

TRIBULUS

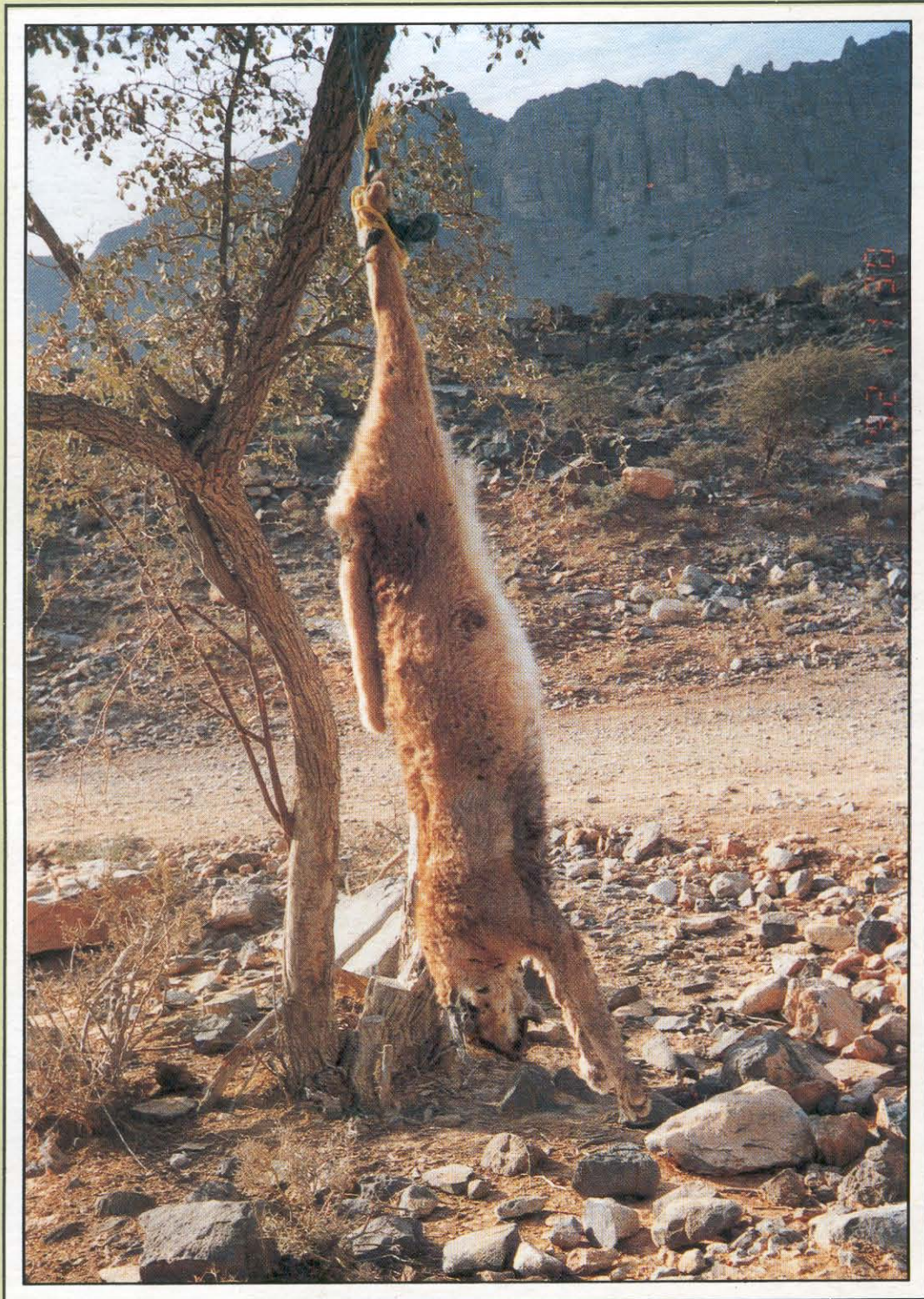


Bulletin of the Emirates Natural History Group

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Vol. 3.1

APRIL 1993



NOTES FOR CONTRIBUTORS

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

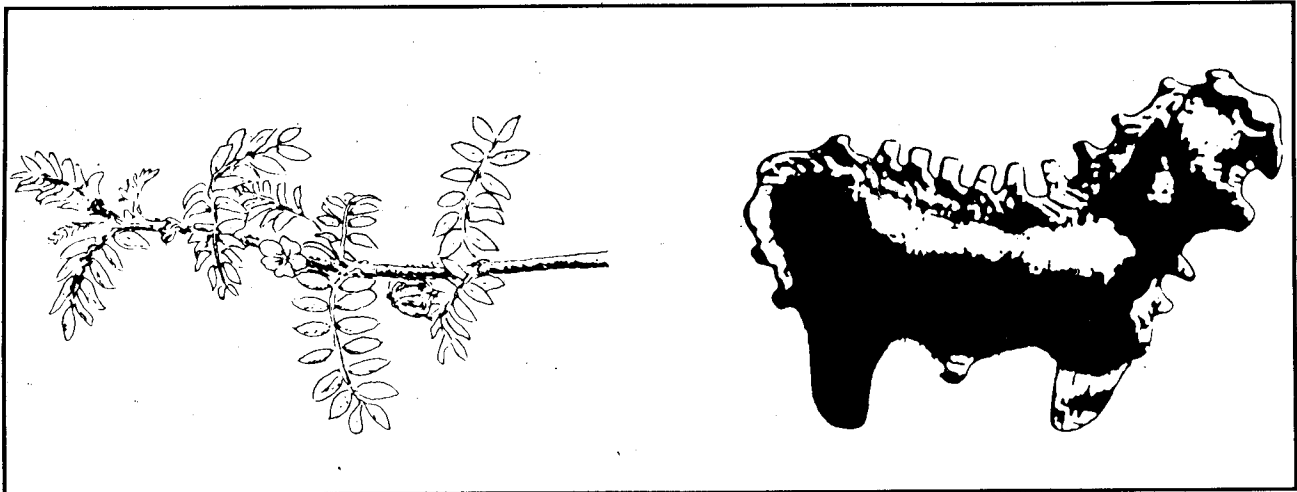
TRIBULUS is published twice a year, in April and October. The aim of the publication, as for the Bulletin, is to create and maintain in standard form a collection of recordings, articles and analysis on topics of regional history and natural history, with the emphasis focussing on the United Arab Emirates 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 : *A Caracal Lynx, found shot near the UAE border in November 1992*

(Picture : John Woods) See Page 29.

Arabic : *A view of a wadi near Masafi*

(Picture : R.A. Western)

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

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

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Editorial

The UAE has established a Federal Environmental Agency, thus replacing the Higher Environmental Council. As the country has become more environmentally conscious in recent years, so the need for an upgraded Agency has become increasingly urgent. Main aims will be to carry out environmental audits on companies, to propose and supervise implementation of environmental laws and to establish and execute scientific projects of relevant concern. While this would seem to be a step in the right direction, it is to be hoped that the new Agency will be more effective than its predecessor. The question of penalties for offending firms has to be addressed and followed up, but a major problem will be the effectiveness of the Agency in implementing decisions at a truly federal level. It is well known that the individual Emirates retain interests over a variety of environmental aspects.

A recent example of this occurred in March 1993 when a consignment of 900 Syrian tortoises in crates was confiscated by the Ministry of Agriculture at Sharjah Airport, in line with the UAE's adherence to CITES articles on the international trade in fauna and flora. So far, so good. Unfortunately the Ministry of Agriculture inspector at the airport failed to make the right provisions for feeding the tortoises or handing them over quickly to the Sharjah Municipality. He also failed to respond positively to an approach from Dubai, on the grounds that they had been seized in Sharjah.

The ensuing delay meant that several hundred of the tortoises died, much to the dissatisfaction of those in the two Municipalities who could have handled them properly. To be effective, the new agency must be empowered to intervene if necessary in unseemly incidence such as this.

The Federal Environmental Agency makes no provision for archaeology. This is most unfortunate, given the fact that a fair amount of recent excavation throughout the Emirates can be classified as rescue archaeology. Although there has been some cross-border co-operation recently (for example the link between Fujairah and Al Ain Departments of Antiquities — see page 27) it does appear that individual Emirates are often more concerned with highlighting only the latest discoveries of their own geographical area. Each Emirate has different archaeological policies and priorities, and penalties for mishandling sites or finds differs from one to another. Even the criteria for designating and protecting sites differs from one part of the country to another. Given the inter-related status of so many sites in the UAE, there is an urgent need to streamline and perhaps centralise the whole concept of archaeology here, at least to create a body for reference purposes and to co-ordinate policy and action.

Hopefully, the Federal Environmental Agency will receive the support necessary. Surely in a country as small and diverse as the UAE this is one area where federalism could really work to the advantage of each

Emirate and the country as a whole. Environmental lobbies such as the ENHG are needed to help bring about increased awareness and to pressure for action in appropriate cases.

A glance through the contents page of this and previous **Tribulus** issues shows that there is an enormous amount of scientific research going on all the time. What is now lacking is a central data base to collate past, present and future activities. As of 1993, there is no way for an individual to get an overview of projects past or in hand.

People have to rely on specific institutions, the media or word of mouth. As it is, too many important reports are lost in esoteric but obscure foreign publications. There is definitely a role here for higher education, perhaps the UAE University or the Ministry of Higher Education and Scientific Research. The ENHG and its affiliates in Al Ain and Dubai can draw attention to what is known to be going on, but we probably do not get to know about a lot of related research.

Several companies have definitely revealed their "green" credentials by helping in the sponsorship of various research projects. Many of them are corporate members of the ENHG (for list see page 26). It is therefore gratifying to learn that Shell has recently granted \$50,000 to the University-based Desert and Marine Environment Research Centre to study the status of mangroves along the Arabian Gulf coastline of the UAE.

Some ten years ago B.P., with logistical support from ADMA-OPCO, sponsored research into the effect of water-borne oil pollution on trees around Abu Dhabi Island, and in the late 1980's a private study of the local mangrove ecosystem was carried out prior to the creation of the Eastern Lagoon as a reserve. With the increase of urban and industrial development along large sections of the country's coastline, a survey to determine present mangrove status is welcome and overdue.

Regular readers are by now used to a front cover photograph showing some specific aspect of local natural history, archaeology, or architecture in a positive light. The picture on this issue is therefore a poignant reminder that the UAE today is fast becoming a fragile and threatened environment for species such as the Caracal Lynx, here seen strung up in the Wadi Bih in Ras al Khaimah. Hence the vital contribution that a strong Federal Environmental Agency can make, an Agency with a remit not only to protect the environment in which we humans breathe and work, but also to protect and if necessary preserve something of those archaeological sites and natural habitats that will mean so much to this country's heritage in the future.

ROB WESTERN

New shells from the UAE's East Coast

by Solene Morris and Dr. Noel Morris

(**Editor's note:** During the course of a survey on the East Coast of the United Arab Emirates in early 1992, the authors collected and described fourteen marginal marine bivalves in backshore environments. They included four new species, and described a replacement generic name.

The four new species are described here for the first time. Three have Latin names taken, respectively, from the Fujairah villages of Mirbah, Safad and Qerat (Girath), and chosen with the approval of the Government of Fujairah.

The survey was carried out with the permission of the Ruler of Fujairah, His Highness Sheikh Hamad bin Mohammed al Sharqi, and received logistic support from the Abu Dhabi Company for Onshore Oil Operations, ADCO, a Corporate member of the Emirates Natural History Group.)

Introduction

The present paper is the result of a preliminary survey carried out in January 1992 on the distribution of marine bivalves along the coast of Fujairah and nearby. We are deeply indebted to His Highness, Sheikh Hamad bin Mohammed al Sharqi, Supreme Council Member and Ruler of Fujairah, for his generous support and interest.

There are two fascinating areas of relatively unspoiled backshore, tidal waters in the neighbourhood of Fujairah. One lies just to the North of the Fujairah deep water harbour, around but mainly to the seaward side of the radio transmitter aerial, surrounded by salt marsh. A second is to the south at Khor Kalba, close to the Omani border, where there is a considerable development of mangal (mangrove) which is not present at the first site. Both are separated from the Gulf of Oman by a long stretch of sandy beach. The first drains into the sea through a narrow channel in the beach a little to the south and east of the radio station and the second at the mouth of Khor Kalba Harbour.

The two habitats have developed in small areas of flatter parts of the narrow outwash fans to the east of the Sharqiyan area of the Northern Oman mountains, close to areas of sabkha-like flats. These flats are supplied by sediment from occasional but regular drainage through wadis from the hinterland.

The first of these backshore environments near the village of Qurayyah consists of approximately three square kilometres of sand flats drained by a fast flowing, dendritic channel that breaches the sandy beach at about the mid-point. Water remains in the channel at low tide and some of the sands close to the channel are dangerously unconsolidated. *Hiatula*, *Dosinia* and *Caecella* are found as recently dead, paired shells, sometimes still in their living position in these soft sands. A little above mid-tide level there is a broad zone of filamentous green algae divided by the main branch of the complex drainage channel. Paired valves of *Laternula* (*Exolaternula*) are very common in this area. Outside the green filamentous algal zone there are wide sand flats. Above this area is a zone of black algal mat

كانت نتيجة المسح الذي تم على سواحل الفجيرة وكلبا مطلع العام الماضي ١٩٩٢ م، العثور على أربع أنواع من القواقع البحرية النادرة، والتي لم يسبق الكشف عنها من قبل. هذا المقال يقدم وصفاً للأنواع الأربعة حيث اطلق على ثلاثاً منها أسماء تتصل بقرى مريح وصفد وقيرات.

* تم اجراء المسح تحت رعاية صاحب السمو الشيخ حمد بن محمد الشرقي - عضو المجلس الأعلى حاكم الفجيرة - وبدعم من شركة أبوظبي العاملة في المناطق البرية - ادكو.

with *Nodilittorina*. This is developed only on the landward side and occurs a short distance seaward of the sabkha. The sabkha in this area is covered with halophytes and affected only by extreme high water.

In the Khor Kalba area there is a complete gradation between the non-marine backshore sabkha through the mangal to the open shore, fully marine environment outside the harbour. The pneumatophores of the *Avicenna* mangrove zone occur in the upper third of the flats above the main drainage channel. This is usually shelly mud with some sandy patches. Small drainage channels run across the flat into the main drainage channel often exposing bivalves in their living position. These include dense populations of *Diplodonta* and, less common *Laternula*, *Marcia* and *Hiatula*. On the seaward side of the main channel, between small areas of mangal, there are sandy embayments with the small purple tellin *Nanhaia*. Passing under the bridge in the direction of Khor Kalba Harbour the environment becomes successively more marine. Here *Saccostrea* becomes a conspicuous feature of the higher intertidal zone followed toward the lower intertidal zone by first *Circenita* and then *Asaphis*.

In the sands of the lower intertidal, in the main part of the harbour, the variety of bivalves increases and closely matches that of the open waters beyond. In both areas, mollusc shells from the open shore have been thrown into the backshore environment by extreme high tides or rough weather. At Khor Kalba a considerable number of sub-fossil shells are now being exposed by erosion of the main channel on its east side. The presence of dead shells within the backshore environment must therefore be interpreted with caution. All the species described here were either alive or represented by freshly dead material with the ligament and periostracum intact. Apart from *Saccostrea*, all the back-shore species are absent from the main beach and foreshore. The typically marine families and genera of the open shore are represented by quite different species.

Animals that form the benthos in these backshore flats avoid the destructive turbulence of the Indian Ocean breakers and some attacks of inshore predators. In common with all intertidal organisms, however, they are living within one of the harshest of all habitats, with regular and irregular changes of salinity, threat of desiccation, a considerable range of temperatures and largely different predation pressures. The bivalves in particular have escaped attack from star fish and naticid snails but are to some extent followed into the habitat by muricid snails and are particularly prone to attack from wading birds.

Within the Indo-Pacific faunal province, particular taxa are specialised for this environment. This is particularly clear within the bivalves; their epifaunal representatives are dominated by the oysters and their infaunal representatives include vertically burrowing tellins (best classified within the **Sanguinolariidae**) vertically burrowing anomalodesmatans (the **Laternulidae**) and a smaller number of veneroids, mactroids and lucines. Each bivalve species seems to have a very particular distribution which seems to be rigorously controlled by both physical and biotic environmental factors. Some of the species are more widely distributed and elsewhere (Arabian Gulf and Red Sea) and may occur on more open shores. In the Gulf of Oman, with its oceanic influence, these species are restricted to the sheltered backshore environment.

In this preliminary study, based on live or freshly dead material, we can in no way evaluate these environmental parameters with any precision. Present day competition between these species seems to us to be of marginal importance although population densities may be controlled in part by the nutrient availability and spacial competition for space. We ourselves adhere to the view that competitive forces of one type or another must have been important at the time of speciation of the animals involved.

Description of new species

Genus *Hiatula* Modeer 1793 (Synonym, *Soletellina* de Blainville, 1824).

Type species *Solen diphos* Linnaeus, 1771, subsequently designated by Stoliczka, 1871, p. 114.

Narrow ovoid to quadrate shells with an essentially smooth surface. Deep burrowing with long separate siphons, rather active, usually virtually equivalved.

Hinge with acicular cardinal teeth differing from those of *Sanguinolaria*, two in the right valve fitting either side of the one in the left valve; all of these three cardinal teeth are bifid. In the left valve there is a further small, simple cardinal on the proximal end of the ligament nymph. No lateral teeth are developed.

Typically with a bluish purple or violet colouration, usually with a smooth straw coloured to brown periostracum.

Hiatula mirbahensis Morris & Morris, sp. nov.

This species was discovered by Blandford on the Pakistani coast at Karachi and to the west. It was recognised by Hanley (BM(NH) manuscript labels) as a new species but has apparently never been described.

Holotype: in the Natural History Museum, London, Zoology Department, Mollusca, reg. no. 1992169. Paratypes: reg. nos. 1992170.

Diagnosis: Elongate, whitish shell with a dull straw coloured periostracum and an approximately straight dorsal margin to the pallial sinus.

Description: Shell distinguished from *Hiatula rosea* by its more elongate shape and off-white colour with straw coloured periostracum. It has the anterior and dorsal parts of the pallial sinus more at right angles to each other although actually meeting in a curve.

Locality: In the sand flats north of Fujairah at about mid-tidal level in soft sands. Other localities include the coastal area near Karachi and the Mekran Coast to the west.

Genus **Nanhaia** nom. nov. pro *Hainania* Scarlatto, 1965 (non Koller, 1927) (Pisces)

Derivation of name: from Nan Hai, the South China Sea.

Type species: *Sanguinolaria (Hainania) tchangsii* Scarlatto, 1965.

Nanhaia is the probable sister genus of *Heterodonax* Morch, 1853.

Nanhaia safadensis Morris & Morris, sp. nov.

Holotype: in the Natural History Museum, London, Zoology Department, Mollusca, Reg. No. 1992171, from the mid- to upper intertidal level in the sand flats to the north of Fujairah.

Paratypes: Reg. No 1992172 from the same locality as the holotype and at Khor Kalba in upper intertidal sand flats approximately 0.5kms to the south east of the bridge across the waterway.

Diagnosis: Small, sub-equivalve, rounded, smooth, purplish white tellinid with an arched dorsal margin to the pallial sinus.

A small, smooth, *Macoma*-like thin shell. It was a dull white colour with a purplish blush. There are two semi-distinct wide white bands radiating from the umbones and a number of other fine radiating white lines and narrow comarginal white bands. There is a shallow lanceolate lunule outlined by a faint groove.

There is a relatively small but slightly protruding ligament nymph with a relatively large ligament protruding above the dorsal line. The inner ligament is attached to the top of the nymph while the outer elastic ligament fixes into the grooves to either side.

The sculpture is limited to very fine comarginal rounded striae which apparently represent growth increments grouped between minor growth halts. The transparent thin golden brown periostracum erodes quickly from dead specimens.

The shell interior is dull white and pale purple with some glossy and some dull areas. The shell margins are smooth.

The anterior adductor scar is leaf shaped and the posterior scar sub-circular. There is a large pallial sinus extending slightly more than half way between the adductors. It is concurrent with the pallial line, slightly forward curved at its anterior and extending well up towards the umbones before turning back to the posterior adductor with a very shallow, convex upwards curve. It is this subtlety of the form of the pallial line that distinguishes the present species from the type species **N. tchangsii**; the upper line of the pallial sinus of *N. tchangsii* is quite straight.

The hinge of the right valve has two upward curving sub-equal, sub-acicular cardinal teeth, the posterior on

bifid. The left valve has a relatively large sub-central sub-acicular cardinal set between two sockets and a very small, short, blade-like cardinal to the posterior on the lower proximal part of nymph.

Nanhaia occurs in the high intertidal sand flats at Fujairah and Khor Kalba. In both localities it seems to be restricted to the sand flats to the eastern side, i.e. seawards of the inlets, shallow burrowing in the soft clean sand; occupying a similar environment in South China. We assume that being equivalve it maintains a vertical position in the sediment but this is difficult to check as the animals always move when disinterred because of the non-consolidated nature of the sediment.

Superfamily Mactroidea (formerly Mactracea) Lamarck, 1809.

Family Mesodesmatidae Gray, 1839.

At present the Mesodesmatidae are recognised by their donaciform shape, an advanced character unique to this family among the Mactracea, and the separate siphons; other described Mactroidea have conjoined siphons. The separate siphons are most reasonably interpreted as a primitive character. **Caecella** had the separate siphons of the Mesodesmatidae but not the donaciform shape. The genus has been placed in the sub-family Ervillinae but the hinge may be better compared with those of **Atactodea**, which does have the typical donaciform shape and locomotory ability of the mesodesmatids. The differences, which include longer robust outer teeth in each valve and more forward position of the ligament pit under the central teeth may reflect the backward pointing umbones of **Atactodea** and be adaptations for easier movement within the sediment.

Caecella has a similar inshore distribution to **Atactodea**, but is buried and inactive in backshore environments of semipermanent sands and muddy gravels thus differing from **Atactodea** which occurs in loose sand of intertidal coarse coarse sandy beaches along with the species of **Donax** that occur in their most protected environments.

Caecella qeratensis sp. nov. is of a similar shape to the large atlantic genus **Standella** Gray, 1853, of the Mactridae. It also has similarly bunched hinge teeth, the individual teeth are, however, quite differently arranged. We suspect that any similarity is a case of morphological convergence.

We retain both **Caecella** and **Atactodea** in the Mesodesmatidae, but are unwilling at this stage to accept their placement within the accepted sub-familial arrangement of this family.

Genus **Caecella** Gray, 1853.

Type species **C. horsfieldi** Gray by original designation. The genus occurs in marginal marine environments across the Indo-Pacific province.

Caecella qeratensis Morris and Morris sp. nov.

Holotype: in the Natural History Museum, London, Zoology Department, Mollusca, Reg. No. 1992173. Paratypes, Reg. No. 1992174. It is common in mid-tidal, soft sands on the tidal flats to the north of Fujairah.

Diagnosis: Short, globose, mactriform **Caecella** with a complex of shell flanges in the umbonal cavity.

Description: Shell mactriform, dull white in colour with a yellowish buff to brown periostracum which is worn away at the umbones. The shell is gibbous and sub-rounded

with a slightly protrusive anterior. The anterior dorsal margin is sub-linear and set at about 45 degrees to the long axis of the shell. The anterior and anterior ventral margins are rounded. The posterior is regularly rounded. The umbones are set a little behind the mid-point of the length and are in very close proximity.

Shell sculpture of fine growth lines in the specimens discovered at this locality showed three major growth halts. One possible conclusion to be drawn from this is that they were in their fourth year.

A light flattening of the shells in front of the umbones produces the slight hint of a lunule; there is no real escutcheon present.

The inner shell surface is a dull white and is porcelaineous with a slight gloss. The inner ventral margin is smooth.

There is an internal shelf present from the umbones to the top of the posterior adductor scar, approximately parallel to the long axis of the shell and additional smaller ridges from the umbones towards the anterior adductor. These slope downwards in an anterior ventral direction.

The adductor scars are distinct and of approximately equal size. The anterior adductor scar is in the form of an inverted comma. The posterior adductor scar is sub-rounded. The pallial line is rather deep and has a small "U"-shaped sinus with its central axis parallel to the long axis of the shell. The sinus often has slight imprints of muscle fibres of the siphonal retractor muscles. The sinus is longer than that of **Atactodea** but typical of **Caecella**.

The hinge teeth are closely grouped in a robust arrangement. They are separated by a near vertical, deeply emplaced, high and short, elongated spoon shaped resiliifer. The right valve has two teeth in front of the resiliifer, the proximal one is thin and vertical, the more anterior and proximal one is robust and at approximately 45 degrees to the first as in **C. turgida** and **C. convexa** (Deshayes, 1855). This tooth has the appearance of being compound; having a posterior part with its crest proximally placed and an outer lower part with a low crest distally placed. There is a strong backwards sloping tooth behind the resiliifer.

The left valve has three teeth in front of the resiliifer. The first is very small and blade-like. It is dorsal in position and only comes half way down the hinge plate. The next anterior is large and bifid and is more or less vertical. There is a short but prominent distal tooth, an anterior lateral at about 45 degrees to the long axis of the shell. There is a large curving tooth behind the resiliifer from which it is separated by a wide socket.

The internal ligament layer is attached to the central resiliifer while the outer elastic ligament layer is attached to the shell margin immediately behind the umbones. This seen from the outside is a much darker brown than the neighbouring periostracum but the sliver of joined periostracum in front of the umbones is also this darker colour. This dark colour can be seen as two small spear like areas to the front and the back of the umbones. The resiliifer protrudes below the rest of the hinge plate and slopes downwards a little posteriorly.

The interior shell shelves are typical of this species, however, a small posterior internal shelf is developed in **C. turgida**, a much more elongate species. **C. convexa**, possibly from the west Pacific, is the nearest in shape to

the present species but it is relatively longer and less gibbous.

Superfamily Laternuloidea (formerly Latenulacea) Hedley, 1918 (1840).

Family Laternulidae Hedley, 1918. (= Anatinidae Gray, 1840 based on *Anatina* Bosc, 1816 = *Laternula* Roding, 1798.)

Nacreo-prismatic shells with fused periostracum covered siphons. Most of shell surface covered with small calcareous spicules within the periostracum. Shell with an umbonal fissure. Ligament internal, mounted between two chondrophores supported by buttresses.

Some species with a sub-triangular lithodesma joined to the anterior side of the chondrophores by elastic ligament material.

Many species occur in inshore and backshore environments intertidally in vertical deep burrows.

Genus *Laternula* Roding, 1798 (= *Anatina* Bosc, 1816, an objective synonym.)

Type species: *Laternula anatina* = *Solen anatinus* Linnaeus, 1758, by original designation.

Two species of the genus occur in the backshore intertidal areas in the neighbourhood of Fujairah, apparently strictly controlled by their environment. In the sand flat locality north of Fujairah harbour, freshly dead shells of *Laternula erythraea* sp. nov. were extremely common but only one single valve of *Laternula navicula* was found, a species which occurs in the apron below the *Avicenna* mangal in Khor Kalba. It seems most likely that the sediment difference is important but it is also possible that different food available in the mangal may have a bearing.

Sub-genus *Laternula* (*Laternula*) Roding, 1798.

Chondrophores without lithodesma.

Sub-genus *exolaternula* Habe, 1953.

Type species *Anatina truncata* Lamarck, 1818 by original designation = *Solen spengleri* Gmelin, 1791.

Similar to *Laternula* (*Laternula*) but with a well formed lithodesma, approximately in the form of an isosceles triangle, attached to and across the anterior of the chondrophores by elastic ligament material.

Laternula (*Exolaternula*) *erythraea* Morris and Morris sp. nov.

1839 *Anatina laterna* Deshayes (non Lamarck sp.), 6, pl. 8, figs. 20 - 23.

Derivation of name: from the classical name for the Arabian Sea, Erythraeum Mare.

Holotype: in the Natural History Museum, London, Reg. No. 1992175, from the backshore sand flats north of Fujairah deep water harbour.

Paratypes: Reg. No. 1992176, from the same locality and 1975030-1, 5 specimens and a single valve, from Khor Khuwayr, washed out of mangrove swamp mud, K.R. Smythe collection; also 1902. 18. 30,871, 1 specimen from Aden and RSMNH 1977034. 1 - 6. 6 fragmentary specimens from Ajman Creek, Ajman, UAE, D. Heppel collection.

Diagnosis: Small, elongate. *Laternula* with attenuated and truncate posterior; hinge with a lithodesma.

Description: The shell is small, very thin and extremely fragile. It is elongate and subrectangular in outline with the posterior dorsal margin usually straight and the anterior dorsal margin well rounded. The posterior end is attenuated and bluntly truncated or occasionally rounded, with a narrow, slightly flared siphonal gape. The anterior margin is broadly rounded with a moderate pedal gape. The shell is approximately equivalved; the right valve may be slightly deeper and overlap the left valve along the ventral margin.

The surface ornamentation is extremely fine spicules, fairly densely spaced, sparser in a narrow radiating band posterior to a distinct posterior line, and absent on the siphonal area. The periostracum is a light yellowing colour becoming rusty brown towards the ventral and siphonal margins.

The umbones are behind the midline (.54) with the beaks directed inwards and slightly anteriorly. The umbonal fissure is approximately in the centre of the umbones and is quite short, reaching to less than one fifth of the shell height. In nearly all the specimens examined, the anterior side of the umbones overlaps the posterior side. The beaks are not usually perforated as in the other species.

The pallial line is faint and the pallial sinus is very broadly "C"-shaped and quite shallow, reaching only about one fifth of the shell length. The anterior adductor is elongate and placed well to the anterior end just about at the break of the curve from the dorsal line. The pedal embayment is not well defined. The posterior adductor scar is sub-triangular and placed behind the buttress and within the angle between the buttress and the posterior dorsal margin.

The buttress is low and rounded, distinctly less blade like than in other species. It is directed posteriorly from where it supports the chondrophore, forming an angle of about 40 degrees with the hinge axis and gradually diminishing into the shell a short distance above and in front of the posterior adductor scar and well short of the dorsal margin of the pallial sinus. The angle between the buttress and the umbonal fissure is about 50 degrees. The chondrophore is directed anteriorly with its anterior edge fairly straight, giving the appearance of being cut. The lithodesmal socket is well developed and the lithodesma, although similar to that of *L. (Exolaternula) spengleri*, tends to be more broadly "V"-shaped.

The maximum shell length of this species in all the material available to us is 35.65 mm, (BM(NH)) Zoo/Moll 197531/1.

Laternula (*Exolaternula*) *erythraea* sp. nov. differs from other *Exolaternula* species in the attenuation of the posterior end of the shell and from *Laternula anatina* (Linnaeus) in having a lithodesma.

(Pictures appear on Pages 18 - 19)

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An Ornithological survey of the UAE & Oman

February - March 1992

by Michael Jennings

I visited the Trucial States, as the United Arab Emirates were then known, on several occasions during the period 1969 to 1971, whilst I was working in Bahrain. At that time the only tarmac road anywhere in the Emirates was between Sharjah and Dubai and the town of Sharjah was merely a narrow covered street about 250m long with a few side roads. Things had changed a bit in the intervening twenty years!

I arrived in Dubai on the afternoon of 18 February and was met by Colin Richardson who was to be my host, guide and companion for the next two weeks. We drove to Colin's house on the outskirts of Dubai along boulevards of watered trees, with neatly tended lawns. There was nothing in Dubai that I recognised from my previous visits. Everywhere there were modern apartment blocks and commercial buildings, industrial areas, parks and gardens and even golf courses. Colin has lived and birded in the Emirates for many years and has recently published his very authoritative "**The Birds of the United Arab Emirates.**" Our plan was to make a trip of about eight days in Oman, to see as much as possible of the country including, if time permitted, a visit to Salalah in the southern, Dhofar, province. The main objective of my own visit was to collect breeding bird information for the Atlas of the Breeding Birds of Arabia project, although the opportunity to see migrants and winter visitors in this eastern corner of Arabia, was also very appealing. I was particularly keen to see again the speciality birds of the northern UAE and Oman, that cannot be found elsewhere in Arabia and some of the exotic species that have become established in the area in recent years.

Colin's house is surrounded by gardens and areas of scrub, a good spot for birding right on the doorstep. In the late afternoon of the first day I was able to see **Grey Francolin, Indian Roller, Rose-ringed Parakeet, Red-vented Bulbul, Graceful Warbler, and Common Mynah** all within a few yards of his house.

As Colin was working on 19 February I had a day to bird in the Dubai area before we left for Oman on 20 February. I used every minute. In the morning John Bannon, a friend of Colin's, dropped me at the Emirates **Golf Course** southwest of Dubai, a local birding hotspot. There were very good numbers of visitors, including a surprising variety of waders scattered around the fairways and greens. The golf course offers to birds the habitat choice of several ornamental lakes, shrubberies and numerous trees as well as well watered lawns. One of the first birds seen was a **Pacific Golden Plover**, in fact there were about ten scattered around the course that day. Other waders finding the greens and lagoons to their liking were **Curlew, Ruff, Redshank, Common Snipe, Ringed Plover, Kentish Plover, Little Stint and Dunlin.** (I failed to identify **Pin-tailed Snipe** which had been seen there the day before). Visiting passerines included three **Song Thrush**, eight **Isabelline Shrike**, an **Isabelline Wheatear**, three **Stonechat**, plus **Tawny**

* في إطار الجهود الرامية الى اعداد أطلس حول سلالات الطيور في العالم العربي تم اجراء مسح لأجزاء من دولة الامارات العربية المتحدة وسلطنة عمان في أوائل العام الماضي ١٩٩٢ م. هذا المقال يلقي الضوء على نتيجة ذلك المسح.

Pipit and Desert Wheatear. There was a single **Swallow.** The ornamental ponds had **Coot, Mallard and Common Sandpiper.** A small group of **Lesser Flamingo** had been installed on one of the ponds and appeared to have had their wings clipped. No doubt when their wings grow confusing records of this species will occur around the Emirates. This group of **Lesser Flamingos** had attracted in one **Greater Flamingo** from the large numbers that inhabit the nearby Dubai Creek at this time of year. During Colin's extended lunchhour he, John Bannon and I made a short visit to Qarn Nazwa to the southeast of Dubai to look for an **Eastern Pied Wheatear** which was wintering in the area. Colin's excellent knowledge of the local birds and habitat soon discovered it — it was a new species for me. On that short trip in the desert we startled a hare from its form, a mammal which is now rather scarce in the Emirates. In fact it was the only one seen in the subsequent two weeks. The nearby Al Habab fodder fields held a tremendous variety of pipits including **Richard's and Meadow Pipit**, there were also several **Skylark**, and **Indian Silverbill.** In the afternoon John and I visited Ramtha sewage lagoons and added **Wigeon, Tufted Duck, Marsh Harrier, Avocet, Red-wattled Plover, Jack Snipe, Citrine Wagtail, Clamorous Reed Warbler, Pied Mynah**, and many others to my rapidly growing trip list.

We left for Oman at midday on 20 February. Not far north of Al Ain we stopped to see what a group of 20 or so **Brown-necked Ravens** were circling for. As we stood there a large raptor glided in from the east. It turned out to be **Lappet-faced Vulture.** This was shortly followed by another and another and another and soon no less than ten of these huge vultures had circled over us, the largest group ever recorded anywhere in the Emirates. Hopefully this was a portent of things to come. Al Ain is now a huge 'resort area' of villas and public amenities where, it seemed, every inch of the ground was regularly watered. We did not linger in the town but whilst passing through we saw **Pale Crag Martin, Purple Sun Bird and Black-crowned Finch Lark** by the road. The customs posts at Hafit just south of Al Ain was passed through without undue delay and we were into Oman.

Oman is a large country, (about 1000 kms from north to south), and we wanted to see as much as possible, so we decided to try and get to Salalah in the southern province by the third or fourth night. If we then spent 2-3 nights in that area it would entail a rigorous regime of an

average of about 350 kms each day. Our first night's camp was a few kilometres southeast of the small town of Dhank, beside some low limestone hills. We explored the hills in the failing light of late afternoon. Local resident species here included **Egyptian Vulture**, **Sand Partridge**, **Pale Crag Martin**, **Great Grey Shrike**, **Brown-necked Raven**. Visitors included **Desert Warbler**, **Blue Rock Thrush** and **Desert Lesser Whitethroat**. Colin had a **Plain Leaf Warbler**. For me the most exciting observation was a pair of gazelle which I had startled in a wadi amongst the hills. In all my travels on mainland Arabia, which have taken me to the majority of central Arabia and all its extremities I have never seen a gazelle! The three species of Arabian gazelles were once very numerous but it is an indictment against desert folk, including foreign visitors, that almost all of them were shot. In Oman there are very strict wildlife laws and the payoff of this policy is that one can still see gazelle wild in the desert. In subsequent days we saw gazelle on three more occasions.

The next two days were spent travelling across the central part of Oman, to a point on the coast some 300 kms east of Salalah. We chose a route south along tracks that mostly avoided the main asphalt highway. This whole area is very arid and generally a rather flat, stony, barren plain with here and there small, leafless, acacia bushes. Some of the shallow wadis held a curious diminutive palm the like of which I had not seen before. In Central Oman there are oil fields in the north at Fahud and Alam and in the south at Amal. We made a point of visiting these settlements. The resident birds in central Oman matched the impoverished habitat. The only regular species were **Brown-necked Raven**, **Hoopoe Lark** and **Great Grey Shrike**. No other species were widespread, except that most of the settlements possessed a few **Palm Doves**. Before we got too far from the mountains in the north some more **Lappet-faced Vultures** and several **Egyptian Vultures** were seen. Migrant species included **Red-tailed Wheatear**, **Olivaceous Warbler**, **House Martin** and **Menetries' Warbler**. The most notable absentee from central Oman is the **House Sparrow**. We looked for them unsuccessfully in all the oil towns and the small villages along the road. They are also absent from Dhofar province. **Brown-necked raven** were breeding at the time and often birds were sitting on nests which probably contained eggs. One nest inspected had two eggs, the regular quota for the species in the most arid areas. Microwave relay towers are placed at intervals along the way, they almost always provided a raven's nest. As we approached the southern coast the amount of vegetation in the desert gradually increased and the variety of birds also began to improve; new birds seen here were **Chestnut-bellied** and **Crowned Sandgrouse**.

Our third campsite was on top of impressive cliffs rising 270m directly from the sea at Ras ash Shuwaymiat. Below us schools of dolphins hunted large tuna-like fish, which in turn fed on vast shoals of sardines. On the rocks of the cliff face there were many lichens but unfortunately amongst all this grand scenery hardly a bird stirred. The following day we had great difficulty moving through extremely broken country before we could find the small fishing village of Sharbithat. Along its sandy beach huge numbers of **Yellow-legged**

Herring Gull were resting or swarming over shoals of sardines, which also attracted **Sooty**, **Black-headed**, **Slender Billed** and two **Great Black-headed Gulls**. **Sandwich** and **Lesser Crested Terns** were also present. Offshore two **Masked Boobies** sailed low over the sea. The local people at Sharbithat were extremely friendly, gathered around and sold us locally made baskets, whilst some rather expensive petrol was syphoned out of a 45 gallon barrel into our tank. Just inland of the village we saw our first **South Arabian Wheatear**, the local race of the **Mourning Wheatear**. Our lunch stop that day was spent under a tall microwave tower which had a temporary population of 26 **Egyptian Vultures**, almost all of which were juveniles. A small farm with pivot irrigation systems between Shelim and Thumrait held **Short-toed Lark**, **Yellow Wagtail** (including the black-headed race) and **Black-crowned Finch Lark**. We reached Thumrait after dark and moved on south towards Salalah camping just over the lip of the escarpment which surrounds the Salalah plain. This area of Dhofar province is remarkable for the fact that it gets an abundance of rain during August/September, which feeds many large trees and supports a profusion of herbs and grasses. The vegetation and the birds are quite distinct from elsewhere in Oman, including several African species usually only found on the Tihama plain of south west Arabia. It was exciting to suddenly see numerous trees, shrubs and grasses in our headlights at the top of the escarpment. We found a campsite up a little side road and switched off the engine to hear numerous crickets and night insects which heightened the impression of the tropics.

On our first full day in the Salalah area we were woken up by groups of **Fan-tailed Ravens** circling over our campsite, probably the most typical and numerous bird of this area. A short walk in the vicinity of the camp produced four species of eagle, **Imperial**, **Spotted**, **Steppe** and **Short-toed**, a ring-tailed harrier (probably a **Montagu's**), **Kestrel** and **Sparrowhawk**. The time of our visit corresponded with the Salalah dry season and consequently most of the trees and bushes were bare of leaves, and the profuse ground vegetation had been severely grazed by very numerous flocks of cows and camels. Unfortunately the summer visitors from Africa had not arrived at the time and little breeding activity among the permanent residents was noted. At Salalah we contacted Ian Brown, a local birder who has been resident in the area for several years. We arranged to go out with him that afternoon. In the meantime we visited two khors (sea inlets) east of the city. The first one, Khor ad Dahariz lined with reeds, had a large flock of **Coot** and probably at least two pairs with young. There was also **Moorhen** breeding, and **Little Grebe** and **Great Cormorant** were present. In the bushes there were numerous **Eurasian Collared Doves**, which are an isolated population away from their relatives in the north. This population of Eurasian collared doves is something of an enigma as they appear to have been in the Salalah area for several years, preceeding the expansion of the species into central Arabia and parts of Northern Oman. One would also expect that the **African Collared Dove** should occur in this area, like it does, not too far to the west, in Yemen. At Khor al Qarm a few kilometres further east there were a number of **Greater Sand Plover**, **Grey Herons** and **Little Egrets**. In the

afternoon Ian showed us some local springs at the base of the hills, which gave us **White-breasted White-eye**, **Grey Wagtail**, **African Paradise Flycatcher**, **Ruppell's Weaver**, **Arabian Warbler**, **Arabian Red-legged Partridge**, **Shining Sunbird** and **Tristram's Grackle**. The highlight of that afternoon was two **Golden-winged Grosbeak** at Ain Gharziz. It seemed we were especially lucky to see this bird as Ian had only ever seen them once before in the several years he has been in the Salalah area. That night we camped at about 1000 m in Jebel Qamar, approximately 70 kms west of Salalah. In this area, and about 50 kms further west the next day, we had more **Arabian Red-legged Partridge**, **South Arabian Wheatear**, a single **Long-legged Buzzard** and **Shining Sunbird**. The hills here are reminiscent of the foothills of south west Arabia with 'exotic' plants such as *Dracaena serrulata*, *Adenium obesum* and *Caralluma* spp. At Khor Mughsail we found a good variety of waders and water birds including **Black-tailed Godwit**, **Pintail**, **Garganey**, **Spoonbill**, **Glossy Ibis**, **Cattle Egret** and **Osprey**. That afternoon we met Ian again for a further excursion to Salalah bird spots. At a huge cattle farm which has extensive fodder fields (known locally as the Sun farm) we found **African Silverbill** common, as well as numerous migrants including **Tree Pipits** and **Bluethroat**, not to mention a small flock of **Rose-coloured Starling**. We camped that night at Teataam in the hills to the northwest of Salalah, utilising abundant dead wood in the wadi to make a warming camp fire. In the morning there was a couple of **Long-billed Pipit** near the campsite and also two of the elusive **Black-headed Bush Shrike**, a local speciality that had eluded us until then. Other typical birds of the hills were **Blackstart**, **Graceful Warbler**, **Desert Lark**, **Pale Crag Martin** and **Cinnamon-breasted Rock Bunting**.

Our tight schedule allowed no time to linger in the Salalah area so we moved back to the dry desert side of the hills, visiting on the way the unique lake at Ayoon, which lies in a limestone canyon. Here we found **House Bunting**, **Scrub Warbler** and **Hooded Wheatear** which are typical residents of desert rocky areas. On the lake there was a **Coot** and a **Ferruginous Duck** whilst **Clamorous Reed Warblers** chattered in the reed beds and some smaller birds, probably **Olivaceous Warblers**, sang. A little further along the road two small groups of **Steppe Eagle** were thermalling, possibly already migrating northwards and in amongst one of these groups there was a single **Lappet-faced Vulture**. A site near Thumrait was recommended to us by Ian for migrants. Here a sewage lagoon held **Wood Sandpiper** and **Temminck's Stint**, **Moorhen**, several **Citrine Wagtail** and a single **Reef Heron** (about 100 kilometres inland). Proceeding further inland from Thumrait we left the asphalt for a 125 km detour into the desert, hoping to find both **Dunn's** and **Bar-tailed Desert Lark** which are known for the area. At almost our first stop to listen for these species we were rewarded with good views of a confiding pair of **Dunn's Lark** and at least two pairs of **Bar-tailed Desert Lark**, with the males singing. However we were lucky because we never saw Bar-tailed again and only a single Dunn's Lark was seen the next day.

The track took us to the small town of Shisur. Shisur is the site of an archaeological dig which had, in recent weeks, received a great deal of media attention in

Europe as the site of the "lost city of Ubar." Having viewed the ruins it seems that the publicity hype had exaggerated the size of the site as the building foundations barely covered 40 metres square. Someone later dubbed the site as the "lost room of Ubar"! In an enormous cavern which held the village well, in ancient and modern times, the remains of an **Eagle Owl** were discovered although its specific identity was uncertain. Overhead in rock crevices numerous **Rock Doves** were breeding with chicks squeaking as we looked over the ruin. Heading northeast from Shisur we reached a pivot irrigation scheme and the asphalt at Dauka. As the light faded we had a **Green Sandpiper**, several more **Rock Dove**, a couple of **Kestrels** and a large flock of **Pied Wagtails** going to roost. Our camp that night was on a broad shallow wadi a world apart from the mountain campsites of the last three nights. As we had come to expect of arid central Oman, very few birds were to be found in the vicinity of our camp in the morning. However a group of four **Spotted Sandgrouse** alighted quite close by before we moved on, the first of four or five groups that we saw that day.

On 27 February we decided we should push on to make sure we would get back to Dubai on 28 February. We drove hard that day to reach the northern Oman mountains near Nizwa at dusk. We were able to come back a slightly different way to the way we went and so did not duplicate many atlas squares. The most notable feature of the return journey was a very large area of enormous old ghaf trees *Prosopis cineria* to the west of Mughshin. This ghaf forest covers an area of at least 20 kilometres by 10 kilometres and it was a pity that we did not have more time to explore it. Almost certainly species breed there which are scarce elsewhere in central Oman. Although we saw only a few birds in this spot in our short visit we were lucky to have an excellent view of another gazelle. At our campsite in the hills northeast of Nizwa, near the village of Misfat al Ibriyeen, we had **Lichtenstein's Sandgrouse** noisily coming to drink after dusk and the following morning before dawn. The next day in the picturesque village, which has orchards and date groves and Aflaj, we had numerous **Yellow-vented Bulbul**, **Rock Doves**, **Graceful Warbler**, **Palm Doves** and the first **House Sparrows** we had seen for some days. In the soil of the plantations there were earthworms, the first I recall seeing anywhere in Arabia.

We made for Dubai on 28 February without delay. The most interesting birds seen en route was a **Barbary Falcon**, a couple of **Egyptian Vultures** and a possible **Lappet-faced Vulture** just east of Nizwa. On the outskirts of Dubai there were a number of **Pallid Swift** and on the creek were about 1000 **Greater Flamingos** and a few **Oystercatchers** and **Gull-billed Terns**, amongst many other species.

I spent 29 February and 1 March on a two-day excursion with Rob Morris, of the National Avian Research Centre at Abu Dhabi, visiting the Northern Emirates area, including part of Oman territory in the Musandam peninsula. Our first call was to the east coast and the mangroves at Khor Kalba. This is the haunt of an endemic race of the **White-collared Kingfisher**. It was pleasing to see half a dozen or so quite easily as well as **European Kingfishers**, several **Clamorous Reed Warbler** and one **Indian Pond Heron**. We went along the coast to Dibba adding **House Crow**, **Wryneck** and

Hume's Wheatear to the trip list. A magnificent group of 21 **Great Black-headed Gulls** were on the coast near Dibba. We had intended to travel over Musandam from Dibba to Ras al Khaimah but unfortunately the road into the mountains had been washed away by recent rain. At the base of the hills we found juvenile **Hume's Wheatear**, **Sand Partridge**, **Scrub Warbler**, **Purple Sunbird** and **Arabian Babbler**. **Hoopoe** were calling in the gardens of Dibba. We considered camping in the Masafi area but when we got there at dusk decided instead to travel in the dark to Ras al Khaimah and camp in the Wadi Bih at the other end of the Musandam track that we would have taken. Our short stay in the Masafi area gave us a **Plain Leaf Warbler**.

One objective of our visit to the Wadi Bih areas was to find **Bruce's Scops Owl** and possibly **Hume's Owl** which could, theoretically, occur. We played a tape of a Hume's owl to try to elicit a response, we got none but heard what sounded like a distant pump. It was when the pumping suddenly started in a bush beside our camp just before dawn the next day that I remembered that Bruce's Scops Owl can sound like a pump! On 1 March as we travelled up the Wadi Bih we saw a small group of **Trumpeter Finch**, which are quite a rarity in the UAE. We picked up the Musandam track and as we got to the summit area at about 1000m we found **Chukar Partridge** to be locally numerous. The chukar population in Musandam is unique to eastern Arabia and may have been introduced long ago from Iran, where it occurs widely. (There is another population in the mountains in the extreme north west of Saudi Arabia). For me the highlight of the whole trip came as we were at this high part of the pass. In a deep ravine below came the distinctive continuous call of a **Cuckoo**. At the time I was not aware of any previous records of a cuckoo calling in Arabia. The tone was the same as European birds although the call was given at a slightly faster rate. The bird called for well over an hour and in that time moved all around us at a radius of about 400 metres. This persistent calling is, to my mind, a good indication of breeding. Also in these hills were **Black Redstart**, a **Little Owl** and a **Scrub Warbler's** nest which contained young. On the lowlands of Ras al Khaimah there were several **Great White Egret** at the Dhayah marshes. Probably the most exciting birding spot anywhere in the Emirates are the fodder fields and ghaf tree parkland of Digdagga. At least a thousand **Pallid Swifts** hawked insects over the fields and **Indian Rollers** could be seen a couple of dozen at a time. **Red-wattled Plover** were numerous in the fields as

were **Purple Sunbird**, **Crested Lark**, **Palm Dove** and **Graceful Warbler**. A few **Red-rumped Swallows** and **Little Green Bee-eaters** were to be seen. **Hoopoes** were calling and we were surprised to find **Rose-coloured Starling** and **Corn Bunting** both singing. Other new birds at Digdagga, not seen elsewhere, were **Lesser Kestrel**, **Sand Martin** and **Quail**.

The final morning of an extremely successful two week trip (over 180 species altogether) was spent with Dr Mohammad Reza Khan at Dubai Zoo and with Colin at the Dubai fish farm just near his house. At the fish farm **Bank Mynah** were present as were a few **Clamorous Warbler**, several **House Crow** and a **Spotted Eagle**. The male of a pair of **Little Ringed Plover** was seen in territorial display and showing aggression towards a **Redshank**, indicating probable breeding. As we walked round the pools a rush of wings overhead heralded the arrival of a group of 80 or 90 **Great Cormorant** which dropped in literally for a few minutes before leaving again, a dramatic finale to a super trip.

My thanks go to the National Commission for Wildlife Conservation and Development (NCWCD) Riyadh, particularly the Secretary General Prof Abdulaziz Abuzinada, for sponsorship of the ABBA project and for the air ticket London to Dubai. On this trip I was especially fortunate to have had the good company and experience of a number of resident and temporarily resident birders. These include John Bannon at Dubai, Ian Brown who showed Colin and I bird spots in Salalah we would never have found on our own, and Rob Morris who gave me two bird-packed days in the northern Emirates. Special thanks also to Dr Mohammad Reza Khan for showing me the bird collection and other exhibits at Dubai Zoo. I sincerely hope that Colin enjoyed the trip as much as I. The fact that the whole trip was such a success for me personally and for ABBA is due to his local knowledge and expertise in the field — not to mention his hospitality and terrific company. I am indebted to him.

(This paper is a report on Abba Survey No. 11, carried out as part of the Atlas of Breeding Birds of Arabia project.)

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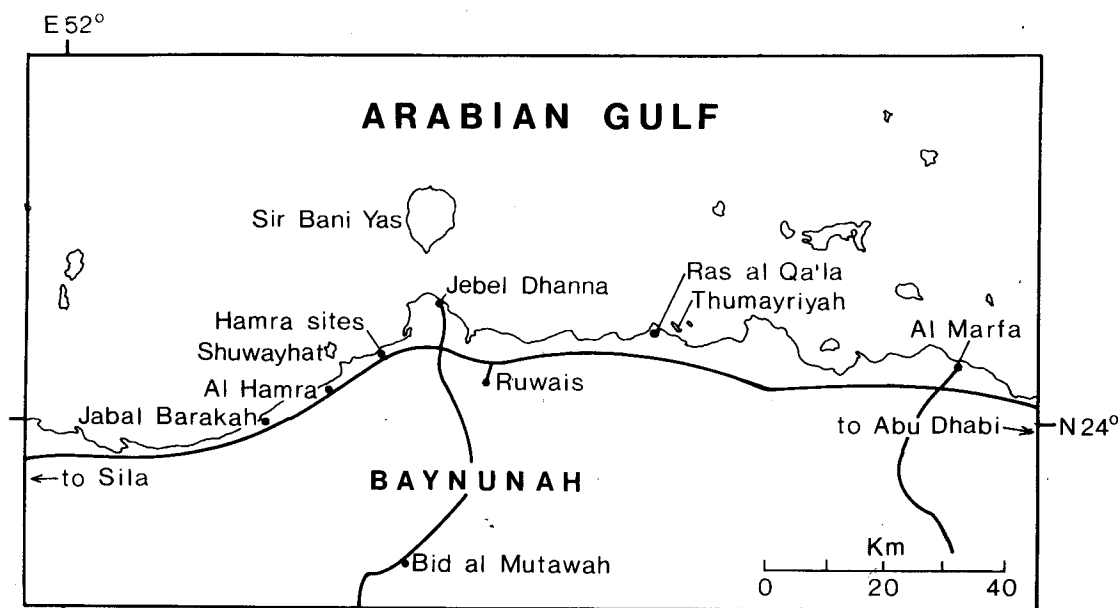
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Lithic artifacts from Abu Dhabi's Western Region

by Sally McBrearty

For four weeks in December, 1990, and January, 1991, I carried out archaeological reconnaissance in the coastal Western Region of the Emirate of Abu Dhabi to seek traces of paleolithic habitation. Scatters of stone artifacts were encountered at several localities in the survey area, and these are described here.

* اكتشف علماء الآثار الذين يقومون بدراسة المنطقة الغربية لامارة أبوظبي عدد من المواقع الهامة. هذا المقال يقدم وصفاً لبعض الأدوات التي تم اكتشافها في المنطقة.



Map of the survey area, Western Region, Abu Dhabi, U.A.E.

Though their precise age is difficult to determine, they are to my knowledge the first to be reported from the Emirate.

Geographically the region is part of the hyperarid Rub 'al Khali basin (Figure 1). Locally the flat saline sabkha plain is punctuated by scattered mesas of resistant, nearly horizontal beds of conglomerate and sandstone, capped in some places by chert. These sedimentary rocks, designated by Whybrow (1989) as the Baynunah Formation, are fossiliferous in places. The diverse fauna reported by Whybrow *et al.* (1990, 1991) includes Late Miocene terrestrial mammals, birds, and freshwater aquatic vertebrates and invertebrates. Woody plant macrofossils are also preserved.

Lithology and fossils both suggest a low energy riverine depositional regime for the Baynunah Formation. The Fossil fauna includes hipparionines (three-toed horses) that indicate an age for the formation of between 11.2 million and 5 million years ago. Other fossils, such as hippopotami, limit the probable date to between 8 and 6 million years. A sample of Baynunah sandstone has been found to have reversed polarity, and further geomagnetic determinations will allow for a more precise age estimate for the fossil material (Whybrow *et al.* 1990, Hill *et al.* 1990).

Stone artifacts are found as surface scatters of varying densities on Baynunah Formation mesas and their surrounding slopes. In most cases they lie on redeposited sediments, but in some cases the artifact scatters are draped directly upon *in situ* Miocene rocks. Most are

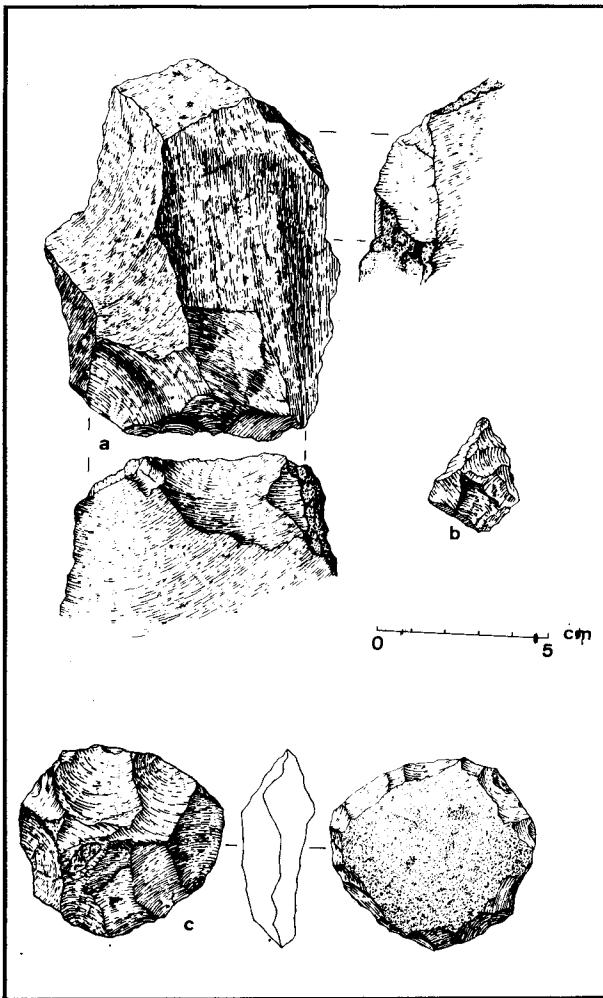
manufactured in the reddish brown chert which caps the Miocene succession, but at one site, Shuwayhat 2, the artifacts are made of silicified limestone.

Seacliff exposures on the northwest shore of the island of Shuwayhat reveal Miocene fossiliferous sandstone, overlain by a bed of tabular chert. Artifacts lie on the slopes of the fossil collecting area designated Shuwayhat 2 by Whybrow *et al.* (1990). The artifacts consist of large flakes and slabs of silicified limestone with minimal secondary flaking (See Figure 2 a).

A thin scatter of small flakes of chert and silicified limestone was observed on the steep eastern slopes of Jebel Hamra, within the Miocene fossil collecting area Hamra 1. The most extensive lithic artifact concentration was encountered on Jebel Barakah. Very productive fossiliferous Miocene sandstones are exposed in seacliff sections on the northwest side of Jebel Barakah.

The artifact scatter is of moderate density, and has an area of at least 500 m². It extends upslope from the top of the seacliff at the Miocene fossil locality to a point nearly due east of the trigonometric station at the summit of the jebel (bearing: 109 degrees). The artifacts themselves consist of chert flaking debris; one flake was found to be casually trimmed (See Fig. 2b). A single core recovered by Ernest Hailwood was produced by the radial or "disc" core technique, and has a prepared platform (See Fig. 2c).

Because all the stone artifacts described here were found on the surface unaccompanied by any Pleistocene or Holocene fossil fauna or other archaeological re-



Lithic artifacts from the survey area. (a): trimmed slab, silicified limestone, Shuwayhat; (b): trimmed flake, chert, Jebel Barakah; (c): radical core, chert, Jebel Barakah.

mains, their age is as yet unknown. None of the artifacts is absolutely diagnostic, technologically or typologically, to any archaeological industry or time period. The radial core from Jebel Barakah conforms to a type commonly found in Middle Paleolithic or Middle Stone Age assemblages throughout Africa, Asia and Europe. In Africa, some Middle Stone Age assemblages may date to as much as 180,000 years ago (Wendorf *et al.* 1975). However, radial cores are not confined to the Middle Paleolithic. They are known from African Acheulian sites dating to as much as 1.5 million years, and rudimentary radial cores are found in deposits dating to 1.8 million years at Olduvai Gorge (Leakey 1971).

According to Edens (1988), radial cores persist into the Neolithic on the Arabian peninsula. He describes specimens from sites of his "Arabian bifacial lithic tradition" of the Rub 'al Khali. These sites are thought to date to roughly 5000-2500 B.C. through analogy with the Levantine sequence defined by Moore (1973, 1982), and through the presence of 'Ubaid sherds at some Gulf coast sites (Oates 1982). However, this inference is based upon observations of surface material; in no case are secure associations confirmed by excavation or radiometric dates.

On the basis of direct observation, the Western Region artifacts can be said only to post-date the late Miocene

deposits upon which they are found. On the basis of their technological and typological characteristics alone they may be as little as 2500 years or greater than 200,000 years old. The presence of lithic artifacts does confirm that the Western Province of Abu Dhabi was occupied in prehistoric times; only further research can establish if human occupation reaches deep into the paleolithic period.

Acknowledgements

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* * *

Rabies in the U.A.E.

by U. Wernery and B.N. Kumar

Introduction

Rabies is a highly fatal viral infection of the central nervous system, which occurs in all warm-blooded animals including birds. It is transmitted by the bites of affected animals. It has now been discovered for the first time in the UAE.

Epidemiology

All warm-blooded animals, with the possible exception of opossums, are susceptible to rabies, and there is no variation in susceptibility with age. Variation in susceptibility between species is noticeable. Foxes, cotton rats, and coyotes are extremely susceptible; cattle, camel, rabbits and cats are highly susceptible; dogs, sheep and goats are moderately susceptible, and opossums little if at all. The question of immunity after natural infection does not arise, but immunity can be produced artificially by vaccination.

Rabies occurs in most countries of the world except the island countries which are able to exclude it by rigid quarantine measures or prohibition of the entry of dogs. Australia and New Zealand have never had the disease, and Britain, Hawaii and Scandinavia are currently free. The disease is enzootic in Yugoslavia, Turkey and much of the United States, particularly the eastern and southern states. Vampire bat transmitted bovine paralytic rabies is endemic in the tropical regions extending from northern Mexico to northern Argentina and on the island of Trinidad. A recent outbreak in cattle in Guyana was epidemiologically associated with a large number of bats which had inhabited a large culvert which was not cleaned regularly because of excessive rainfall. Rabies has become an important problem in Canada only in recent years, being carried down from the north to the populated areas largely by the migration of foxes, and has recently been diagnosed for the first time in dogs and foxes in Greenland. Sylvatic rabies is a major problem in much of Europe. The disease has spread westward to East and West Germany, Denmark, Belgium, Czechoslovakia, Austria, Switzerland and France and spread continues at the rate of about 30-60 km (18-37 miles) per year. Foxes are the principal vectors and, as in Canada, cattle are the principal receptors. In North America skunks are the common vectors.

There appears to be a difference in role between vectors. For example, in Europe it is thought that foxes carry the infection into a new area, but it is other species which disseminate it within an area. This would have important repercussions for control programmes based on wildlife surveillance.

Rabies occurs in most countries in the African continent, but the reported incidence is surprisingly low for an area with such a high population of wild carnivores. A number of wildlife hosts has been identified, including wild dogs, jackals and mongoose.

Rabies is not of major economic importance in farm animals, although individual herds and flocks may suffer many fatalities. The disease is always fatal. The prime

* تم مؤخراً ولأول مرة رصد مرض السعار في دولة الامارات العربية المتحدة.
هذه الورقة تلقي بعض الضوء على المرض وظهوره في دولة الامارات العربية المتحدة.

importance of rabies is its transmissibility to humans with veterinarians being at special risk.

The source of infection is always an infected animal and the method of spread is almost always by the bite of an infected animal, although contamination of skin wounds by fresh saliva may result in infection. Because of the natural occurrence of rabies in animals in caves inhabited by infected insectivorous bats, inhalation as a route of infection came under suspicion. It is now accepted that interbat spread, and spread from bats to other species in principally by bites, but that infection by inhalation also occurs. Ingestion of virus can also lead to infection if the dose is large enough.

Traditionally, the dog, and to a minor extent the cat, have been considered to be the main source animals. However, native fauna, including foxes, skunks, wolves, coyotes, vampire, insectivorous and fruit eating bats, raccoons, mongoose, and squirrels may provide the major source of infection in countries where domestic carnivora are well controlled. Bats are the important species in which symptomless carriers are known to occur. Although rodents can be infected with the rabies virus they are not thought to play any part in the epidemiology of rabies, either as multipliers or simply as physical carriers of the virus. Many of the viruses they carry are rabies-like rather than classical rabies.

Domestic livestock are rarely a source of infection although chance transmission to man may occur if the mouth of a rabid animal is manipulated during treatment or examination. The virus may be present in the saliva for periods up to 5 days before signs are evident.

Rabies in the U.A.E.

Rabies was observed in the U.A.E. for the first time in spring 1991. It occurred in domestic animals and foxes in Al Ain and surrounding areas (Table 1). It is believed that the disease was brought into the U.A.E. from Oman where rabies is known to be endemic in dogs and foxes.

The first cases of rabies in Oman were reported in two foxes and one goat in August 1990. By October 1990, it had been recorded in Buraimi, adjacent to Al Ain, and in the north of Oman's Batinah coast by November 1990.

From Al Ain the disease has spread to the Gulf coast with rabid camels in the regions of Jebel Ali, Al Guwaisa, Labsah and Al Khawaneej. Although 3 foxes have only been examined so far it is believed that the fox is responsible for the spread of rabies in the U.A.E. According to Christian Gross (**Mammals of the Southern Gulf**) the most widely distributed animal in our area is the fox, due to his enormous adaptability. Besides the towns, foxes here inhabit both open desert

Southern Gulf) the most widely distributed animal in our area is the fox, due to his enormous adaptability. Besides the towns, foxes here inhabit both open desert areas as well as mountains. Along the coast small colonies are known to be living in the rocks of the breakwaters in Ajman and Umm al Qaiwain.

Since a vaccination programme in domestic animals (mainly camels) is being carried out, the disease was not observed in the last months of 1992. However, it is very difficult to receive any information about rabies-like symptoms in less valuable animals than camels. Fortunately, rabies has not been seen in dogs and cats in village or city areas of the U.A.E. Due to lack of information we cannot comment on rabies of pets in urban areas. It is quite possible that the severe rabies outbreak in 12 camels near Al Guwaisa was caused by a stray dog. Foxes tend to bite one or two animals in a group, while dogs will often bite a large proportion of a herd or flock.

Table 1 : Rabies among animals in the U.A.E. January 1991 - March 1992					
Animal Species	Al Ain	Abu Dhabi	U.A.Q.	Dubai	Total
Goats	4	0	0	0	4
Sheep	5	0	0	1	6
Foxes	3	0	0	0	3
Camels	12	2	2	15	31
Total	24	2	2	16	44

Etiology

The rhabdovirus (genus lyssavirus) of rabies is truly neurotropic and causes lesions only in nervous tissue. It is one of the larger viruses and is relatively fragile. It is susceptible to most standard disinfectants and dies in dried saliva in a few hours. The virus can be propagated in tissue culture and chick embryos.

On a worldwide basis there are minor and major antigenic variants of rabies virus. As measured by monoclonal nucleocapsid antibodies, old and new world rabies viruses as well as those from Asia may differ significantly from each other.

Certain antigenic variants exist in nature against which conventional vaccines do not fully protect.

Pathogenesis

Following the deep introduction of rabies virus by the bite of a rabid animal, initial virus multiplication occurs in striated muscle cells at the site. The second tissues to become infected are the neuromuscular spindles which provides an important site of virus entry into the nervous system.

Following entry of the virus into nerve endings there is invasion of the brain by passive movement of the virus within axons first into the spinal cord then into the brain.

The only lesions produced are in the central nervous system, and spread from the site of infection occurs only by way of the peripheral nerves. This method of spread

accounts for the extremely variable incubation period which varies to a large extent with the site of the bite. Bites on the head usually result in a shorter incubation period than bites on the extremities. The severity and the site of the lesions will determine to a large extent whether the clinical picture is primarily one of irritative or paralytic phenomena. The two extremes of the paralytic or dumb form and the furious form are accompanied by many cases which lie somewhere between the two. Death is usually due to respiratory paralysis. At death there are viral inclusions and particles in virtually every neuron in the brain, spinal cord and ganglia. Electronic microscopic examination also shows the presence of the virus in the cornea.

For all practical purposes the disease can be considered to be always fatal. But infrequently an experimentally infected animal shows clinical signs of the disease but recovers. There are two recent records of spontaneous recovery in man.

Clinical findings

Among farm animals, cattle are most commonly affected. The incubation period is usually about 3 weeks, but varies from 2 weeks to several months in most species, although incubation periods of 5 and 6 months have been observed in cattle and dogs.

In the paralytic form, knuckling of the hind fetlocks, sagging and swaying of the hindquarters while walking, often deviation or flaccidity of the tail to one side, are common early signs. Decreased sensation always accompanies this weakness and is one of the best diagnostic criteria in the detection of rabies.

Drooling of saliva is one of the most constant signs. The so-called yawning movements are more accurately described as voiceless attempts to bellow.

This symptom is very typical in camels (Fig. 1). Paralysis follows, the animal goes down and is unable to rise. Death usually occurs 48 hours after recumbency develops and after a total course of 6 to 7 days.

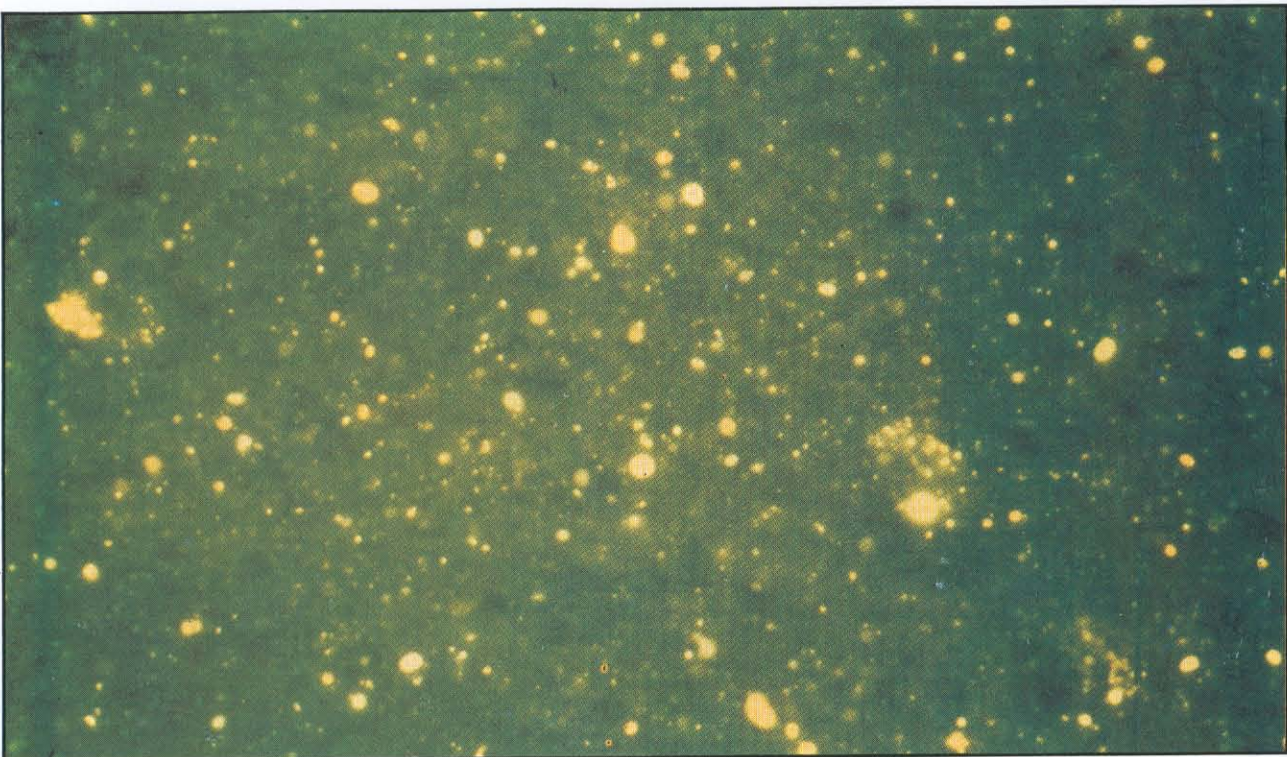
In furious rabies the animal has a tense, alert appearance, is hypersensitive to sounds and movement and is attracted by them so that it may look intently or approach as though about to attack. In some cases they will violently attack other animals or inanimate objects. These attacks are often badly directed and are impeded by the incoordination of gait. Frequently, loud bellowing is usual at this stage. The sound is characteristically hoarse and the actions are exaggerated. Sexual excitement is also common, bulls often attempting to mount inanimate objects. With this violent form of the disease the termination is characteristically sudden. Severe signs may be evident for 24-48 hours and the animal then collapses suddenly in a paralysed state, dying usually within a few hours.

There is no constant pattern in either the development or the range of signs. Some animals do not eat or drink, although they take food into the mouth. There is apparent inability to swallow. Others eat normally until the terminal stages. The course may vary from 1 to 6 days. So great is the variation in clinical picture that any animal known to be exposed and showing signs of spinal cord or brain involvement should be considered rabid until proved otherwise.

Continued on Page 21



A rabid camel. The attempt to yawn is typical of rabies.

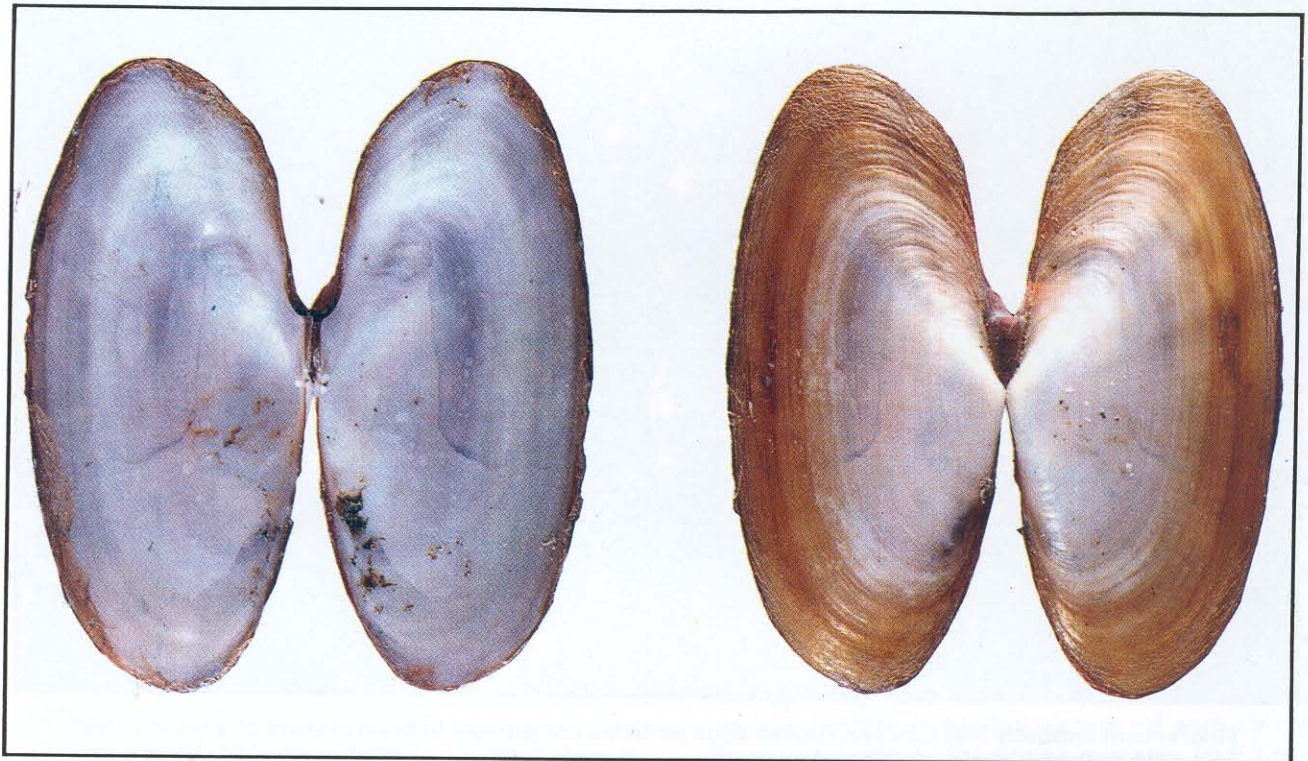


Fluorescent antibody test positive. Rabies virus particles are present in brain smears of a rabid camel as bright yellowish spots of different sizes.
(Pictures by Ulrich Wernery)

NEW SPECIES OF SHELLS



Nanhaia safadensis

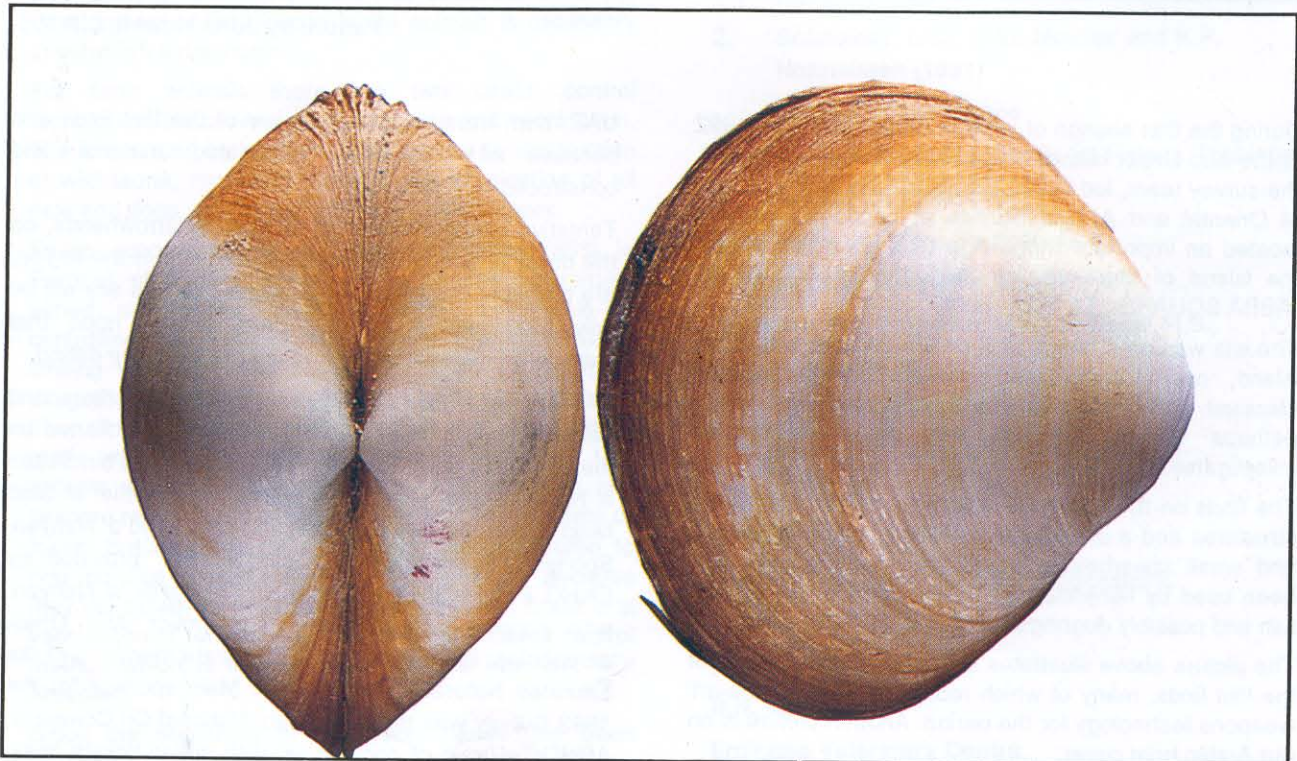


Hiatala mirbahensis

NEW SPECIES OF SHELLS



Laternula (Exolaternula) erythraea



Caecella qeratensis

Neolithic flints from Merawah



Picture by John Nowell, L.R.P.S.

During the first season of work in March and April 1992 of the Abu Dhabi Islands Archaeological Survey Project, the survey team, led by Dr. Geoffrey King, of the School of Oriental and African Studies at London University, located an important Stone Age (Neolithic) flint site on the island of Merawah, off the coast of Abu Dhabi, (ABBA SQUARE : TA 25).

The site was on a raised bluff on the western end of the island, over looking the channel running between Merawah and Liffiyah. Nearby were a number of cairns, perhaps burials, although they have yet to be investigated.

The finds on the site itself included several small stone structures and a substantial number of fine arrowheads and small spearheads, suggesting that the area had been used by fishermen as a base from which to hunt fish and possibly dugongs.

The picture above illustrates a representative sample of the flint finds, many of which represent 'State-of-the-art' weapons technology for the period. Another picture is on our Arabic front cover.

The Merawah site is the best of its kind yet found in the

UAE, both from the point of view of the flint finds and because of the other associated material and constructions.

Tentative dating suggests only that the arrowheads, on the basis of comparisons with other finds in the region, are probably more than 4,000 years old. The site will be fully examined at a later date, in the hope that associated material will permit a more definitive dating.

The Archaeological Survey, which completed a second season of work in mid-April 1993, was established on the directives of UAE President Sheikh Zayed bin Sultan al Nahyan, and is under the patronage of Chief of Staff Major General Sheikh Mohammed bin Zayed al Nahyan. Sponsorship for the 1992 season was provided by ENHG Patron Sheikh Nahyan bin Mubarak al Nahyan, with support from a number of major Abu Dhabi companies, including several Corporate members of the Emirates Natural History Group. Main sponsor for the 1993 Survey was the Abu Dhabi National Oil Company, ADNOC, Group of companies, with airline tickets being provided in both years by UAE national carrier Emirates.

* * *

Necropsy and diagnosis

The safest attitude to adopt is to handle all suspect animals with extreme care. Confirmation of a diagnosis of rabies depends on careful laboratory examination of fresh brain. Dogs or other species, which are suspected of having rabies because of abnormal behaviour, should be kept in isolation where they cannot bite others, for 10 days. The animal can be classified as non-rabid if it is alive at the end of that time.

The recommended laboratory procedure includes the following three tests and it is recommended that at least two of them be used on all specimens:

- * A fluorescent antibody (FA) test on impression smears from the brain (Fig. 2). The test can be completed in 3 hours.
- * A histological search for Negri bodies in tissue sections with results available in 48 hours.
- * Intracerebral inoculation of weaned mice with brain tissue with results in 3 weeks or less.

The diagnosis of rabies is one of the most difficult and important duties that a veterinarian is called upon to perform. Since in most cases there is a probability of human exposure, failure to recognise the disease may place human life in jeopardy.

Treatment and control

No treatment should be attempted after clinical signs of rabies are evident. Post exposure vaccination is unlikely to be of value in animals, as death usually occurs before appreciable immunity has had time to develop. Euthanasia of suspect animals must be prevented, particularly if human exposure has occurred, since the development of the disease in the animals is necessary to establish a diagnosis.

For farm animals there are two useful control techniques: the prevention of exposure and vaccination. The former can be achieved to a degree by destruction of wild fauna, muzzling, restraint and vaccination of all cats and dogs, and keeping farm animals indoors.

Foxes account for a very large proportion (85% in Europe) of wildlife rabies and a control programme aimed at reducing their population is capable of controlling the spread of rabies. However, the difficulty of limiting their population size without eliminating them altogether has led to a search for ways of vaccinating them. It is now known that foxes can be protected by orally administered vaccines. There is some risk that rodents will eat the bait that is set out for foxes and become rabid, and even bite and infect other rodents or foxes. But rats and mice are generally considered to play no part in rabies epidemiology, possibly because they die quietly and without biting. However, mass oral vaccination of terrestrial wild animals is a rabies control method which is feasible, effective and internationally accepted.

Since the beginning of last year, rabies has been confirmed in different animal species in the U.A.E. by different laboratories. Everybody in this country who is

dealing with any kind of animals should be aware of this fact and act accordingly. Animals showing signs of central nervous symptoms described in this article should be considered rabid until proved otherwise. This includes wild animals which have lost their fear towards human beings. Any animal suspected of rabies should be reported to Municipal officials who will take the necessary steps. To minimise the risk of a rabies outbreak a strict vaccination programme should be followed.

Vaccination programme:

Animals:

- Ruminants and Horses
1. vaccination at the age of 6 months
 2. booster 4 weeks later
 3. every year
- Pets:
1. vaccination at the age of 12 weeks
 2. booster 14 days later
 3. every year

Humans:

after contact with rabid animals – 6 vaccinations day 0, 3, 7, 14, 30, 90 (booster every year)

prevention

2 vaccinations within 14 days, booster every year.

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NOTES AND QUERIES

Annotated Records of Hawk-moths from Al Ain

Striped Hawk-moth *Hyles lineata* Fabricius ssp. *livornica* Esper

Often recorded from Arabia incorrectly as *Hyles livornica* Esper, the Striped Hawk-moth has a circum-polar distribution and is one of the more common hawk-moths in the warmer temperate and sub-tropical regions of the northern hemisphere and the commonest one found in Arabia. Despite this fact, my own records for casual sightings of this moth in and around Al Ain were few until quite recently: 3/11/91 Choueifat School 1 ex; 15/11/91 Al Jimi 1 ex; 23/2/92 Al Jimi 1 dead ex; 10/4/92 Al Oha 1 ex.

This changed abruptly over the Christmas period of 1992 when I made the following records: 23/12/92 Prisunic Supermarket 1 ex; 24/12/92 Al Oha 7 ex; 26,27,28/12/92 Al Jimi 15 ex; 25/12/92 Muwajji 1 ex.

It is hard to decide whether this sudden abundance of the moth around Al Ain represented a mass emergence of local moths or a sudden migratory influx of moths from further afield (e.g. Oman). However, all specimens examined were in prime condition and this may argue against the latter hypothesis. Finally as I write this, the moth again seems to be quite common and I have the following records: 27/2/93 Al Oha 2 ex; (27/2/93 Al Wafi Centre, Dubai 1 ex); 28/2/93 Al Muwajji 1 ex; 28/2/93 al Jimi 1 ex.

Humming-bird Hawk-moth *Macroglossum stellatarum* Linnaeus

This interesting insect does not appear to be common in the Al Ain area and I can only offer the following two casual records: 27/08/91 Hilton Hotel 1 ex; 15/10/91 Al Jimi 1 ex.

Both records are of moths resting up during daytime, which is slightly unusual since this is a diurnal species — my other sightings of the Humming-bird Hawkmoth in the UK and around the Mediterranean have been of moths hovering over flowers. However, I have seen related diurnal species in Brazil resting up over periods of several days. This resting behaviour of *M. stellatarum* could quite possibly be associated with the long migratory flights made by the species.

Eastern Deaths-head Hawk-moth *Acherontia styx* Westwood

Two species of *Acherontia* occur in Arabia: the eastern species *A. styx* and western *A. atropos*. Their distributions are said not to overlap, but the adult moths are sufficiently alike as to warrant caution in all recording. The caterpillars have distinctively different

colourations and pose less of a problem. Having consulted numerous books, I am satisfied that my records all refer to *A. Styx*: 24/12/91 Al Ain town centre 1 ex; 27/12/91 Muwajji 1 dead ex; 20/12/92 Al Ain town centre 1 ex; 20/1/93 Choueifat School at least 6 larvae in the possession of schoolboys!

2/2/93 Al Jimi district 1 fully grown larva; 14/2/93 Choueifat School 1 ex; 15/2/93 Tawam Hospital 1 ex.

In past times the appearance of these moths inspired a certain feeling of dread because of the thoracic markings and also because of the ability of the moths to emit audible squeaks. The uncanny skull and cross-bones motif (deaths-head) is only really seen on the western form *A. atropos*; the design on the thorax of *A. styx*, to my eye, more properly resembles the no less dreadful mask of the Klu Klux Klan. In his book *Insects of the World*, Walter Linsenmeier provides excellent illustrations of the thorax of a number of other related species, some of which also have mask-like markings.

Oleander Hawk-moth *Daphnis nerii* Linnaeus

Of all of the hawk-moths which I have seen, including dozens of species from tropical Brazil, none have been quite as pretty as the Oleander Hawk. The wing markings of light and dark olive greens, grey, cream and pink are intricate and very beautiful. When resting on its larval foodplant, the moth must be almost invisible. The shape of the wings is also curious — the forewings are cut away at the inner edge and at rest, both pairs of wings are held away from the body exposing the fat abdomen which tapers and curves upwards at its tip. The sides of the abdomen have counter-shaded oblique stripes, reminiscent of those found on many hawk-moth larvae; these probably aid in camouflaging the moth amongst vegetation. The life cycle of this attractive insect has been described and the moth illustrated in colour by Bish Brown in a previous *Tribulus*. Given the prevalence of both the cultivated variety of oleander in Al Ain and the wild *Nerium mascatense* in nearby wadis, one would expect the moth to be common in the region, but alas I have only one record; 21/2/93 Al Jimi district 1 ex.

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Cretaceous fossil survey

A second season of palaeontological work along the edge of the Hajar Mountains and outcrops thereof running northwards from Jebel Huwayyah, ('Fossil Valley'), in the Sultanate of Oman, near the UAE city of Al Ain, and Jebel Mileiha, in the Emirate of Sharjah has revealed important information about the late Cretaceous period.

The survey was carried out by palaeontologists from Britain's Natural History Museum, working with the support and sponsorship of the Abu Dhabi Company for Onshore Oil Operations, ADCO.

In a report on the results of two years of survey work, the two authors, Andrew Smith and Noel Morris comment that "the collections made during 1991 and 1992 have provided us with one of the most diverse late Cretaceous Tethyan faunas known."

Among their finds were around 4,000 specimens of fossil molluscs, including a number of new species and new scientific families, (taxa), and 1,350 specimens of fossil sea-urchins, (echinoids) of over forty different species, many again of which were previously unknown by scientists.

"The echinoid fauna," say the report's authors, "proved to be exceedingly rich, and also remarkably well preserved. Without doubt, it represents the most diverse late Cretaceous echinoid fauna in the world."

Six hundred specimens of fossil corals were also found, which Smith and Morris describe as "without doubt the largest and most diverse" collection of coral known from this part of the Cretaceous era.

Overall, say Smith and Morris, "more than 200 taxa (families of fossils) were represented, and a sizeable proportion of these represent new species," impressive evidence of the importance and success of their work.

The two scientists, aided by a number of colleagues,

including a senior ADCO geologist, Jose de Matos, concentrated their surveys on the Qahlah and Simsima rock formations, the latter, in particular, being of interest to ADCO, because rocks of the same formation are the oil-bearing strata in the Shah field, south of Liwa.

The area surveyed included Jebel Huwayyah, Jebel Bu Milh, a few kilometres further north and also in the Sultanate of Oman, Jebel Rawdah, on the road to Hatta, and Jebel Buhays and Jebel Faiyah, between Al Madam and Mileiha. All are well known to local amateur fossil collectors, but the two surveys are the first serious scientific studies of the area.

The Cretaceous period of geological time is dated to between 140 and 65 million years ago, and the rocks examined by the team date to the last few million years of the period. At that time the Arabian Peninsula was still connected to Africa, and the Indian sub-continent was still moving northwards in the Indian Ocean, with a now-disappeared ocean called the Tethys running from the Black Sea south of the Caspian Sea to South East Asia. (See 'Plate Tectonics and the Oman Mountains,' by K.W. Glennie, *Tribulus* Vol. 2.2 October 1992, Page 11).

The results of the survey have added substantially to scientific knowledge about the marine fauna of this period, and will also help ADCO geologists gain a better understanding of some of the rock formations in which they hope to find oil deep beneath the surface.

Late Cretaceous faunas and palaeoenvironments of the United Arab Emirates and adjacent areas.

by Andrew B. Smith and Noel J. Morris, Department of Palaeontology, The Natural History Museum, London.

Interim support submitted to the Abu Dhabi Company for Onshore Oil Operations, 1992.

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GORDON'S WILDCAT — a progress report

An earlier article in this journal (M. Jongbloed, "Gordon's Wildcat Breeding programme," *Tribulus* Vol. 1.2, October 1991, p.21,) outlined the problems facing this rare and interesting cat, and discussed the urgent need for conservation measures. The first of these is the establishment in captivity of a breeding population of adequate genetic diversity, to avoid the problems associated with excessive inbreeding. The IUCN — Cat Specialist Group, which is considering giving this project official status, will only do so if a broader genetic basis can be established, than that which is present now. Ideally, the captive population should be held at several different centres as a precaution against accidental loss of a group through disease and other causes. This has already been accomplished as the more than forty living offspring of the original breeding couple are now spread over 12 different zoos and breeding centres in the world.

During the period February 7 - 24, 1993 an intensive trapping campaign was mounted in the Al Awir region, where a Gordon's wildcat was caught in 1985, with the objective of catching one or more cats to add to the captive population. Cat tracks were discovered at

several locations within twenty four hours, but the cats proved to be extremely wary and trap-shy, so that only three cats were captured over the two and a half weeks of the study. All three proved to be feral domestic cats, not wildcats.

Three cats in two and a half weeks may not sound very efficient, but it should be explained that all carnivores, and cats in particular, have to be allowed some time to become accustomed to the presence of the trap before it can be set to make a catch. Trapping effort is commonly expressed in terms of "trap-nights," i.e. one trap set to catch for one night. In other studies of carnivores elsewhere in the world, success rates of one catch per 100 trap-nights are not common, so 3 cats in 18 trap-nights, as achieved in this study, is not unreasonable.

Although it was disappointing to catch only feral cats in this trapping campaign, much was achieved in the way of fine-tuning trapping techniques. Moreover, two dead Gordon's wildcats were found in the Al Awir region. One, an adult, was a road casualty, while the other, smaller and perhaps sub-adult, appeared to have died a natural

death, although other causes, such as poisoning or internal injury cannot be ruled out, as the body was decomposed and mummified. It would seem, therefore that further trapping in this area could well yield wildcats for the breeding population. The presence of numerous feral cats reinforces the opinion of MJ that outbreeding to the large feral cat population is a major problem for the wildcat.

It is to be hoped also that in future it may become possible to carry out ecological and behavioural studies on the wildcats, so as to build up a body of knowledge which will be of value should conservation and range management measures become desirable in the future.

It is a pleasure to record here the sponsorship by Royal Dutch Airlines, Cathay Pacific Airlines, Al Futtain Motors

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20,000 graves at Ad Door site

There may be as many as 20,000 graves at the two thousand year old archaeological site of Ad Door just outside the town of Umm al Qaiwain, according to the leader of the archaeological team from Belgium's University of Ghent.

The Belgian team leader, Professor Ernie Haerinck, calculates the figure on the basis of the area of the site, and the discoveries made so far.

"The site is a minimum of four square kilometres in size," he says. "We can assume that half of it contains graves, and excavations so far have suggested that there is at least one grave in each ten metre by ten metre square. This would mean that there are at least 20,000 graves on the site, of which less than one per cent have so far been examined by archaeological teams."

During his 1992 season, Haerinck and his team cleared two areas of the site, totalling 2,700 square metres, and found a total of thirty graves. Some were of a new style, being simple burials without stones, while some showed evidence of rituals taking place at the time of burial.

"From the discolouration of the sand, we can deduce that oil or grease must have been dragged along a five or ten centimetre strip around the graves," he says. Scientific analysis of the discoloured sand is now planned for next season.

The finds for the 1992 season, Haerinck said, were many and varied, with a considerable amount of very thin glass being discovered, unfortunately all in fragments.

"The styles are new, and probably came from Rome or Syria," he adds.

A fragment of a stone sculpture that may represent a mythical beast, the griffin, was also uncovered, along with several pieces of terracotta objects depicting a camel with a rider, bone plaques, and a number of small terracotta statuettes of women.

"These statuettes are very similar to others found in the Eastern Arabian site at Thaj," Professor Haerinck notes. Other finds included several new forms of pottery, both local and imported, a new form of incense burner, and a few coins, of the same type as those found earlier on the site, while Haerinck also noted that a number of iron ar-

and the Union National Bank, which made this pilot study possible. Traps were generously loaned by the Beit al Barakat Breeding Centre in Oman, and invaluable financial and personal assistance was provided by the members of the Dubai Natural History Group. Last but not least, the quail and mice, who gave their lives for this project, deserve special mention. All these have our warmest thanks.

Dr. Ian Linn & Dr. Marijcke Jongbloed,
P.O. Box 12119, Dubai, U.A.E

and

**Department of Zoology,
Exeter University,
Exeter, Devon, U.K.**

rowheads, ten to twelve centimetres long, had also been uncovered.

"These are exactly the same in shape and size as a number on display at the Museum in Al Ain, where they are part of an exhibition of weapons used until very recently by local people. This would suggest that the same style of arrowhead may have been in use for nearly two thousand years."

Over the past few years, the archaeological teams working at Ad Door, from Britain, France, Denmark and Belgium, have concentrated on excavating particular graves or other sites. On the basis of 1992's work, however, Professor Haerinck now advocates a different approach.

"The only way to understand the Ad Door site is to clear large areas, to show the relationship between the graves and the surrounding land. This year, for example, most of the objects we found were not in the graves, but between them."

"In the 1993 season, I shall continue making large exposures of land to give us a better understanding of the site," Haerinck adds.

With new finds being made each season, the archaeologists are continually revising their assessment of what the town of Ad Door used to be. Now, Haerinck believes, there is sufficient evidence from excavation to suggest that it was a port, a religious centre and a living city, all rolled into one. From the discoveries already made, and from the size of the site, it is evident, he believes, that Ad Door was one of the major population centres of the Southern Gulf during its heyday, which lasted from around 100 BC until the third Century AD.

The work at Ad Door is being carried out under the patronage of Supreme Council member and Ruler of Umm al Qaiwain, His Highness Sheikh Rashid bin Ahmed al Mu'alla. Haerinck thanks the Ruler for his support, and also for that of Crown Prince Sheikh Saud bin Rashid, and the Director of the Diwan, Sheikh Khalid bin Rashid. Logistic support was also provided in part by General Motors, who loaned a vehicle to the archaeological team, and by other local businessmen.

PETER HELLYER

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Spiny Mouse (*Acomys cahirinus*) (formerly *dimidiatus*)

On April 5th, 1991, the partially flattened remains of a **Spiny Mouse** were found on the road to Ghayl, approximately 5 kms from the Manama to Ras al Khaimah road (VA 27). On each side of the road there were low rocky outcrops, typical habitat for these little known UAE rodents. The only previous traceable record was from Jebel Faiyah (VB 27) in 1971 by Michael Gallagher (now curator of the Oman Natural History Museum in Muscat).

The specimen was recently forwarded to the Harrison Zoological Museum in Sevenoaks, Kent, where the Director, Dr David Harrison confirmed that it was definitely *Acomys cahirinus* (previously *A. dimidiatus*). The reason for the name change is not clear, but probably brings it into line with other races in the area. The Spiny Mouse covers a very wide range from southern Iran, southern Asia Minor, Cyprus, the Arabian Peninsula, Egypt, Sudan, Ethiopia, Somalia south to Kenya and Tanzania and west to Niger and southern Algeria.

It is difficult to describe a fast moving, small rodent, which is nocturnal and crepuscular and was only seen in the flattened state. However, using the references mentioned below, I will try. It is a small mouse-like

creature measuring between 7 and 8 inches in length with the tail equal to or longer than the head and body put together. The tail is scaly with a few bristly hairs on it, but no terminal brush tip. From the middle of the back down to the root of the tail and laterally over the flanks, there is a covering of thin stiff spines. Colour is generally sandy brown with some darker areas. The white underside is sharply separated from the upper brown and there are small white patches at the base of the ears and below each eye. The face is quite pointed with numerous long black and white whiskers, the ears are large and the eyes moderately large. The undersides of the feet are pinkish and hairless.

In captivity they are reported to have eaten berries, biscuits, lizards and large insects. Camel spiders and scorpions have also been consumed.

References

Harrison, David L., 1972. **The Mammals of Arabia** Vol. 3. Ernest Benn Ltd., London.

J.N.B. BROWN

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* * *

Law on finds, sites for Sharjah

The Government of the Emirate of Sharjah announced a new Archaeology Law in mid-January 1993 providing for the protection of archaeological sites in the emirate, and laying down penalties for the theft or smuggling of artefacts, and for illegal excavations.

The law also provides for the Emirate's Archaeology Department to be the sole authorised party for issuing excavation licences and licences for exports of antiques other than those of local origin. Export of local finds was forbidden.

Landowners henceforth may not excavate sites on their land or keep artefacts found thereupon without

permission from the Department, while anyone owning artefacts has to register them at the Department. They may only be sold with the permission of the Department, which must be offered them first.

No factories may be built close to archaeological sites, while the Department must, by law, be advised of all planning projects. The forty article law also gives the Archaeology Department the right to own archaeological sites or buildings.

The law is the first detailed legislation of its kind in the Emirates.

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Kalba Archaeology

A team headed by Dr. Sabah Abboud Jassem, of Cambridge University, UK, working in collaboration with the Sharjah Department of Archaeology, carried out a month long excavation of a site at Tarif, west of Kalba, one of Sharjah's East Coast enclaves, at the end of 1992.

The site, on level ground shortly before the foothills of Jebel Qusiy, was first located by British archaeologist Beatrice de Cardi during a surface survey of much of the Northern UAE in 1968.

The most interesting feature discovered was the remains of an ancient alignment, originally perhaps three metres in height and between two and a half metres wide, stretching for up to seventy metres, with adjoining semi-circular structures.

Still to be assigned a date, the alignment or wall may well be of early Second Millenium or late Third Millenium age. The graves excavated on the site held goods from the Hellenistic period.

The alignment itself was constructed of river boulders, but is otherwise, according to De Cardi, remarkably similar to alignments found in the Wadi Asimah, also in the Hajar Mountains, in the Emirate of Ras al Khaimah, discovered by De Cardi in the late sixties and subsequently excavated by Burkhard Vogt for the Ras al Khaimah Department of Antiquities. The Wadi Asimah site contains remains covering periods from the Third Millenium to the Hellenistic.

PETER HELLYER

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ENHG joins IUCN

At the end of 1992, the Emirates Natural History Group was accepted as a member of the Gland, Switzerland-based IUCN-World Conservation Union, in the category for Non-Government Organisations.

The IUCN is a Union of member states, Governmental agencies and non-governmental organisations concerned with the development, promotion and implementation of scientifically-based action towards protection and sustainable use of the world's living

resources.

The Group is the first IUCN member of any category from the United Arab Emirates. Elsewhere in the Gulf, Kuwait has one NGO member and Saudi Arabia three Government agencies, while Oman and Saudi Arabia are also state members of the Union. Other institutions in the UAE to have announced that they are discussing the possibility of applying for IUCN membership include the Dubai and Al Ain Zoos.

* * *

Jashanmal Annual Award

The winner of the Group's Jashanmal Annual Award for Natural History for 1992 was Peter Hellyer, Chairman of the Group from 1989 to 1992 and currently a member of the TRIBULUS Editorial Board.

The award, sponsored by the Jashanmal National

Company in Abu Dhabi, was previously won by J.N.B. 'Bish' Brown and Rob Western.

It is awarded for contributions made to the promotion of natural history in the UAE.

* * *

Corporate Members of the ENHG

Production of TRIBULUS, and much of the other activity of the Emirates Natural History Group, like our sponsorship of the Emirates Bird Report, would not be possible without the generous support of the Group's Corporate members. Indeed, the Group Committee would not have been able even to consider converting our duplicated Bulletin into a printed format without such support.

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, Abu Dhabi Hilton Hotel, Abu Dhabi Maritime and Mercantile International, ADMMI, Abu Dhabi National Hotels Company, Abu Dhabi National Oil Company, ADNOC, Abu Dhabi Marine Operating Company, ADMA-OPCO, Abu Dhabi Petroleum Ports Operating Company, ADPPOC, ANZ Grindlays Bank plc, Al Fahim Group, British Airways, The British Council, British Petroleum plc., Federal Express, Forte Grand Hotel, The Higher Colleges of Technology, Mobil Abu Dhabi Inc., Motivate Publishing, National Bank of Abu Dhabi, Shell Gas Abu Dhabi, Spinney's Abu Dhabi and Union National Bank.

Group Meetings July – December 1992

July	6	:	USIS Film : 'The Wetlands of America.'
August	3	:	USIS Film : 'The Rivers of America.'
September	7	:	'An Introduction to Abu Dhabi' — Peter Hellyer
September	21	:	'Birding in the Emirates,' — Dave Robinson
October	5	:	'Early Days in the Emirates,' — Edward Henderson
October	19	:	Film : 'The Ice Man.'
November	2	:	'The Cultural Role of the Family in the UAE,' — Connie Eide
November	16	:	'Abu Dhabi Islands Archaeological Survey,' — Dr. Geoffrey King
December	7	:	'Fishes of the Gulf,' — John Hoolihan
December	21	:	Film

RECORDERS' REPORTS FOR JULY - DECEMBER 1992

Archaeology and Palaeontology

With peace prevailing in the Arabian Gulf, archaeology in the Emirates returned to normal in the second half of 1992 with the usual flow of foreign teams working in the country, and with locally-based teams also more active than usual in recent years.

At the level of the ENHG, a highlight was a weekend trip to Ras al Khaimah in November, during which members were given a guided tour of the site of the ancient mosque at Julfar by the leader of the British team, Dr. Geoffrey King. An earlier report on the excavations was carried in *Tribulus* Vol. 1.2, October 1991.

Dr. King also spoke to the Group in Abu Dhabi in November about the results of the first Abu Dhabi Islands Archaeology Survey, which took place on the islands of Sir Bani Yas, Dalma and Merawah in March and April.

As an expression of support for the Julfar excavations, the Group made a donation of Dh. 5,000 towards the expenses for the 1992 season, the largest such donation yet made by the Group towards scientific work. Group members Kate Bonner and Carolyn Lehmann both spent a considerable amount of time with the Julfar team, while both were also members of the team for the second season of the Abu Dhabi Islands Archaeology Survey Project in March and April 1993.

A Japanese team from the University of Kanazawa also continued work on the excavation of a settlement area at the Julfar site. A report will be published in a subsequent issue.

Elsewhere in the UAE, there was also substantial activity over the winter months. In Umm Al Qaiwain, Professor Ernie Haerinck, of the University of Ghent in Belgium, continued excavations at the Ad Door site from October to early December, concentrating on the clearing of an area of about 2,000 sq. metres of this Parthian-era town. (See Page 24). Earlier excavations by Professor Haerinck were reported on in *Tribulus* Vol. 1.1, April 1991.

At the end of December, Professor Dan Potts, late of the University of Copenhagen, and now from the University of Sydney, Australia, commenced a two month season at the Tell Abraq site, not far from Ad Door, with the dual objectives of examining the interior layout of the Third Millennium tower and of excavating an Umm an Nar type collective tomb first discovered during the 1990 season under the edge of the mound.

In the Emirate of Sharjah, one highlight was the inauguration of the Sharjah Museum by the Ruler, His Highness Dr. Sheikh Sultan bin Mohammed al Qassimi. The Museum, in the preparation of which a French team was involved, displays finds from excavations throughout the Emirate.

A French team arrived at the end of the year to resume work on the 2,000 year old fortress building at Mileiha, between Dhaid and Al Madam. Another excavation took place at Tarif, near Kalba, one of Sharjah's East Coast

enclaves. (See Notes and Queries, Page 25).

Elsewhere on the East Coast, the UAE's first Iron Age site, discovered at Dibba in the late 1960s and cursorily examined by personnel of the Trucial Oman Scouts, was re-located and excavated by a team from the Fujairah Department of Antiquities, under the direction of Dr. Walid Yasin al Tikriti, of the Al Ain Department of Antiquities and Tourism.

The structure proved to be a stone-lined collective tomb of Iron Age date, mixed with material under a mound and other graves of an earlier, perhaps Second Millennium date. Further excavations in Dibba are planned for future years.

In the Emirate of Dubai, the Dubai Museum continued rescue excavations in the Qusais area.

The focus of attention in the Emirate of Abu Dhabi was rescue archaeology in the Hili and Rumailah area of Al Ain, and on nearby Jebel Hafit, together with the planning of work on Islamic sites in the western desert regions.

Along the coast, the palaeontological survey conducted by a team led by Peter Whybrow, of London's Natural History Museum, and supported by our Corporate member, the Abu Dhabi Company for Onshore Oil Operations, ADCO, resumed in early December, and finished at the end of January.

The focus of attention was on analysis of sediments in the Miocene era rocks. Some further work on lithic industries was conducted by Sally McBrearty, of Brandeis University, U.S.A. (A report on her first season of lithic survey can be found on Page 13).

A report on a survey of late Cretaceous rocks in the eastern UAE and neighbouring Oman, carried out in early 1992, was submitted to ADCO by Andrew Smith and Noel Morris, members of the Whybrow-led palaeontological team, and revealed major new discoveries. A summary is in Notes and Queries on Page 23.

Overall, archaeology and palaeontology in the Emirates continue to attract increasing attention, from both foreign and local sources. With several more teams at work in the first three months of 1993, the winter of 1992-1993 may well prove to be the busiest yet in terms of studies into the country's ancient heritage. Evidence of increasing local support was underlined by the interest shown by President His Highness Sheikh Zayed bin Sultan al Nahyan in the Abu Dhabi Islands Archaeological Survey Project, which completed its second season in April 1993.

As always, however, there remains scope for interested amateurs to play a role in the location of new sites, and also as volunteers in the professionally-directed excavations.

PETER HELLYER
Archaeology Recorder

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Birds

The latter half of the year appeared to start off relatively quietly, as most summers normally do, with up to 8 **Whiskered Terns** and 7 **White-winged Black Terns** at Dubai's Creek Golf course in July and up to 10 **Night Herons** apparently overwintering at Dubai's fish farm. Then in August, 2 nests were found with 4 young **Night Heron** nearby. This is the first time this species has bred in the UAE and only the 2nd time in Arabia (the first was near Riyadh in 1992). At the same time 2 young **Reed Warblers** were seen begging food from adults in the *phragmites* reedbed at the fish farm, another first UAE breeding record.

On 22 August, 2 **Wood Pigeons** were seen flying over the Emirates Golf course, abundant in most of Europe, but their first appearance in the UAE. Another was found by Len Reaney and Mike Wood on Das Island in December. At the end of August a **White-breasted (Smyrna) Kingfisher** arrived at Sharjah's Ramtha tip, where it decided to overwinter (though it was often difficult to find in spite of its brilliant colouring). 2 **Pintail Snipe** were found near one of the ornamental ponds at the Emirates golf course on 2 September, in the same place as last year's birds and possibly some of the same flock returning. 3 **Ruddy Shelduck** were seen on Das Island's beach on 17 August and up to 3 turned up at Ramtha tip in early November. Ian Philip reported 11 **Long-toed Stints** on Al Wathba's prison sewage ponds and **Alpine Swifts** were seen at Al Dhafra airbase on 12 September and in Dubai on 13th. A **Little Green Bee-eater** found its way to Das Island on 25 September, a remarkable record considering there are still no breeding records west of Jebel Ali.

In mid September an influx of 51 **White Storks** were found in a number of fields from Ras al Khaimah to Abu Dhabi. Most had departed by early October.

Unique weather conditions over central and eastern Asia from mid October were responsible for the arrival of a **Radde's Warbler** at the Emirates golf course on the 19th, another first record; a **Rustic Bunting** on Das Island on 27th and a **Forest Wagtail** in Bateen wood around the same time. By early November rarities were literally falling out of the sky. Two **White-capped Buntings** were at the Emirates golf course on the 5th and 6th November, more at home in the northern Himalayas and a first record for the UAE and Arabia. Also on the 6th, 3 **Sociable Plovers** and a **Black-winged Kite** were found in Ras al Khaimah and a number of **Olive-backed Pipits** landed in Dubai and Abu Dhabi. On the 12th a **White-breasted Waterhen** was seen feeding near the reeds at Ramtha tip and remained in the area until the end of the year. This Indian species has never occurred in the Gulf before and apart from the occasional sighting in Oman is

virtually unknown in Arabia. Ramtha continued to provide surprises, when a **Purple Gallinule** was found in the same patch of reeds on the 24th November.

At Khor al Beidah a series of visiting birders from Finland, Sweden and Germany found more of our elusive, and probably formerly overlooked **Great Knot**. After the season's first report of 21 on the 18th November the numbers reached a record high of 90 by the end of the year. **Great Knot** was only discovered in the UAE in 1986 and has since been seen at Khor al Beidah in the springs of 1990 and 1992 and the winter of 1992/3.

At the end of November further excitement was generated by the arrival of an **Oriental Pratincole** at the Emirates golf course. The identity of this bird proved rather difficult to establish, but a series of photographs were sent to *Birding World* who confirmed it as *Glareola maldivarum* (Oriental), a first for the UAE and Arabia. Other interesting reports in November included a **Scops Owl** on Das Island on 5th, an **Eversmann's Redstart** at Masafi, 7 probable **Greylag Geese** over Das Island on the 15th, a **Trumpeter Finch** singing near Al Ain zoo on the 16th, **Imperial Eagles** at Rams on 3rd and at Khor Kalba on the 18th and a **Corncrake** at Al Wathba pools on 27th.

Interesting birds continued to show up in December with a **Dusky Warbler** seen and heard in Bateen wood from 6-20th (a 2nd UAE record) and a **Dotterel** at Al Wathba fodder fields on 27th. A **Buff-bellied Pipit** was reported at Al Wathba on 20th December and would be another first record for the UAE and Arabia. This species was formerly lumped under the Water/Rock Pipit complex and is of good birding interest. A detailed report is awaited from the observers. Together with our other 'firsts,' it would make a total of seven for the six month period — impressive evidence of the fact that birding in the UAE still holds many surprises.

These and all other interesting sightings will be listed in detail in Emirates Bird Report 17 due for publication April 1993.

I am grateful to the following observers whose records are included here: John Bannon, Christian Cederroth, Annika Forsten, Jim Hart, Jenny Hollingworth, Steve James, Tapani Numminen, Ian Philip, Rob Quested, Len Reaney, Dave Robinson, Staffan Rodebrand, Par Sandberg, Steve Turner and Mike Wood.

Colin Richardson,
Bird Recorder,
P.O. Box 2825,
Dubai.

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Mammals

Regrettably, the second half of 1992 saw a marked decline in the number of records received. This can be ascribed partly to inactivity by the recorder, and partly to the fact that researchers from the National Aviation Research Centre were not out in the field recording. Mammals are notoriously elusive creatures to find, unless road casualties, usually being detected from their tracks, but a lot of sightings, by Group members and others, do not get reported. Thus we have not a single dolphin record for the period, although they were undoubtedly present.

Despite the paucity of records, however, some useful information was collected. Perhaps the most disappointing records were of the carcasse of an **Caracal Lynx** (*Caracal caracal schmitzi*), seen near the headwaters of the Wadi Bih just under the Omani enclave of Musandam (ABBA SQUARE WA28), in late November and of a carcasse of an **Arabian Leopard** (*Panthera pardus nimr*), found shot around the same period and in the same general area, though in this case on the Ras al Khaimah side of the border. It's nice to know they still exist, but tragic to learn of their occurrence in such a fashion. Details were sent to the Oman Natural History Museum (**See cover picture**).

More encouraging was the receipt of further reports of the **Brandt's Hedgehog**, (*Paraechinus hypomelas niger*), one live specimen seen in the Al Jimi area of Al Ain (VB25) on September 9th, and a late report from December 1991 of a road casualty in Ayn Al Faidah, (VB25). The first specimen reported to the Group was earlier in 1992, from Wadi Naqab (WA28), although it now seems probable that the species has previously been confused with the **Ethiopian Hedgehog** (*Paraechinus aethiopicus dorsalis*), of which two reports of road casualties were received from the Wadi Quda'a, a tributary of the Wadi Bih, (WA28), on November 5th. For future observers, the simplest way of identifying the Brandt's is by its large ears, short legs, and black coloration of head, limbs and spines. More information of the distribution of our two hedgehog species would be welcome.

Another uncommon species to be reported was the **Arabian Gazelle**, (*Gazella gazella cora*), with three being seen running in the 'Southern Loop' area, 20 km south west of Jebel Ali, (VA26), on September 9th, "Abundant tracks" were reported from the same area on November 27th, confirming the continued presence of gazelles in this area. A single gazelle was seen not far

away at Sih Shueib in January 1992, also in Square No VA26 (not VB26, as erroneously stated in Vol 2.2, Page 43). There was also a report of a single gazelle being seen on three occasions in the Wadi Zikt in Fujairah, (WA26), between September and December.

From the "Southern Loop" area on September 9th, a dead **Arabian Red Fox** (*Vulpes vulpes arabica*), was reported. Foxes are common inhabitants of desert, mountains and shoreline, and have adapted well to the new feeding opportunities offered by man, as indicated by a report from the rubbish dump at the Shah oil field (TB22), in September, when at least twenty five animals were disturbed feeding on the rubbish. More information from other desert oilfield locations would be gratefully received.

As reported elsewhere in this issue of **Tribulus**, (see Page 15), rabies has now been recorded among foxes in the Emirates. Any suspiciously behaving fox should be avoided!

Scattered records of **Cape Hare** (*Capus lepenis omanensis*), were received, including one that they were 'common' on the island of Ras Ghanadha, (UB26), and of **Black Rat** (*Rattus rattus rattus*) on Abu Dhabi island (UA25). One of the Rat reports was worthy of more note. The animal was seen at two o'clock in the morning on September 26th, waiting on the pavement at a traffic light. When the lights changed to red and two oncoming vehicles drew to a halt, the rat promptly scurried across the pedestrian crossing and away into the darkness.

Early reports for 1993 already suggest a more lengthy report for the next issue of **Tribulus**. The pattern of reporting, however, remains very patchy. Any reports, even of the most common species, would be welcomed.

Over the course of 1993, the Group's own mammal records since 1977 will be provided to the National Avian Research Centre, for integration into a national database, from which it will eventually be possible to prepare a preliminary outline of patterns of population density and distribution.

My thanks to those who contributed records: Steve Bolton, Gary Feulner, Michael Gillett, Charles Laubach, Marijcke Jongbloed, Mike Oatham and Ted Ridley.

PETER HELLYER
Mammal Recorder

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Plants

The Plant Recorder undertook a three day expedition around the Northern Emirates during Ramadan 1993 (6th - 8th March). The primary aim was to photograph plants in situ to replace many ancient transparencies that over the years in the humid air of Das Island had become badly affected by mould. A secondary aim was to check out new as well as familiar mountain sites for anything different that might have turned up this Spring. Many wadis still carried scattered pools and rivulets, and a total of four Racer snakes (*Coluber rhodorachis*) were seen on different occasions during the trip. All of the snakes were seen basking in shallow pools with just the head out on a boulder, and all were light coloured, but with typical banding.

The hills were profuse with lush grasses, spring annuals and many species of perennial in flower. The area around Hatta was disappointing in terms of variety, but the Cruciferae, Scrophulariaceae and Leguminosae families were all well represented. **Physorrhynchus chamaerapistrum** (*Cruciferae*) in particular was at its best all the way up to the summits around Huweilat, with shrubs up to one metre tall in flower.

The East Coast hills were even more lush, with carpets of annuals in shady habitats and around plantations and oases. Here the tiny yellow flowers of various species of Compositae were noticeable, especially **Launaea massauensis**, **Reichardia tingitana** and **Urospermum picroides**. Interspersed with these were masses of blue pimpernel **Anagallis arvensis** and pale lilac **Erucaria hispanica**.

Just north of Khor Fakkan, near the village of Bidiyah, is a rocky spur jutting into the sea. Once an island known as Jezirat Bidiyah, this hill has been linked to the mainland by a causeway for many years. Though the top has been levelled off and much stony detritus pushed over the sides, it proved to be an excellent spot for plant pho-

tography. Here **Glossonema varians** (*Asclepiadaceae*) was growing in profusion, all in flower but as yet without the characteristic softly-spined fruits. The strong citrus aroma of **Haplophyllum tuberculatum** (*Rutaceae*) pervaded the whole area while the terminal clusters of bright yellow flower heads were everywhere conspicuous. In bygone days this plant was widely used for medicinal purposes. The Geraniaceae family was represented by large numbers of **Erodium neuradifolium** and the more distinctive **Geranium mascatense**, easily identified by the large black circle in the centre of the deep lilac flower. This was the first recording of **G. mascatense** on the East Coast, having previously been sampled only in the Musandam and in the hills immediately to the north of Masafi. At the highest points of Jezirat Bidiyah were several windswept bushes of **Grewia erythraea** in full flower and already displaying immature but characteristic fruit clusters of 3 or 4 joined berries.

The hills between Masafi and Uaynat also proved a fertile hunting ground for plant photography and recording. Everywhere ground level plants were being strangled by the pernicious parasite **Cuscuta planiflora**, prime victims being the delicate annual lily **Asphodelus tenuifolius** and young shrubs of **Fagonia indica**. The tiny **Viola cinerea**, just a few centimetres high but of spreading aspect, was common here, along with **Lavandula subnuda** and **Leucas inflata** (both Labiatae). The main Leguminosae representatives were **Astagalus spp.**, **Cassia italica**, **Hippocrepis constricta**, **Medicago laciniata** and **Tephrosia apollinea**.

Certainly 1993 will go down as one of the better years for sheer profusion of Spring growth. Although no new species was discovered, the range of several were extended by this brief but concentrated survey.

R.A. WESTERN
Plant Recorder

Book Review — Tuyur Al Emirat

With the support of the Cultural Foundation in Abu Dhabi, Arabic speakers now have the opportunity to learn about the birds of the UAE in their own language. At the end of December 1992, 'Tuyur Al Emirat,' a revised and updated version of Colin Richardson's standard 1990 work 'The Birds of the UAE,' was published, the first book of its kind in Arabic to go deeply into an aspect of the country's natural history. There are a number of changes from the original English edition. Eight new species have been added to the main text, the result of the last couple of years of birdwatching, while the breeding maps have been revised for no less than twenty five species.

The book is already out of date. Work on it was completed by last summer, and since then several species new to the Emirates have been recorded, many by Colin himself, while further extensions of range have been proven for others. That is unavoidable, and in no way detracts from the importance of the book.

English language readers, particularly those owning 'Birds of the UAE,' will be frustrated not to be able to check the new pieces of information. For Arabic speakers, however, the book is invaluable, and the Cultural Foundation deserves congratulations for its sponsorship.

Colin deserves congratulations too for his sterling efforts in updating the work. It is a fine record of the country's bird-life, and will stimulate further exchange of knowledge between the UAE's citizens and expatriate bird-watchers. Colin will forgive me for pointing out a painful omission from the book's Bibliography, which makes no mention of **Tribulus**, born after Birds of the UAE was published, even though we published, in Vol. 1.2 (October 1991), the first official Bird List of the UAE, produced by Colin himself, along with Bob Richardson, then Abu Dhabi Recorder. No doubt that omission will be remedied in future editions.

Our Arab readers interested in birds should spare no efforts to obtain Tuyur Al Emirat, while those of us who have Arabic-speaking friends interested in local bird-life should make sure we get copies for them.

Tuyur Al Emirat, by Colin Richardson, translated by Saeed Mohammed Al Awadi, published by Hobby Publications, Liverpool, UK, 1992. Sponsored by the Cultural Foundation, P.O. Box 2380, Abu Dhabi, U.A.E., and available, price UK £20.00, from Colin Richardson, P.O. Box 2825, Dubai, U.A.E.

PETER HELLYER

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