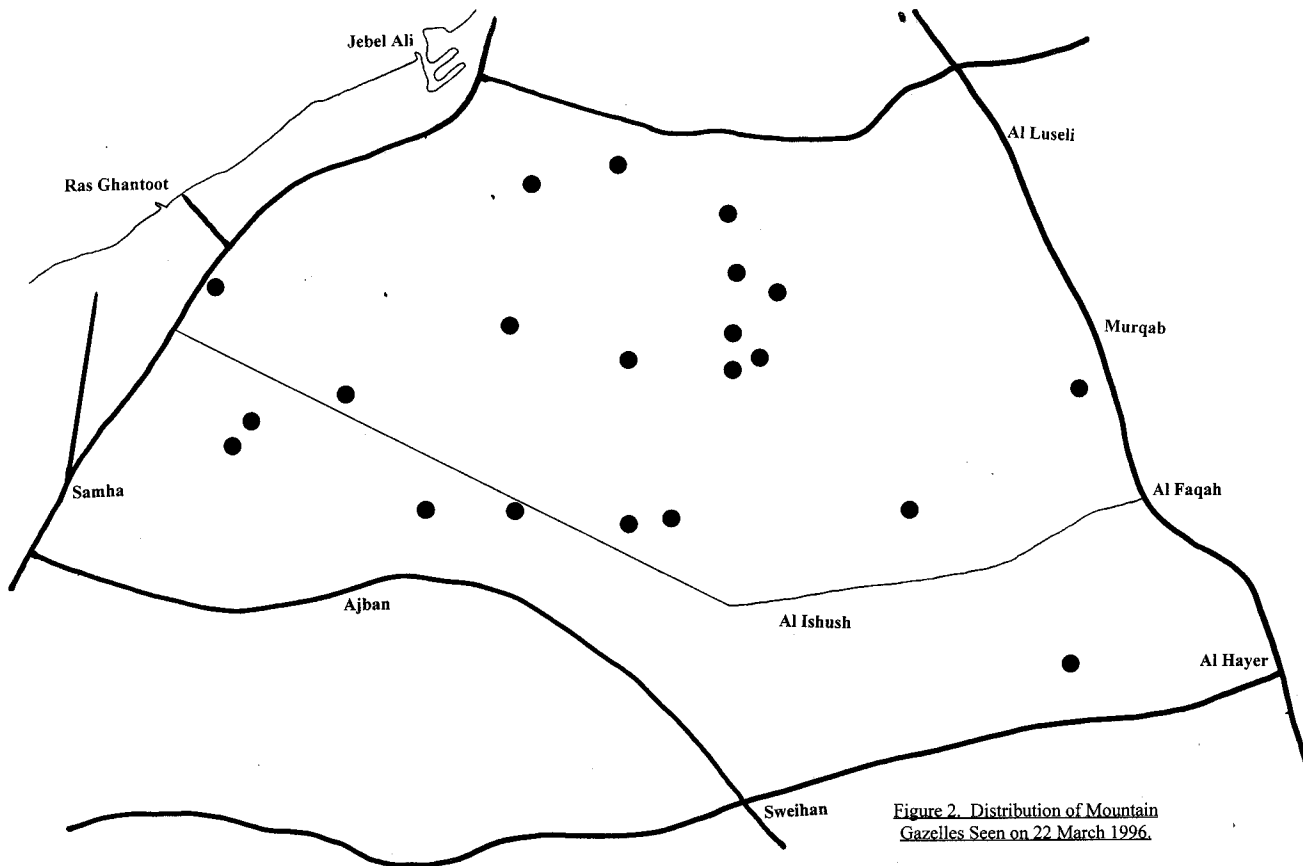
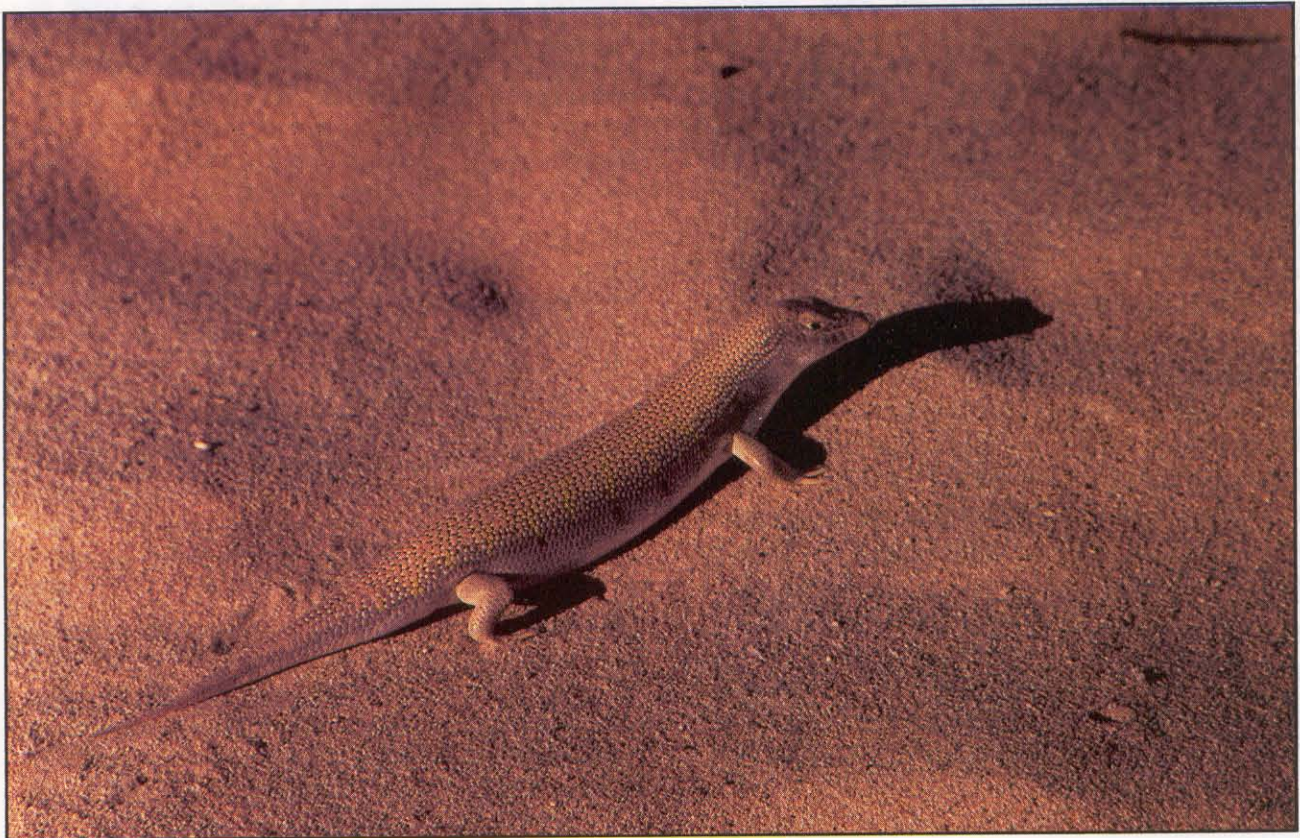


Figure 2. Distribution of Mountain Gazelles Seen on 22 March 1996.



Eastern Sand Skink, *Scincus mitranus* (P. Hellyer) See P. 9



White-spotted Lizard, *Acanthodactylus schmidtii*. It is unknown whether the blue frill is scar tissue, or a previously unrecorded sexual signal. The animal was following a female at the time. — R.J. Hornby



Displaying male Houbara, *Chlamydotis undulata macqueenii* (NARC). See P. 20



Female Houbara with eggs. (NARC)

The Houbara Bustard (*Chlamydotis undulata macqueenii*)

by Tom and Theri Bailey

The Bustard family

"The first record we have of man's association with bustards dates from 4,000 to 6,000 BC in the form of a simple outline drawing in the Tajo Segura cave in southern Spain. The drawing is unmistakably of a great bustard and the early Neolithic hunters must have marvelled at this stately and mysterious bird of the open plains. Today, countless generations later, our knowledge of the bustards is astonishingly meagre and they remain largely birds of awe and speculation."

Osborne et. al. (1984)

The Houbara is a member of a group of birds called the bustards, or floricans, belonging to the family **Otididae**. Bustards are medium sized to very large terrestrial birds, chiefly inhabiting open plains and semi-desert regions of the world, although some of the African species live in thick thorn scrub (Cramp and Simmons, 1987; Osborne et. al. 1984). Fossil records indicate that bustards originated in Africa from where they diverged to occupy much of the Old World. No bustard species is found in the New World. Most scientists agree there are 23 species of bustards (Cramp and Simmons, 1987), but many subspecies are currently being reclassified as separate species, increasing this figure (Goriup, pers. comm.). Some such as **Heuglin's Bustard** (*Neotis heuglini*) are extremely uncommon while others such as the **Rufous-crested Bustard** (*Eupodotis ruficrista*) are still relatively common (Jonsgard, 1991).

A typical bustard has a short beak, a long slender neck, is stout bodied, short tailed and is supported on long legs with only three toes (Osborne et al., 1984). Bustards differ from most other birds in a number of ways; they have hexagonal and not transverse-shaped scales on their legs, they have no crop for storing food and they have no preen gland with which to oil their feathers (King and McLelland, 1984; Cramp and Simmons, 1987). Bustards are instead covered with powder down, which, along with dust bathing, helps to keep their feathers clean. (King and McLelland, 1984).

Bustards display sexual dimorphism and male bustards are, as a general rule, larger than females (Cramp and Simmons, 1987). Ornithologists have always found the bustard family fascinating due to the elaborate displays that the males perform during the breeding season in order to attract females. Some of the larger species such as the **Kori Bustard** (*Ardeotis kori*), which rivals the **Great Bustard** for the record of the heaviest flying bird in the world, perform a balloon-type display, during which the bird struts along with its head thrown back, its tail cocked, its wings twisted or drooped and its throat greatly distended (Osborne et al., 1984). Other bustards such as the **Little Bustard** (*Tetrax tetrax*) perform a jumping display whilst others such as the **Black Bustard** (*Eupodotis afra*) perform graceful aerial displays, in which they leap or fly into the air and then pirouette down to the ground (Osborne and et al 1984). The houbara bustard has its own unique type of display, called a running display, in which the males strut around throwing their heads back along their bodies to reveal white fans of breast feathers (Osborne et al., 1984; Porter and Goriup, 1985).

طائر الحباري ظل هدفاً للعرب من هواة الصيد بالصقور منذ زمن طويل.. ولضمان استمرار هذه الهواية دون تهديد هذه الفصيلة بالانقراض يقوم المركز الوطني لأبحاث الطيور في أبوظبي بأعداد دراسة علمية مفصلة عن هذا الطائر.. هذه الورقة تلقي بعض الضوء حول عادات طائر الحباري وتكوينه البيولوجي.

The biology of the Houbara Bustard

"A season for rejoicing, the rains are close at hand and the houbara have arrived. They are verily like the manna of old, Allah's reward to those who have endured the summer heat."

H.R.P. Dickson, 1956.

The houbara is the most common bustard in the world and has the widest distribution. Houbara bustards live in arid countries, from the Canary Islands in the West, through North Africa and the Middle East, to Pakistan and India, north into Kazakhstan and as far East as China and the Central Mongolia (Johnsgard, 1991). At present most scientists agree that there are three distinct subspecies of houbara, which have plumage and behavioural differences; the North African race (*Chlamydotis undulata undulata*), the Canary Islands race (*Chlamydotis undulata fuertaventurae*) and the Asian race (*Chlamydotis undulata macqueenii*) (Cramp and Simmons, 1987). The subspecies of houbara bustard occurring in Asia, and thus in the United Arab Emirates, is sometimes known as the **MacQueen's Bustard**.

The Houbara is thought to be a resident in North Africa and the Canary Islands (Cramp and Simmons, 1987) whilst populations in Central Asia are migratory, wintering from Pakistan to Arabia, where they overlap with local breeding populations such as the ones in Saudi Arabia (Saint-Jalme, 1994). All scientific evidence to date indicates that the houbara occurring in the UAE is not a resident but a migrant that flies down from the north in autumn and returns during the following spring (NARC, 1994). It is presumed that these houbara migrate to find new food due to the harsh winters of their breeding grounds. Some houbara wintering in the UAE travel several thousand kilometres from their breeding grounds. During migration they stop regularly to feed and often walk many kilometres, trotting or walking with the typical bustard gait, and leaving distinctive tracks. It has long been speculated that the UAE birds originate from northern Iran, Turkmenistan, Uzbekistan and Kazakhstan and recent evidence from ecologists working for the National Avian Research Centre has confirmed this (Osborne, Bowardi and Bailey, *in press*).

The Houbara Bustard is well adapted to arid environments and is able to survive for long periods without food or water (Johnsgard, 1991). Wild houbara rarely drink, but are thought to gain most of the liquid they require from the dew on plants as well as from the animals that they eat (Cramp and Simmons, 1987). Houbara are opportunistic omnivores (Osborne et al. 1984; Johnsgard, 1991). Large prey includes small mammals, reptiles and snakes, while the invertebrates consumed includes locusts, grasshoppers, beetles, ants, snails, spiders, centipedes, caterpillars, termites and scorpions. The plant material eaten are fruits, seeds, shoots,

leaves and flowers (Osborne et al 1984; Cramp and Simmons, 1987; Roberts, 1991; Jonsgard, 1991).

Houbara have cryptic colouration and are secretive and cautious birds. They are reluctant to take flight and prefer to run and will avoid detection by taking cover behind a bush or crouching flat along the ground (Cramp and Simmons, 1987; Roberts, 1991). Brosset (1961) considered that the availability of cover for hiding is more important in determining the distribution of the houbara than food availability. They can reach speeds of up to 40 km/h on the ground and up to 65 km/h when flying (Cramp and Simmons, 1987). Once airborne, a houbara may attempt to avoid a predator such as a falcon, by twisting and turning at great speed and sometimes ejecting a sticky jet of foul-smelling green liquid from their caeca towards the pursuer (Al Nahyan, 1977; Roberts, 1991). As long ago as the eleventh century the falconer poet Ousama described the houbara bustard's method of defence (translated by G. Potter, 1929);

"....for when the saker comes near it, it flies down to the ground; and as the saker makes turns around it the bustard receives it with its tail; if it comes near it, it drops its excreta upon it, sprinkles it on its feathers, fills up its two eyes and flies away. But if this action fails, the saker overpowers it."

The breeding behaviour of the houbara bustard is not yet fully understood; it is not clear whether the birds are monogamous or polygamous, whether pairs are formed temporarily if at all, and at what age wild birds become fully mature (Johnsgard, 1991). The breeding season of wild houbara is from November to June, depending on the geographical location, and nesting may only take place if conditions are favourable (Porter and Goriup, 1985). Rainfall is important for the development of vegetation and food animals and after winters with little or no rain houbara are less likely to breed (Mendelssohn, 1979). Most breeding is thought to occur in the former Soviet Union (Roberts, 1991) although older references indicate that some also takes place by resident Arabian birds (Barnes, 1893; Ticehurst and others, 1922; Ticehurst and Cheesman, 1925; Kinnear, 1934; Dickson, 1956). The bizarre running dance of the male houbara during the breeding season has been described. Once the male has attracted a female and mated, he plays no further part in the reproductive cycle. On average, females lay 2-3 eggs, which are incubated for 21-23 days and the young fledge after 35 days, but remain with the parent well after this period (Cramp and Simmons, 1987; Johnsgard, 1991). Outside the breeding season, houbara bustards are gregarious, forming small flocks which move to where food is available (Mendelssohn, 1979; Johnsgard, 1991).

Traditional falconry and the houbara bustard in the Middle East

Falconry and the hunting of houbara are deeply ingrained in Arab traditions and culture, and falcons have had a central and respected place in UAE society for at least a thousand years. Falconry has existed in the Middle East since the 8th Century BC (Sergeant, 1976) and descriptions of hunting houbara with falcons in Arabia more than 700 years ago exist in translations of the chronicles of the legendary Ousama (Potter, 1929). For hundreds of years Arabs have used wild-caught and carefully trained falcons to catch quarry such as Cape Hares (*Lepus capensis*), Stone Curlews (*Burhinus oedicnemus*) and Houbara (Allen, 1980; Upton, 1989). However, in the traditional life of the Peninsula it was houba-

ra that were most important as a source of food for humans, because each winter the numbers of resident birds were swelled by large numbers moving into the peninsula from Central Asia (Dickson, 1956). In former times, a typical hunting party comprised of a small group of men and half a dozen falcons, searching for houbara from camel back. A good bag would be two or three bustards after a day or two of hunting. During his travels in Arabia in the 1950's, Thesiger was told by UAE President H.H. Sheikh Zayed bin Sultan al Nahyan that a good falcon might take 8 or 9 houbara in a day (Thesiger, 1984). The houbara would be boiled or roasted and served with rice and represented a valuable supplement to an otherwise limited diet of rice, dates and milk. The flesh of the bustard tastes like a cross between chicken and duck (Al Nahyan, 1977).

With the advent of oil wealth in the late 1960's Arab falconry has changed; houbara bustards are now hunted not for food, but for sport, because they provide an exciting challenge, having highly adapted anti-predator responses. In addition falconry symbolises a link with the past and represents an important part of the community's identity. Sheikh Zayed wrote eloquently on the importance of falconry in modern Arab life (Al Nahyan, 1977);

"Our hunting trips accustom us to patience and endurance and are a source of satisfaction to us. We regard them as a means of achieving a degree of psychological equilibrium between sedentary urban life and that of the desert. The simple happiness this sport brings us fortifies us against the stresses and strains of our official duties."

In 1989, due to the realisation by Sheikh Zayed and his sons that the number of houbara bustard in the UAE and elsewhere was declining, thus threatening the future of Arab falconry, the National Avian Research Centre, was established through Abu Dhabi Emiri Decree (see article in this issue on the National Avian Research Centre P. 19). The Centre is founded on the belief that the sustainable hunting of houbara will ensure that falconry continues in the United Arab Emirates and that, if managed correctly, falconry will help to ensure the protection of desert ecosystems both in the UAE and in the rest of the houbara's range. It is hoped that the words of Sheikh Zayed remain as true for the houbara in the future as they have in the past:

"Let the bustard; which fly as fast as the wind, fly away and return."

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A botanical excursion in the UAE

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In February and March 1995 employees and students of the Department of Botany from the University of Osnabrück visited the UAE and adjacent areas in Oman for the first time. The group was led by Professor Herbert Hurka, Head of the Department of Botany. The University of Osnabrück in north-western Germany was established in the 1970s, since when a Faculty of Biology and Chemistry, including a modern Botanical Garden, has been established. The Department of Botany educates students towards overall botanical knowledge and compiles and maintains a herbarium.

While in the UAE, the group of 15 botanists was based in Sweihan at the National Avian Research Centre, NARC. Several field trips to different areas were carried out, covering various major ecosystems, such as the wadis, the East Coast, the Gulf Coast, the mountains, and the sands of the central desert and around Liwa. At each of the excursion sites botanical surveys were conducted. Plant specimens were collected, identified and taken back to the University, where they became part of the University's herbarium. The data were analysed and returned to the National Avian Research Centre, as a contribution to the NARC Herbarium Project.

The results of the excursion are given in Table 1. Excursion sites covered the area around the National Avian Research Centre in Sweihan (No. 1; 24°23'N/55°26'E), the south-western slopes of Jebel Hafit (No. 2; 24°03'N/55°45'E), the lakes at Ayn Al Faida (No. 3), the dunes between Al Hayer and Shuayb (No. 4; 24°40'N/55°41'E), the alluvial plains at Al Madam (No. 5), the coastal plain of Jezirat al Hamra (No. 6), the saline lagoon and mangrove of Ras al Khaimah (No. 7; 25°52'E), the Wadi Bih and Ruus al Jibal area (No. 8; 25°47'N/56°13'E), the calcareous rock formation in Ras al Khaimah (No. 9), the mountains around Masafi (No. 10; 25°23'N/56°16'E), the

Khor Kalba wetlands (No. 11), the area around Hatta Pools (No. 12; 24°42'N/56°11'E), the sands around Liwa (No. 13; 22°59'N/54°03'E), and the area around Ras al Khaimah Intl. Airport (No. 14).

A total of 147 plant species were recorded. Two species were new to the UAE, *Schoenoplectus littoralis*, and *Pulicaria arabica*, which need further investigation. Another valuable record is *Salsola drummondii* from Ayn al Faida, which was previously only once reported to occur on the Gulf Coast by botanists from NARC. Though the majority of the species identified were already known to occur in the UAE and adjacent areas, the records of the group from Osnabrück are valuable contributions to the overall knowledge on the local flora. Of major importance were the plant species' distribution within the UAE. It was once again confirmed, that the mountains around Hatta and Masafi are richer in number of species when compared to other ecosystems, such as the sands and the coasts.

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Table 1 Species recorded at the various sites (x=one record; N=new to UAE):

Site number: FAMILY AND SPECIES: Number of species recorded per site:	1 16	2 15	3 8	4 6	5 1	6 7	7 4	8 7	9 3	10 47	11 5	12 32	13 2	14 1
Acanthaceae														
<i>Blepharis ciliaris</i> (L.) B.L. Burtt		x										x		
Adiantaceae														
<i>Adiantum capillus-veneris</i> L.										x				
<i>Onychium divaricatum</i> (Poir.) Austin								x						
Aizoaceae														
<i>Limeum arabicum</i> Friedr.	x													
Amaranthaceae														
<i>Aerva javanica</i> (Burm. f.) Spreng.		x												
Apocynaceae														
<i>Nerium mascatense</i> DC.										x				
<i>Rhazya stricta</i> Decne.										x		x		
Asclepiadaceae														
<i>Leptadenia pyrotechnica</i> (Forssk.) Decne.	x													
<i>Pergularia tomentosa</i> L.												x		
<i>Periploca aphylla</i> Decne										x				
Asteraceae														
<i>Helichrysum</i> sp.										x				
<i>Iphiona scabra</i> Decne.		x										x		
<i>Launaea capitata</i> (Spreng.) Dandy	x											x		
<i>Launaea massauensis</i> (Fres.) Chiov										x				
<i>Launaea</i> aff. <i>mucronata</i> (Forssk.) Muschler										x				
<i>Launaea spinosa</i> (Forssk.) Sch.-Bip												x		
<i>Pulicaria</i> cf. <i>arabica</i> (L.) Cass.												N		
<i>Pulicaria glutinosa</i> Jaub. & Spach		x							x					
<i>Reichardia tingitana</i> (L.) Roth										x				
<i>Rhanterium epapposum</i> Oliv.	x													
Boraginaceae														
<i>Arnebia hispidissima</i> (Lehm.) DC.				x										
<i>Heliotropium bacciferum</i> Forssk.			x			x								
<i>Heliotropium calcareum</i> Stocks										x				
<i>Heliotropium</i> sp.												x		
<i>Moltkiopsis ciliata</i> (Forssk.) I.M. Johnston	x													
Brassicaceae														
<i>Eremobium aegyptiacum</i> (Spreng.) Boiss				x										
<i>Erucaria crassifolia</i> (Forssk.) Del.														x
<i>Farsetia heliophila</i> Bge. ex Cosson								x						
<i>Farsetia</i> cf. <i>stylosa</i> R. Br.										x				
<i>Morettia parviflora</i> Boiss		x								x		x		
<i>Physorhynchus chamaerapistrum</i> (Boiss.) Boiss									x			x		
Capparaceae														
<i>Capparis cartilaginea</i> Decne.		x												
<i>Capparis spinosa</i> L.												x		
<i>Cleome amblyocarpa</i> Barr. & Murb.				x										
<i>Cleome</i> aff. <i>droserifolia</i> Del.		x										x		
<i>Cleome rupicola</i> Vicary												x		
<i>Cleome</i> sp. i										x				
<i>Cleome</i> sp. II										x				
<i>Dipterygium glaucum</i> Decne	x													
Caryophyllaceae														
<i>Cometes surattensis</i> L.										x				
<i>Gymnocarpus decandrum</i> Forssk.										x				
<i>Hemaria hemistemon</i> J. Gay						x						x		
<i>Hemaria</i> cf. <i>hirsuta</i> L.										x				
<i>Polycarpha repens</i> (Forssk.) Aschers. & Schweinf.											x			
Chenopodiaceae														
<i>Arthrocnemum macrostachyum</i> (Moric.) Moris & Delponte							x							

Site number: FAMILY AND SPECIES: Number of species recorded per site:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	16	15	8	6	1	7	4	7	3	47	5	32	2	1
<i>Cornulaca monacantha</i> Del.			x			x								
<i>Haloxylon salicornicum</i> (Moq.) Bge.	x													
<i>Salsola drummondii</i> Ulbrich			N											
cf. <i>Salsola schweinfurthii</i> Solms.-Laub											x			
<i>Seiditzia rosmarinus</i> (Ehrenb.) Bge													x	
<i>Suaeda aegyptiaca</i> (Hassel.) Zoh			x											
<i>Suaeda vermiculata</i> Forssk							x				x			
Cistaceae														
<i>Helianthemum lippii</i> (L.) Dum.-Cours										x				
Convolvulaceae														
<i>Convolvulus virgatus</i> Boiss										x				
Cucurbitaceae														
<i>Citrullus colocynthis</i> (L.) Schrad				x										
Cynomoriaceae														
<i>Cynomorium coccineum</i> L.			x											
Cyperaceae														
<i>Cyperus conglomeratus</i> Rottb.	x										x			
<i>Cyperus laevigatus</i> L.												x		
cf. <i>Schoenoplectus littoralis</i> (Schrad.) Palla												N		
Ephedraceae														
<i>Ephedra foliata</i> Boiss. ex C.A. Meyer					x									
Euphorbiaceae														
<i>Chrozophora</i> sp.												x		
<i>Euphorbia arabica</i> Hochst. & Steud. ex Boiss										x		x		
<i>Euphorbia granula</i> Forssk												x		
<i>Euphorbia larica</i> Boiss		x												
<i>Euphorbia</i> sp.										x				
Fabaceae														
<i>Argyrolobium roseum</i> (Camb.) Jaub. & Spach										x				
<i>Astragalus fasciculifolius</i> Boiss								x						
<i>Crotalaria aegyptiaca</i> Benth	x									x		x		
<i>Hippocrepis</i> sp.										x				
<i>Indigofera arabica</i> Jaub. & Spach		x												
<i>Indigofera argentea</i> L.	x													
<i>Indigofera</i> sp.												x		
<i>Lotus garcinii</i> DC						x								
<i>Tavemiera</i> sp.										x				
<i>Tephrosia apollinea</i> (Del.) DC		x								x				
Geraniaceae														
<i>Erodium neuradifolium</i> Del. ex Godr										x				
<i>Monsonia nivea</i> (Decne.) Webb				x										
Juncaceae														
<i>Juncus rigidus</i> Desf.			x									x		
Lamiaceae														
<i>Lavandula subnuda</i> Benth										x				
<i>Leucas inflata</i> Benth										x				
<i>Salvia macilenta</i> Boiss												x		
Liliaceae														
<i>Asphodelus tenuifolius</i> Cav.								x		x				
Mimosaceae														
<i>Prosopis cinerea</i> (L.) Druce				x										
Moraceae														
<i>Ficus salicifolia</i> Vahl									x					
Moringaceae														
<i>Moringa peregrina</i> (Forssk.) Fiori		x												
Nyctaginaceae														
<i>Boerhavia elegans</i> Choisy												x		
Orchidaceae														
<i>Epipactis veratrifolia</i> Boiss										x				

Site number: FAMILY AND SPECIES: Number of species recorded per site:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	16	15	8	6	1	7	4	7	3	47	5	32	2	1
Orobanchaceae														
<i>Cistanche tubulosa</i> (Schenk) Wight												x		
<i>Orobanche</i> sp.												x		
Plumbaginaceae														
<i>Dyerophytum indicum</i> (Gibs. ex Wight) O. Kuntze										x		x		
<i>Limonium axillare</i> (Forssk.) O. Kuntze			x											
Poaceae														
<i>Aeluropus lagopoides</i> (L.) Trin.						x								
<i>Cenchrus ciliaris</i> L.	x									x		x		
<i>Cymbopogon commutatus</i> (Steud.) Stapf		x								x				
<i>Dichanthium foveolatum</i> (Del.) Roberty														
<i>Eragrostis</i> cf. <i>ciliaris</i> (L.) R. Br.												x		
<i>Halopyrum mucronatum</i> (L.) Stapf						x								
<i>Panicum turgidum</i> Forssk.	x													
<i>Sporobolus spicatus</i> (Vahl) Kunth						x								
<i>Tricholaena teneriffae</i> (L.f.) Link										x				
Polygonaceae														
<i>Calligonum comosum</i> L'Hérit.													x	
<i>Pteropyrum scoparium</i> Jaub. & Spach										x				
<i>Rumex</i> sp.										x				
Primulaceae														
<i>Anagallis arvensis</i> L.										x				
Resedaceae														
<i>Ochradenus arabicus</i> Chaudary, Hillcoat & Miller								x						
<i>Ochradenus aucheri</i> Boiss										x		x		
<i>Reseda</i> cf. <i>aucheri</i> Boiss		x												
Rhamnaceae														
<i>Ziziphus spina-christi</i> (L.) Wild								x						
Rosaceae														
<i>Amygdalus arabicus</i> Oliv.								x						
<i>Neurada procumbens</i> L.	x													
Rubiaceae														
<i>Galium setaceum</i> Lam.										x				
<i>Kohautia</i> sp.												x		
<i>Pseudogaillonia hymenostephana</i> (Jaub. & Spach) Lincz.										x				
Scrophulariaceae														
<i>Kickxia ramosissima</i> (Wall.) Janchen										x				
<i>Misopates orontium</i> (L.) Rafin.										x				
<i>Scrophularia deserti</i> Del.										x				
Solanaceae														
<i>Hyoscyamus</i> sp.										x				
Tamaricaceae														
<i>Tamarix aucherana</i> (Decne.) Baum			x				x							
Urticaceae														
<i>Forsskaolea tenacissima</i> L.										x				
Verbenaceae														
<i>Avicennia marina</i> (Forssk.) Vierh.											x			
Violaceae														
<i>Viola cinerea</i> Boiss.												x		
Zygophyllaceae														
<i>Fagonia</i> sp.										x				
<i>Fagonia indica</i> Burm. f.	x													
<i>Tribulus arabicus</i> Hosni	x													
<i>Tribulus pentandrus</i> Forssk.	x													
<i>Zygophyllum mandavillei</i> Hadidi						x								

NOTES AND QUERIES

A tetradrachm of Abi'el found near Mileiha

In April 1996, a coin found on the surface in the Mileiha area by Dr. Saif Mohammed al Ghais, of the Faculty of Science of the Emirates University, was submitted to the Abu Dhabi Islands Archaeological Survey Project for identification.

Through comparison of the coin with examples of local pre-Islamic coinage published by D.T. Potts, (1991, 1994), it was possible to identify the coin as being a copper/bronze tetradrachm from the S2 (Eagle) Class of the monarch Abi'el.

Weight:: 15.0 grams; Diameter : 2.4 cm.

The general description of the Class in Potts (1994) is applicable:

"Characteristics: obv: head of Heracles r. wearing the pelt of Nemean lion; rev. seated figure l. with right arm raised, supporting an eagle, left arm curled around staff; Aramaic legend to the r. of staff, beneath the sea, and along the left margin of the coin face."(1).

Despite close parallels with the Mileiha S2 tetradrachms 181, 182 & 183 illustrated by Potts, the coin shows slight but distinct differences, including the distance between the lower side of the extended right arm and the legs of the seated figure.

As far as is known, the Al Ghais coin is the first copper/bronze example of the Abi'el S2 class to have been published, the only other coins of the class, all also from Mileiha, and published by Potts, four tetradrachms, two drachms and three obols, all being of silver.

The etymology, origins and dating of the Abi'el S2 coins are still the subject of disagreement between scholars. Potts (1994) suggests however that they are "some of the if not the oldest issues of Abi'el."

He goes on to suggest a chronology for the early coinage of south eastern Arabia which would place the S2 class, described as the 'proto-typical Abi'el issue,' in the earlier 2nd century BC, and further states that "it is

now virtually certain that Abi'el must have reigned at Mileiha." (2)

The identity of Abi'el remains unclear. None of the S2 class coinage yet examined has been of a condition sufficient to permit scholars to agree on the patronymic of the monarch, or even to agree as to whether the monarch was male or female.

Debased derivatives of the early Abi'el coinage continued to be used into the 3rd Century AD at the coastal site of Ad Door in Umm al Qaiwain, while from the context of a debased coin mould found at Mileiha it is evident that the debased coins were certainly being minted in the 1st Century BC and/or the 1st Century AD, (Bouchariat & Drieux in Potts [1991]).

The Al Ghais tetradrachm was an isolated surface find, with no evidence of other archaeological material nearby. As this note suggests, however, it is of some importance, underlining the fact that all such stray finds should be reported for identification.

I am grateful to Dr. Saif al Ghais for drawing attention to the coin, and also acknowledge, with thanks, the help of Professor Dan Potts of the University of Sydney, who kindly commented on the first draft of this note.

References:

1: Potts, D.T. (1994). *Supplement to the Pre-Islamic coinage of Eastern Arabia*, CNIP Publications 16. Copenhagen. P.43.

2: Potts, D.T. (1994), *op. cit.* p. 82

Bibliography:

Potts, D.T. (1991) *The pre-Islamic Coinage of Eastern Arabia*, Carsten Niebuhr Institute of Ancient Near Eastern Studies, CNIP Publications 14, Copenhagen, 119p.

Potts, D.T. (1994) *Supplement to The pre-Islamic Coinage of Eastern Arabia*, CNIP Publications 16. 88p.

Peter Hellyer

Oligocene fossils from near Al Ain

While the Late Cretaceous fossils to be found at Jebel Huwayyah (Fossil Valley), in Oman's Wilayat of Buraimi, adjacent to Al Ain, have been widely recorded (1), little, if anything, appears to have been published on other fossils, possibly of Tertiary Oligocene date, to be found nearby.

Following the road from Buraimi towards Mahdhah, and after passing Jebel Oha and shortly before reaching Jebel Huwayyah, a low hog-backed hill runs away from the left hand (western) side of the road. The sediments containing the fossils are to be found on the western side of this hill, and represent fossilised sandy shallow seabed deposits. The sediments, which lie on the surface of the hills and are angled at around 45 degrees, may be easily removed as slabs. Within them, numerous large fossil *Oyster* are visible.

A sample of the fossilised sediments was shown to Dr. T.D. Adams, former Group Vice Chairman and a trained paleontologist, (now President of the Azerbaijan International Operating Company), in October 1995. Besides the easily visible oysters, of up to 8 cm. length and 6

cm. in breadth, he also identified smaller fossils which he provisionally identified as being *Protozoa: Foraminifera: Nummalites: gezhensis*, of types first recorded in sediments to be found around the Giza pyramids in Egypt and of Oligocene date.

Further information on the presence of fossils within possible Oligocene outcrops within the UAE and adjacent areas of Oman would be welcome.

Reference

1. Smith, A.B. and Morris, N.J., n.d. (1992?). *Late Cretaceous faunas and palaeoenvironments of the United Arab Emirates and adjacent areas*, Interim Report to the Abu Dhabi Company for Onshore Oil Operations, ADCO.

and

Lehmann, C. (1992). *Fossil sea-urchin tests found in the UAE and adjacent areas*, in *Tribulus*: 2.1: 3-5, iii-vi.

Peter Hellyer

Wildlife Agency for Abu Dhabi

A new agency responsible for the conservation of wildlife in was created in May 1996 by Law No.4 for 1996, issued by the Abu Dhabi Crown Prince and the Deputy Supreme Commander of the UAE Armed Forces, Sheikh Khalifaa bin Zayed al Nahyan, in his capacity as Deputy Ruler of Abu Dhabi.

The new body is called the Environment and Wildlife Research and Development Agency, and will be an autonomous state institution, operating primarily within the Emirate of Abu Dhabi, but with the authority to open offices in other member Emirates of the UAE. It will be headed by a Secretary General, yet to be named, who is likely to be one of the UAE's top national biologists.

According to an unofficial translation of the Law, the Agency's objectives will be:

"to protect and control the environment and wildlife and its biological diversity in the natural environment."

Within this framework, the Agency will be empowered to conduct the necessary studies and surveys, assess water and ground resources, propose plans for establishing and managing protected areas and wildlife refuges, and to co-ordinate with other bodies both within the country and overseas.

It is also to carry out public awareness campaigns, and to seek to qualify UAE nationals to become involved in wildlife conservation and management.

The Agency will also have the power to create subsidiary

units devoted to particular spheres of wildlife study and management. The Law placed the National Avian Research Centre under the Agency's supervision, and it was understood as this issue of *Tribulus* went to press that the functions of NARC dealing with houbara and with falcons were to be separated into individual units.

The Law also wound up the Environment Protection Committee established under the supervision of the Abu Dhabi Municipality in 1989, placing its tasks under the Agency.

At a federal level, the Agency is to co-operate with the Federal Environmental Agency.

The Environment and Wildlife Research and Development Agency will become the main body in Abu Dhabi Emirate dealing with wildlife issues, responsible both for research and conservation, including the drafting of legislation for protection of habitat and of wildlife.

While it is likely that routine administrative matters, will pre-occupy the Agency and its Board of Directors for a year or so, the Agency should have the capacity to provide the Emirate of Abu Dhabi with a sorely-required formal structure for the conservation of environment and wildlife.

It is also expected to collaborate closely with voluntary bodies, such as the Emirates Natural History Group and the Emirates Bird Records Committee.

Peter Hellyer

GROUP PROGRAMME - July to December 1995

- July 3rd : The Arabian Seas Expedition, talk by Jonathan Ali Khan.
- September 18th : The Maldives: Indian Ocean Paradise, talk by Wafa Morda'a
- October 2nd : Water Resources of Abu Dhabi, talk by Don Jorgensen.
- October 16th : NARC's 1995 expedition to Kazakhstan, talk by Ron Loughland.
- November 6th : Mountain walking in the UAE, talk by Gary Feulner.
- November 20th : Conservative issues in the UAE, talk by Marijcke Jongbloed.
- December 4th : Birding holidays in the UAE, talk by Colin Richardson.
- December 16th : Whales and dolphins, talk by Robert Baldwin.

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Production of **TRIBULUS**, and many of the other activities of the Emirates Natural History Group, would not be possible without the generous support of the Group's Corporate members.

The Editorial Board and the Group Committee acknowledge, with thanks, the sponsorship of the following Companies and bodies, whose support has been invaluable.

Abu Dhabi Company for Onshore Oil Operations, (ADCO), ADGAS, Abu Dhabi National Hotels Company, Abu Dhabi National Oil Company, (ADNOC), Abu Dhabi Marine Operating Company,

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RECORDERS' REPORTS

Archaeology

As usual, the winter of 1995-1996 has seen extensive archaeological activity throughout the Emirates, with both foreign and local teams being involved.

In Abu Dhabi, the main focus of attention has been on the continuing work of the Abu Dhabi Islands Archaeological Survey. In January and February, a three member ADIAS team carried out investigations on the island of Balghelam, north east of Abu Dhabi, into a collection of features on a relict shoreline. Conducted with the support of the island's owner, Presidential Court Chamberlain Sheikh Surour bin Mohammed al Nahyan, the work identified a group of at least eleven water wells, one of which produced pottery dating back to the Sixteenth Century AD. Contemporary with these was more pottery found under an alignment of three small walls associated with a group of hearths, some of which, up to 1.1 metres by 1.4 metres in size, may have been used for proto-industrial activity. The work, which will be resumed next winter, represented the first detailed study of archaeological features of a type found on relict shorelines on many of Abu Dhabi's islands, and should help considerably in providing a better understanding of the nature of occupation of the islands during the Late Islamic period.

In March and April, the main ADIAS season, further work was undertaken on the pre-Islamic Nestorian monastic site on Sir Bani Yas, completing excavation of the church at the heart of the complex and recovering a substantial number of pieces of finely decorated plaster that further confirm the sophistication of the monastery's inhabitants.

ADIAS survey teams also visited other islands in the Western Region, including Ghaghah, Al F'zaiyyah, Yasat al Ulya and Yasat Sufla, continuing mapping of pre-Islamic and Islamic sites, while at the end of April, an archaeological survey along the route of a new Main Oil Line was carried out for ENHG Corporate member the Abu Dhabi Dhabhi Company for Onshore Oil Operations, ADCO, which along with several other Corporate members, continued to provide valuable logistic support throughout the season.

The most active of the northern emirates in an archaeological sense were Fujairah, Ras al Khaimah and Sharjah. In Fujairah, the team from Australia's University of Sydney, led by Professor Dan Potts, continued its extensive surveying in the Hajar Mountains, identifying several dozen previously unrecognised copper mining sites. Carbon 14 dating carried out from one of the sites, in the Wadi Hayl, showed for the first time that the local copper industry continued at least until the Fourteenth Century AD, several hundred years later than had previously been recognised. Potts and his team also discovered several new groupings of petroglyphs in the mountains, including one large grouping in Wadi Hayl, and also carried out trial excavations on an Iron Age fortress lying underneath a Late Islamic fort in the village of Awhalla.

In Ras al Khaimah, the local Department of Archaeology and Antiquities continued work on the large 'tell' at Qush, which has produced evidence of continuous occupation from the late Iron Age until the Abbasid period, around 1,500 years later. One of the largest 'tells' in the Emirates, the Qush site will require several more years of excavation, and should add substantially to understanding of the chronology of pottery sequences in the northern emirates.

Also in Ras al Khaimah, a German team led by Burkhard Vogt carried out rescue excavations on Second Millennium tombs in Shimal and near the mountain village of Idhn, adding to knowledge of the Wadi Suq period.

Another foreign team, working with the support of Britain's Woolwich Building Society, also carried out an extensive survey of the architecture of Ras al Khaimah's surviving traditional mosques, following on from a survey of fortified buildings completed several years ago, and reported in *Tribulus* Vol 2.2. (See Book review on P. 31).

In Sharjah, the local team, directed by Dr. Sabah Jassem, continued work at Jebel Buhas, in the Madam Plain, concentrating on an important cemetery believed to date back to the Late Stone Age. Analysis of the skeletal material is being carried out by Germany's University of Tübingen. Extensive work was also carried out in the environs of Khor Fakkan on the East Coast, on an early Second Millennium BC cemetery, while excavations in the Abu Shagara area in Sharjah town produced evidence of occupation from the 'Ubaid period, around 7,000 years ago.

A joint Spanish-French team also continued work on the Iron Age village at Al Thuqaibah, near Madam, which dates back to around 1,000 BC.

On the East Coast, a British team also carried out a further season of work on a Third to Second Millennium BC site in Kalba.

Elsewhere, the team from Belgium's University of Ghent carried out a final season of work at the First Millennium AD site at Ad Door in Umm al Qaiwain, while in Dubai, the local Museum continued excavations on the early Islamic settlement in the Jumeirah district, which have already produced the most extensive evidence from the period known anywhere in the Emirates.

While both local departments and foreign missions continue to be active in UAE archaeology, it is a matter of some regret, not least to the foreign missions, that there is still only minimal involvement in local archaeology by UAE citizens. The Emirates University, whose Department of History formerly offered some courses in archaeology, has recently downgraded the importance it attaches to the subject, and UAE students interested in the subject can no longer receive any formal training within the country. Moreover, there is little sign of would-be local archaeologists taking advantage of the presence of highly-qualified and well-experienced

foreign teams to gain field experience.

It is to be hoped that this failing will be remedied before the foreign teams, who have so much expertise to

share, move on to work in other countries.

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

Birds

November 1995

At last early mornings and evenings began to feel cooler with temperatures in the range 24-28°C. By day the air was calm and temperatures remained around the 35°C mark until the third week when temperatures dropped perceptibly to around the 29-32°C range. The winter was heralded by a *shamal* (a strong west wind) on 26th when scattered clouds appeared and remained to the end of the month.

Wetland species took the spotlight in November with a **Ruddy Shelduck** (14th record) and a female **Red-crested Pochard** (6th record) at Khor Dubai on the 21st, the latter remaining to the end of the month. On the 17th nine **Greylag Geese** were seen flying over Jab-el Hafit. At Zabeel fish ponds a **Ferruginous Duck** remained throughout the month while eagles arrived in force at Khor Dubai. An amazing selection were found including a **Short-toed Eagle** on 10th, a **Booted Eagle** on 23rd and up to six **Spotted Eagles** throughout the month. Single **Lesser Spotted Eagles** were at Ramtha tip 10-19th, at Al Ain camel track 17th and at Khor Dubai from 23rd (reported well into December), only the 5th-7th records. A **Griffon Vulture** was seen over Jebel Hafit on the 16th. A **Purple Gallinule** was at Ramtha tip from 10th-19th (5th record) and a late **Spotted Crake** was at Ramtha tip on 10th. **Great Knot** numbers at Khor al Beidah had increased to six by 19th while two **Common Knots** were reported at Khor Dubai on 6th (possible 4th record). **White-tailed Plovers** were reported at several sewage water locations, including a maximum of eight at Ramtha tip on 18th, while a **Caspian Plover** was found at Al Wathba on 2nd. One **Dotterel** was at Al Wathba on 2nd and four were at Hamranniyah on 16th (17th & 18th records). A rather rare **Great Snipe** was found at Dhayah on 10th.

A **Short-eared Owl** was a local rarity at Al Wathba from 18th to the end of the month. A **Blyth's Pipit** was at Abu Dhabi race course and four were at Al Wathba from 2nd, while an **Olive-backed Pipit** (15th record) was at Bateen Airport park on 2nd. 5 **Richard's Pipits** were present all months at Al Wathba camel track fields. A **Long-billed Pipit** was seen at Khor Kalba on 28th. A **Pechora Pipit** was reported on the Kalba cornice on 28th for a possible 1st record if accepted. Up to 29 **Bimaculated Lark** were at Al Wathba from 2nd and four were at the Al Ain camel track on 13th, while one **Oriental Skylark** was seen briefly at Al Wathba on 2nd. Seven **Hypocorax** were at Al Wathba plantation from 2nd until at least 15th. 20 more were found at Sila from 10th until at least the 25th. A **Robin**, a rare winter visitor, was reported in Bateen gardens on 26th, while at the Emirates Golf Course a **Black-throated Thrush** on 10th was the season's only sighting so far. A **Moustached Warbler** (6th record) was at Ain al Faydah on

17th and at least two **Sykes's (Booted) Warblers** were singing at Khor Kalba on 15th. One **Brambling** (16th record) was at Hamranniyah on 16th & 17th while a single **Spanish Sparrow** was also there on 16th.

December 1995

December was dominated by overcast skies and intermittent rain showers. This rather unseasonal weather (more like February) subdued most birds and made them very hard to find, if they had indeed hung around in such conditions. The rain started on 7th and proceeded with vigour on 11th when it became almost daily until the end of the month. Daily temperatures dropped from an average of 28°C in the sunny first days of the month to only about 20°C during rain.

Offshore produced some interest, with six **Masked Boobies** (4th record) on 1 December off Khor Fakkan, while at Khor Dubai a **Ruddy Shelduck** (15th record) lingered for a few days from 21st. Also at Khor Dubai an **Imperial Eagle** was worth watching from the 21st. Another was reported from Hamranniyah on 15th. A **Little Pratincole** (7th record) was at Khor Kalba on 2nd and a **White-breasted Waterhen** (3rd record) was found at the Jebel Ali Hotel gardens on 8th. A **White-breasted Kingfisher**, only the 3rd record, was a surprising find at Dhayah mangroves on 28th. Two **Oriental Skylarks** were discovered at the Al Wathba camel track on 26th, while a **Blyth's Pipit** (approx. 13th record) was a good bird to watch at the Abu Dhabi horse race track from 21st. A **Long-billed Pipit** at Al Wathba camel track on the 1st was unusual, while a late **Tree Pipit** at the Jebel Ali Hotel on 15th and 7 **Richard's Pipits** at Al Wathba on the 19th, were noteworthy. Not so mundane for Arabia, a male **Blackbird** at Jebel Ali on 8th was only the 12th record! A **Brambling** at Al Wathba on 1st was the 17th record and a **Little Bunting** on Das Island on 21st was the 9th record.

January 1996

In Dubai the unsettled weather continued throughout January, with overcast skies on most days. There were strong south-westerly winds in mid month followed by more rain showers on the 17th and heavy rain overnight on the 23rd. Clear skies were not noted until the 29th. Temperatures remained around 22°C, rarely peaking to 25°C.

Many good sightings were reported, including the winter's only **White Stork** at Al Ain camel track on the 1st, a **Ruddy Shelduck** at Al Ghar Lake from 22nd (15th record) and a female **Red-crested Pochard** which remained at Khor Dubai until at least the 4th (6th record). Bird of the month was a **Crested Honey Buzzard** at Zabeel from the 16th, the 2nd UAE record and only the 3rd for Arabia.

A **Goshawk** at Qarn Nazwa during the week ending

26th January was only the 3rd record while a **Spotted Crake** at Ramtha on 26th was an unusual winter sighting. Four common **Lapwings** at a Nadd al Sheba pond on 5th January were the country's only wintering birds, while two **White-tailed Plovers** were at Ramtha on 26th. 21 **Great Knot** were seen at Merawah Island on the 4th while 15 **Marsh Sandpiper** were at Khor al Beidah on 8th and a record 32 were at Al Ghar lake on the 21st. 3 **Armenian Gulls** were at Al Ghar Lake on the 22nd while a **Mediterranean Gull** reported at Ramtha tip on 22nd January would be the UAE's 1st and awaits further details. A **Short-eared Owl** was found on Merawah Island on the 4th. 110 + **Lesser Short-toed Larks** were discovered in the desert area near the Dhafrah incinerator road on the 5th while a peak of **Bimaculated Larks** were found at the Al Ain camel track on the 12th. An extraordinary winter influx of **Hypocolius** were found, including 80 at the Al Ain camel track from the 12-14th January. One at Al Wathba on 22nd January had increased to 9 by 27th. A male **White-throated Robin** at Balghelam Island on 23rd January was the first ever winter record and a very early **Pied Wheatear** was at Al Wathba also on the 22nd. A **Hume's Yellow-browed Warbler** was on Das Island the 13th and up to 11 **Rose-coloured Starlings** were at Al Ain camel track from 10th January with a smaller flock seen at the Emirates golf club during the same period.

A **Common Rosefinch** seen in Abu Dhabi on the 19th was the first January record.

February/March 1996

The season continued overcast with regular showers, making it the wettest winter and spring for nearly 40 years. By the third week of March the weather became more settled and the display of wild flowers and greenery in the desert was breathtaking. Migration, however was badly affected as the numbers of birds seen (though not the quality!) was the lowest we can remember.

A second **Crested Honey Buzzard** joined the first in the Zabeel area of Dubai upto 5th March while a **Lesser Spotted Eagle** at Khor Dubai on 1 March was the 8th record. Single **Hen Harriers** were at Sir Bani Yas Island on 11th February, Hamraniyah on 20th March and at Al Ain camel track 20-24th March; the first certain records for four years. A **Lanner Falcon** at Jebel Hafit on 21st March, was only the 16th record since 1987.

Two **Little Crakes** were at Ruwais red beds on 9th March (15th record) and one was at the Emirates Golf Course 17 March (16th record) while two early **Collared Pratincoles** were at Al Jazeerah sewage dump on 23-24th March.

A 1st-winter **Common Gull** (6th UAE record) was found amongst thousand of larger gulls at Rams dump on 27 March and a **Little Gull** record at Khor Kalba from 15-28 March was the country's 1st record.

A visiting Dutch birder reported two **Palm Swifts** at Al Ain on 20 February, the possible first record for the UAE and the Gulf States if accepted, while one **Alpine Swift** (12th record) and a **Little Swift** (11th record) were at Qarn Nazwa on 12th March. An **Indian Koel** at Safa park, Dubai, on 1st March was the 4th record. Three pairs of **Bar-tailed Desert Larks** were seen inland Jebel Ali on 22nd to 29th March and a **Dunn's Lark** was near Umm al Qaiwain beach on 27th March, the first record if accepted.

A **Wire-tailed Swallow** at Al Ghar on 20th February was the 1st UAE record (and probable first for the Middle East) and a **Crag Martin** seen at Qarn Nazwa on 30th

March was the year's only record so far. A **Forest Wagtail** in Mushrif Park, Dubai on 5 March was the 8th record.

Up to 32 **Hypocolius** were at Al Wathba throughout February and March and 25+ were at Al Shati from 22nd March to the end of the month. At least 7 were at Al Ain camel track on the 9th February. A **Caucasian Bluethroat** was in Bateen Wood on 27th February. Up to two **White-throated Robins** were in Masafi 20-28th March and one was at Qarn Nazwa from 30 March while a male **Pied Stonechat** at the Emirates Golf Course 22-23rd March, was the 2nd record. A **White-crowned Black Wheatear** at Sila on 20th February was the 3rd record. Single **Yellow-browed Warblers** were on Das Island 15-24 February and at Al Wathba 15 March and **Hume's Lesser Whitethroats** were reported in Bateen Wood, the Emirates Golf course, Zabeel, Masafi Wadi and Qarn Nazwa from 25 March. **Semi-collared Flycatchers** were at the Emirates Golf Course 17-25 March (with 2 there on 24th), Zabeel from 31 March and at Bateen wood on 1 April. A spectacular peak of 1,200 **Pale Rock Sparrows** were seen passing over Qarn Nazwa ahead of a storm on 12 March. A **Cinereous Bunting** at Jazeerah al Hamrah on 28 March was the 17th record for this globally endangered species.

April 1996

The month started off clear and sunny, with some isolated showers. Day temperatures rose steadily from 26°C to the mid 30's by the end of April as summer approached. There were several days of dust haze and south winds which did not appear to affect an otherwise rather poor month for interesting migrants.

A **Black Stork** was at Fujairah on 4 April (5th record), while a **Honey Buzzard** and a **Hobby** were at Bateen Gardens on 16th. Two late **Spotted Eagles** and a less common **Steppe Eagle** were seen at Khor Dubai on 5th.

At least 2 agitated pairs of **White-tailed Plovers** near Ajman on 7th represented the country's first breeding record for this species.

On the 3rd, 12 **Great Knots** were at Abu al Abyadh while a pair of **Bar-tailed Desert Larks** were again seen inland from Ghantoot, this time carrying food on 24th, the most convincing breeding record to date for these elusive little larks. Three **Blyth's Pipits** were at Al Wathba and one was at Al Ain on 4 April (c. 15th & 16th records) while 120 **Red-throated Pipits** were at Al Wathba on 4th. The flock of at least 30 **Hypocolius** at Ghantoot had dwindled to five when last seen on 13th. Single **White-throated Robins** were seen at Ghantoot on 6th, Jebel Ali on 9th, near Al Ain on 19th and in Bateen Gardens on 22nd while one **Thrush Nightingale** was at Ruwais on 15th. A male **Pied Stonechat** at Al Wathba on 4 April was the 3rd record, coming very closely after the previous month's 2nd record. A **Blyth's Reed Warbler** in song in Abu Dhabi on 15 April was a convincing 5th record. Single **Semi-collared Flycatchers** were at Zabeel from 31 March to 8 April and up to two **Masked Shrikes** at the Emirates Golf Course from 13-17th. 12 **Ortolan Buntings** were near Masafi on 5th and a **Cinereous Bunting** on Das Island 26-27 March was the 18th record.

Although not strictly in the UAE, but probably in Omani waters, Carolyn & Dieter Lehmann, during their Jebel Ali/Muscat yacht race, came across a possible **White-tailed Tropicbird** and a **Frigatebird** off the Batinah and Musandam coasts respectively. These would be first records for the area.

Other interesting sightings for the month (some turning up in gardens) included several (family) parties of **Hoopoe**, with good numbers of **European Rollers**, **Nightjars**, **Nightingales**, **Rufous Bush Chats**, **Spotted Flycatchers**, **Upcher's** and **Willow Warblers** moving through.

Observers: Simon Aspinall, John Bannon, Mark Beaman *Birdquest*, David Bradford, J.M. Breider, Jon Buxton, G. Clarkson, J&E Djerf, M. Dryden, Gary Feulner, Per Forsberg, Timo Eskola, Annika Forsten, Martin Garner, Christian Gross, H. Hendricks, C. Holt, B & W. Holt, H.H. & H. de Haag, Abdul Hakim, Peter Hellyer, Henk Hendriks, Jenny Hollingworth, Chris Holt, Dick Hornby,

Steve Howe, Steve James, P. Jonasson, Marijcke Jongbloed, H. & O. Karhu, M.R. Khan, C. Lehmann, Steve Madge/*Limosa Holidays*, *Naturetrek*, *Natur-Studienreisen*, Tappani Numminen, Jukka Nurmi, Urban Olsson, Richard Porter, D. Oelkers, Len Reaney, Colin Richardson, Janne Riihimäki, Alec Rollo, P. Rusanen, M. & D. Saunt, P. Sharman, M. Sipponen, Chris & Tilde Stuart, Markku Tunturi, Andrew Tynham, Alison Waller and Mike Wood.

Colin Richardson,
Secretary,
Emirates Bird Records Committee.

Book reviews

Status and Conservation of The Breeding Birds of the United Arab Emirates, by Simon Aspinall, Hobby Publications, Dubai and Liverpool, 1996. 177 pp.

Over the course of the last few years, there has been a steady flow of publications dealing with the history, natural history and heritage of the United Arab Emirates, both in English and, increasingly, in Arabic, and with the 25th anniversary of the creation of the state falling this year, the number is set to increase yet further. Some of the publications have dealt with archaeology, like those by Professor D.T. Potts earlier favoured with reviews in *Tribulus*, and have been produced by academics who have visited, rather than have lived in the country.

Others have been compiled after exhaustive research by UAE residents, among which is ***Status and Conservation of The Breeding Birds of the United Arab Emirates***, by Group member Simon Aspinall.

The study of ornithology in the Emirates has grown rapidly in the last few years, and has become increasingly professional, a far cry from the early days of the late 1970s, when Group members began to compile records and bird lists. As a result, the standard work on the country's bird life by Colin Richardson (1) remains valuable, but is becoming outdated. This new book, the result of several years of research by the author as part of his work for the National Avian Research Centre, and published with the support of the Abu Dhabi National Oil Company ADNOC, summarises the latest data on one aspect of the UAE's birds, those breeding in the country, and includes substantial new information.

Drawing heavily not only on his own research, but also on data provided by active UAE birdwatchers and ornithologists, as well as on information collected for the *Interim Atlas of the Breeding Birds of Arabia*, Aspinall has produced a volume that will not only be essential reading for anyone interested in the country's birds, but which also represents a major contribution to the growing mass of information about the country's environment and wildlife, and about the need for its conservation.

He shows through the use of easy-to-comprehend maps, for example, the distribution of the UAE's more than 100 breeding species, and identifies both several

species and several locations which are of regional or international importance. The UAE has, for example, breeding populations of the threatened **Socotra Cormorant** *Phalacrocorax nigrogularis* which are globally important, while offshore islands like Qarnein and Dayyinah are of regional significance because of their populations of breeding tern species. The former, under the protection of its owner, Minister of State for Foreign Affairs Sheikh Hamdan bin Zayed al Nahyan, holds over 70,000 breeding birds a year.

Associated with the species descriptions are recommendations for conservation, details of suggested protected areas, and a host of other information that adds to the scientific value of this book, while the ordinary birdwatcher will also be delighted by the extensive range of over 60 fine colour photographs, some by the author, and others by well-known local bird photographers.

Some of the data will not be new for regular *Tribulus* readers, Aspinall having contributed a number of important papers on individual species or areas over the last couple of years, but this should not deter anyone from buying the book. *Status and Conservation of The Breeding Birds of the United Arab Emirates* represents the latest available published information on the country's bird life. Armed with this, and with Richardson's earlier companion volume *The Birds of the UAE*, the serious ornithologist and the part-time birdwatcher will both be fully equipped - until, of course, the next piece of data is collected, which, one is pleased to note, happens on a remarkably frequent basis.

No-one with even a passing interest in UAE bird life can afford to be without this well-researched, well-produced and competitively-priced publication.

Price: UK Pounds 14.99 or Dh 110.00 from P.O.Box 50394, Dubai, U.A.E.

References

1. Richardson, C (1990). **The Birds of the United Arab Emirates**, Hobby Publications, Dubai.

Checklist:

Birds of the United Arab Emirates, compiled by Colin Richardson and Simon Aspinall, Emirates Bird Records Committee

It is now nearly five years since the first formal locally-produced Checklist of the Birds of the UAE was compiled by Colin Richardson and the late Bob Richardson was published in *Tribulus* 1:2, and since then ornithology in the Emirates has developed at a rapid pace.

Not simply in terms of the number of records, or even the number of species recorded (395 of natural origin and 11 feral species, at the latest count), but also in terms of the rigour with which records are assessed.

That process owes much to the devoted efforts put in by the Emirates Bird Records Committee, which has given its imprimatur to this updated Checklist.

The Checklist, of course, could not have been put together without the records supplied over the years by a whole host of birdwatchers, both beginners and the

more specialist, and nearly 195 individuals and organisations are credited with contributing to the national database on which this Checklist is based.

The Checklist is not an identification guide, (the only illustration, of our endemic sub-species of *White-Collared Kingfisher*, is on the cover), simply a source of ready reference on the birds recorded here, including their status and, for rarer species, the details of individual sightings.

In the nature of local ornithology, things move so fast that publications can never keep up. Two species new to the Emirates were reported just after the Checklist appeared and two more a few weeks later. That in no way, however, undermines the value of this essential work.

Richardson and Aspinall, and others, including EBRC members, who have worked to produce this document deserve thanks from all those interested in local birdlife.

Price: Dh 40, from EBRC, PO Box 50394, Dubai.

The Towers of Ras al Khaimah, by Derek Kennet, illustrated by David Connolly. BAR International Series 601, 1995. 237 pp.

In Vol 2.2 this journal was fortunate enough to be able to carry a short article by British archaeologist Derek Kennet on the traditional defensive structures still to be found in the northern Emirate of Ras al Khaimah (1). This book, published in the International Series of British Archaeological Reports with the support of the Department of Antiquities and Museums of the Government of Ras al Khaimah, and with financial backing from Emirates Bank International and the Society for Arabian Studies, represents the full results of a survey carried out by Kennet, Connolly and another researcher in the winter of 1991-1992, and will prove of value to all those interested in the history of the UAE and in the different types of defensive structures that evolved over the years.

Kennet, with the assistance of fine drawings by Connolly, records a total of 75 'towers,' (broadly defined to include all defensive structures), ranging from the impressive fort that now houses the National Museum of Ras al Khaimah and the 'pepper-pot' towers of Jazirat al Hamra, both almost certainly dating to the Nineteenth Century, to small, almost destroyed hill-top enclosures such as those to be found in the Wadi Qawr, in the mountains in the southern part of the Emirate.

He introduces his work with an examination of historical sources describing fortifications in the northern Emirates, some now destroyed, such as the 'Foretress of Doba (Dibba)' described by a Portuguese author in a book published in 1676, thus helping to make such references accessible to a wider audience.

The main part of the work adopts a simple format, with a description of the fortification itself and drawings (by Connolly) of elevation and site plan that make the book easy to read, and to use as a handbook and guide for those who may venture out into the mountains of the Emirate.

One might have wished for a little bit more information about the possible dating of the structures. While many of those along the coast were probably built in the early Nineteenth Century, following destruction of earlier forts by British naval expeditions, some of those in the mountains are almost certainly earlier, and Kennet, well-

informed on the pottery to be found in the area, could perhaps have included a paragraph or two for each tower about dating of associated pottery. In one of the only two cases in which he does so, in description of an enclosure in Huwaylat, (the other being Husn Shimal - Sheba's Palace - north of Ras al Khaimah), he simply notes that "there are a few traces of Iron Age pottery here similar to that found on the Iron Age sites in the vicinity," without stating whether he believes that the structure may originally be of Iron Age date.

Yet, as he will know, the remains of Iron Age hill top forts have been identified at Husn Madhab, in Fujairah, and Jebel Buhays, in Sharjah. Moreover, he concedes that dating of the inland structures is unclear. A short description of the pottery would at least have provided some indications.

The clarity of the black-and-white photographs also leaves something to be desired, although, to be fair, one should note that it is not always possible, in a limited circulation publication such as this, to go to the expense of colour reproduction.

Despite these caveats, however, Kennet has produced an important document, and the Ras al Khaimah Government, in particular Deputy Ruler Sheikh Sultan bin Saqr al Qassimi, Chairman of the Department of Antiquities and Museums, deserve credit not only for having commissioned the study in the first place, but also for having arranged its publication.

The Towers of Ras al Khaimah represents a serious attempt to record this important aspect of the UAE's heritage before it disappears. Many of the structures have already advanced further towards total dilapidation since Kennet's survey, adding to the importance of this work.

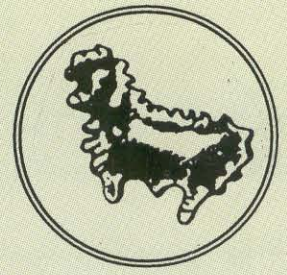
Other Emirates should consider, as a matter of urgency, following Ras al Khaimah's lead in recording and publishing details of their own defensive structures before they disappear.

The Towers of Ras al Khaimah, available from the National Museum of Ras al Khaimah, P.O.Box 94, Price Dh 175.00

Reference

1. Kennet, D (1992). **The Towers of Ras al Khaimah**, in *Tribulus*: 2.2, October 1992, P. 29-30; P. 47-48 (in Arabic).

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