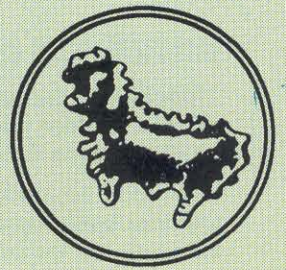


TRIBULUS



Bulletin of the Emirates Natural History Group

Vol. 5.2

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NOTES FOR CONTRIBUTORS

TRIBULUS is the name of the Bulletin of the Emirates Natural History Group. The Group was founded in 1976, and over the next fourteen years, 42 issues of a duplicated Bulletin were published. The revised format of TRIBULUS, introduced in 1991, permits the inclusion of black and white and colour photographs, not previously possible.

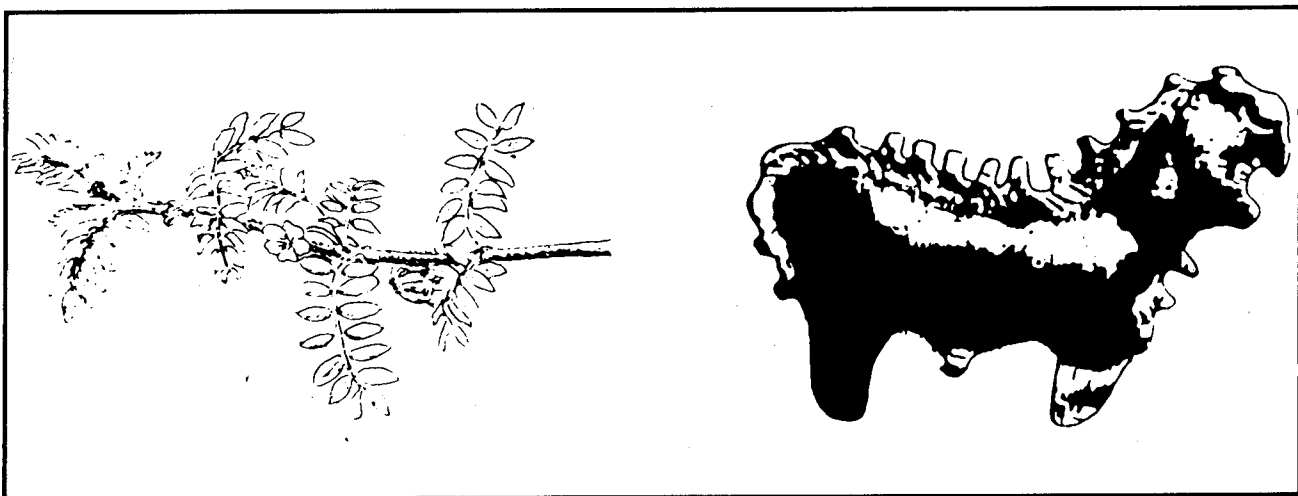
TRIBULUS is published twice a year, in April and October. The aim of the publication is to create and maintain in standard form a collection of recordings, articles and analysis on topics of regional archaeology and natural history, with the emphasis focussing on the United Arab Emirates and adjacent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

Correspondence and enquires should be sent to:

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A.R. Western, Chief Editor,
Dr. Michael Gillett,
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S. James, Assistant Editor



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

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

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Editorial

The recent death after illness of Bish Brown, doyen of natural history groups in the Emirates since 1976, has been widely reported in the local press. As a close friend during his Abu Dhabi days, I have taken this opportunity to write a personal tribute elsewhere in this issue. Though Bish had finally left the UAE, he remained to the end an enthusiastic ENHG member and an avid reader of *Tribulus*. Earlier this year, he was working with Marijcke Jongbloed on a book on the country's reptiles, and Marijcke intends to complete this project as a fitting tribute to Bish, whose research into UAE snakes and lizards remains unsurpassed. Bish will be fondly remembered by members past and present.

We are sad, too, to report the death of former Group Bird Recorder R.A. (Bob) Richardson, co-author of the first official Bird List of the UAE, published in Volume 1.2. Although only resident in the UAE for a few years, Bob made important contributions to local ornithology.

The Arabian Leopard Trust, founded by Marijcke, goes from strength to strength, and this issue includes a report on a recent ALT survey in the mountains of the Northern Emirates to update mammal records, which throws important light on some species that are rare and/or threatened.

Another focus of attention this year has been the work of the Arabian Seas Expedition, supported by a number of our Corporate sponsors, in exploring the waters around the UAE, and filming our marine life. In association with its work, the first scientific study of the cetaceans of the UAE has been carried out, supported by Union National Bank. The study has also revealed the continued presence of considerable numbers of dugongs in our waters, albeit endangered. Three important articles by Robert Baldwin give a distinctly marine flavour to this issue.

There are also two important articles by our editorial board member Michael Gillett, lists of tiger beetles and of butterflies, both of which add substantially to published knowledge of these neglected groups.

In past Editorials, I have commented on the growth of awareness in the UAE of the importance of a clean healthy environment. Leadership in this campaign has traditionally come from the top, notably from Government and industry, which have established or have supported dozens of natural history related projects in recent years, from archaeology to zoology.

There remains, however, a strong need for increased awareness at grassroots level. Earlier this year, the Director General of the Federal Environmental Agency lamented the lack of environmental curricula in the country's schools. Our Patron, the Minister of Higher

Education and Scientific Research, also recently noted that the centuries-old Gulf tradition of living in harmony with nature was in danger of being swamped by the rising tide of urbanisation and consumerism.

Pollution in all its forms is threatening the very culture and historical tradition of the Gulf.

The situation was stressed by UAE participation in World Environment Day in September, which saw large numbers of volunteers turning out for 'clean-up' campaigns, one of which focussed on the recently-established Bateen Gardens nature park in Abu Dhabi.

Pressures on the UAE's fragile environment remain immense, however, given the sheer extent of development and the population pressures. ENHG members can all play a personal role here in disseminating the message of environmental awareness.

Finally, snippets of news from elsewhere in Arabia. The reintroduction of the Arabian Oryx to the wild in Oman is now complete, with this autumn's release of seven US-bred animals. These are the last captive-bred oryx needed for the project, and they join an estimated 288 already in the wild, descended from three captured in 1962 on the Saudi-Yemeni border and six others brought in from other countries.

There are also plans in Saudi Arabia to introduce the (African) red-necked ostrich into the former range of the now-extinct Arabian Ostrich. Birds from Sudan have already been freed in a protected zone at Mahazat As Sayd, and are being closely monitored. We shall follow both programmes with interest, in the hope that similar, scientifically-managed programmes may get under way in the UAE, following on from the commencement of commercial ostrich farming in Al Ain.

Finally, Oman has banned the import of rhinoceros horn, even though the country is not a party to CITES. This horn is used for making *khanjar* (dagger) handles. In his latest book, *My Kenya Days*, Wilfred Thesiger recalls that when he was in Yemen in 1966-67, there was no tradition of using rhino horn for this purpose, but by 1977, as a result of remittances from Yemeni expatriates in the Gulf, the demand for luxury goods rose, and the fashion for rhino horn handles took off almost overnight. In the next fifteen years, the demand virtually exterminated the rhino in large parts of Africa. As Thesiger aptly comments, it is "a horrifying example on a vast scale of utterly pointless human extravagance inspired by vanity."

A.R. WESTERN

Whale and dolphin research in the UAE

by Robert Baldwin

It may come as a surprise to many that the waters of the United Arab Emirates may prove to be host to over one third of the world's eighty or so known species of whales and dolphins. Not only that, but some of them may even be sub-species new to science and unique to the region.

In February 1995, with the sponsorship of Union National Bank, (a corporate member of the Emirates Natural History Group), I commenced a Whale and Dolphin Research Project, the preliminary phase of which is now nearing completion. The initial aims are to establish baseline data regarding the status and distribution of cetaceans in the UAE. Genetic studies and research on the effect of pollution on dolphins have also begun in collaboration with the Centre for Dolphin Studies in Port Elizabeth, South Africa. All data are to be geared towards successful conservation management of this fascinating and remarkable group of marine mammals.

Outlined briefly here are some of the discoveries of the project to date.

The first phases of fieldwork were conducted along the coasts and offshore islands to the west of Abu Dhabi. Whales have been sighted in areas to the far west, adjacent to and beyond Jebel Dhanna, while reports of their presence have also come from the islands of Zirku and Qamein. Carcasses have been reported in recent years from Bahrani and Rafiq Islands, just west of Abu Dhabi, while vertebrae have been found washed up on Balghelam, to the east of Abu Dhabi.

There is little doubt that the Arabian Gulf waters of the UAE host a number of different whale species. In some cases, particularly when only a few bones have been found, identification is difficult, but the species definitely include: Fin Whale (*B. physalus*), Bryde's Whale (*B. edeni*) and Humpback Whale (*Megaptera novaeangliae*). Probably present, and confirmed from Omani waters outside the Gulf, are Blue Whale (*Balaenoptera musculus*), Sei Whale (*B. borealis*) and Minke Whale (*B. acutorostrata*). False Killer Whale (*Pseudorca crassidens*) has been identified from a carcass inside the Arabian Gulf, and has been seen off the East Coast.

The occurrence of any of the large baleen whales here, with the exception of Bryde's Whale, a known resident of warm waters in many parts of the world, raises the question of their origin.

Populations of all the other species of baleen whales around the world are known to migrate great distances between feeding locations in polar waters and breeding grounds in warmer tropical or sub-tropical waters. With this in mind, the first assumption would be that the UAE's baleen whales come to this area to breed - the warm shallow waters of the Arabian Gulf, for example, probably suit the needs of young whale calves perfectly. However, the Arabian Gulf is blocked to the north by the

هذه الدراسة تلقي الضوء حول ظهور الحيتان والدلافين في المياه الإقليمية لدولة الامارات العربية المتحدة.. وبحسب الدراسة فإن هناك أدلة كثيرة على وجود فصائل عدة من الحيتان والدلافين التي لم ترصد من قبل في المنطقة والمهددة بالانقراض على نطاق العالم بأسره.

Asian landmass. For the area's baleen whales to have come from feeding grounds in the polar oceans around Antarctica would require long-distance migration to an extent not yet recorded, while they would also have to cross the equator, something, again, that has never been recorded for any baleen whale population.

Are the UAE's whales, therefore, year-round residents, breeding and feeding in the waters off the Arabian Peninsula? If so, this would make them unique among the world's baleen whale populations, and they may have become genetically isolated from other populations. The answers to these questions may have major implications for the preservation of these species, some of which are endangered or vulnerable to extinction, and this would be particularly so if any of the UAE's baleen whales are of previously undescribed sub-species.

The answers to the many questions about the whales of the Emirates and neighbouring waters, such as those of Oman, must await the results of further research and support from the littoral states.

During the course of this year's research, dolphins have also been seen on many occasions and in many areas. Particularly striking is the relative abundance of both Bottlenose (*Tursiops truncatus*) and Indo-Pacific Humpback Dolphins (*Sousa chinensis*).

The Indo-Pacific Humpback Dolphin is an interesting species about which very little is known. The World Conservation Union, IUCN, lists it in its Red Data Book on endangered species as 'status unknown,' but it is generally considered to be a species under threat due to its preference for shallow, coastal environments.

Throughout its range, it generally occurs in small groups of between six to ten individuals, and occasionally in groups of up to 25. On two separate occasions during research in UAE waters, and in two separate localities, groups of over 30 Indo-Pacific Humpback Dolphins were discovered and observed for many hours. This constitutes the largest two groups of the species on record. The dolphins were active at times, leaping clear of the water and interacting with one another. One young male performed a backward somersault, an unusual acrobatic display for this species. Feeding behaviour was also observed, sometimes in water less than one metre in depth.

Bottlenose Dolphins were also frequently seen, some-

times in mixed pods with Indo-Pacific Humpback Dolphins. The large numbers of dead Bottlenose Dolphins and other forms of marine life observed during survey work are cause for concern. The remains identified were of animals that had died anywhere between one month and three years previously.

On one single day, a seven hour walk along beaches on an offshore island revealed remains of 28 Bottlenose Dolphins, 3 Common Dolphins, (*Delphinus delphis*), one Spinner Dolphin, (*Stenella longirostris*), one False Killer Whale, one baleen whale, 26 Dugongs (*Dugon dugong*), 32 Green Turtles (*Chelonia mydas*), one Loggerhead Turtle (*Caretta caretta*), two sea snakes, over thirty seabirds, such as Cormorants (*Phalacrocorax sp.*) Gulls (*Larus sp.*), Terns (*Sterna sp.*) and Greater Flamingo (*Phoenicopterus ruber*) as well as many large fishes.

A number of skulls were collected for measurement and cataloguing, following which they will be deposited at the Natural History Museum of the Emirates University in Al Ain.

Numerous samples were also taken for genetic analysis, and, where possible, for pollution and stomach content analysis. The number of remains found suggest the possibility of death where human activity is a causal factor.

One of the most interesting results of field research was the discovery of a Finless Porpoise (*Neophocaena phocaenoides*) on a beach on the island of Merawah, around 100 km, west of Abu Dhabi. Finless Porpoises have never before been scientifically recorded in the waters of the UAE, and have only very rarely been recorded anywhere in the Arabian Gulf. This is apparently the first Gulf record for four years. Skin and muscle tissue samples were collected for genetic analysis, which will be the first genetic analysis to be performed on this species anywhere in the world, forming the basis for any future genetic work on the species. We need to find out more about this shy animal, poorly known to science, as its survival is surely threatened.

Skulls of other dolphins were also collected from Merawah. Three, in particular, are of interest, since they belong to a species of the family Stenellidae, the Spinner Dolphin (*Stenella longirostris*), constituting yet another new record for the UAE. Another skull may prove to be that of a Spotted Dolphin (*S. attenuata*), another new record if confirmed.

Off the coast of Fujairah, in the Gulf of Oman, further new records for the UAE were made during a short marine survey. Sperm Whales (*Physeter macrocephalus*) were observed in deep water (1,000 metres), including males, females and juveniles, suggesting the possibility of a breeding ground. Risso's Dolphins (*Grampus griseus*) were also regularly observed offshore in this area. Neither species had previously been recorded in UAE waters. False Killer Whales and Bottlenose Dolphins also occur regularly off the East Coast.

Observations have also been made during research work regarding the interaction between the marine mammals of the UAE and human activity, such as fisheries. The welfare of the rich natural marine resources of the region depends upon effective coastal and marine management planning and implementation, including

the declaration of protected areas. In order to achieve this, planning authorities require solid scientific data upon which to base decisions and execute action plans. The process of gathering data for management purposes is multi-disciplinary. Links between the various marine research programmes in the UAE are therefore vital, and good co-operation, thus far, has led to a greater use of information.

That several records of cetacean species new to the Emirates can be made in just a few months of field study is an indication of the value of this region to the world's marine mammals, and to the lack of research carried out until now. Research on marine mammals in the UAE has really just begun.

The discoveries so far made by the Union National Bank Whale and Dolphin Research Project illustrates the wealth of information that is waiting to be revealed, the value of that information both to local requirements and the international scientific community, and the need for focussed study in the future.

An inherent component of any successful conservation project is the need to create awareness. To this end, at the end of 1995 the results of the research will be published in both English and Arabic, the first book on the whales and dolphins of the UAE, which will detail knowledge of the country's cetaceans to date. A foreword has been written by HE Sheikh Nahayan bin Mubarak al Nahayan, Minister of Higher Education and Scientific Research and Chairman of Union National Bank, while chapters include information on each of the species of cetaceans recorded in UAE waters, as well as the intriguing relationship between fishermen and cetaceans, the history and evolution of cetaceans, conservation and scientific research on the country's cetacean life.

Acknowledgements:

I acknowledge, with thanks, permission granted by the Emirates Natural History Group to make use of its records, dating from the late 1970s, of cetacean records in the UAE, which, although not extensive, represent the only data on the subject that had been collected prior to the commencement of the research project.

My thanks, too, to HE Sheikh Mohammed bin Zayed al Nahyan, for permission to undertake study on the island of Merawah, and to HE Sheikh Hamdan bin Zayed al Nahyan for permitting access to the Bu Tini shoals, as well as to members of the Arabian Seas Expedition and Fairdeal Shipping of Fujairah, who provided me with access to their boats for the purpose of marine study.

Finally, the research could not have been undertaken without the sponsorship of Union National Bank, provided as a result of the personal interest of its Chairman, HE Sheikh Nahayan bin Mubarak al Nahayan, and of its Acting Chief Executive, Anwar Sher.

To all I am most grateful.

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A full report of the study covered above and entitled "Whales & Dolphins of the UAE," has been published by the author and was produced by UNB in December 1995.

Abu Dhabi and the disappearing Dugong

by Robert Baldwin

The Arabian Gulf waters of the United Arab Emirates host part of the world's second largest population of **Dugongs** (*Dugong dugon*). Habitat off the coastline of the Emirate of Abu Dhabi has been identified as the most important for dugongs, and the area around the island of Merawah and the Bu Tini shoals, in particular, is considered to be the site with the highest priority for conservation in the Arabian Gulf (Preen 1989). Little research, however, has thus far been conducted on the UAE's dugongs and no estimate of their total numbers has been made.

Recent aerial and boat surveys have shown the presence of large herds of dugongs near Bu Tini, where seagrasses, the preferred food of dugongs, is found in abundance. There is, however, cause for concern about the status of this species, about which particularly little is known, other than the fact that it is among the most endangered of the world's marine mammals.

The UAE is a country whose development has been recent, rapid and extensive. The effects of development on the marine environment remain largely undocumented. Nevertheless, there have been obvious changes, such as the construction of ports and harbours, land reclamation, extensive dredging and the introduction of modern fishery techniques and equipment. Degradation of marine habitats and impacts upon many species are evident. Some of the effects of these changes are currently under investigation by both international and local scientists. Initial observations indicate a possible decline in the numbers of dugongs in the region (Baldwin and Cockcroft, *in press*).

The recent aerial and boat surveys have revealed dugong herds of 100 individuals or more near Bu Tini and Merawah. Numerous young and sub-adult individuals were sighted within the largest herd, which was seen travelling to the south of the Bu Tini shoals. A similar sized herd was observed from a boat in the same area just a few weeks previously, and smaller groups of dugongs, ranging from two or three individuals to over 30 have frequently been seen to the east, west and south of Merawah island, the latter in the deep and well-sheltered Khor al Bazm. In this vicinity too, the numerous dugong 'trails' in the seagrass beds are a clear indication of feeding.

Sightings of dugongs are not restricted to this area. On two occasions in early 1995, dugongs were sighted no more than ten kilometres from the island of Abu Dhabi, and others have been seen further west, near the island of Abu al Abyadh. Beached remains provide the evidence of the continued presence of dugongs in other locations in the west of the Emirate, close to the maritime border with Saudi Arabia and Qatar.

The remains of dead dugongs have been found in many

هذا المقال عبارة عن دراسة حول الاكتشافات التي أثبتت مؤخراً وجود عروس البحر والمهدد بالانقراض في مياه أبوظبي، ويعتقد أن مياه إمارة أبوظبي تضم ثاني أكبر مجموعة من عروس البحر في منطقة المحيط الهندي بأسرها مما يستدعي بذل المزيد من الجهود والتدابير للمحافظة على هذه الفصيلة.

parts of the country, but the vast majority have been found in, or near, fishing villages. Most of these dead animals show clear evidence of having been caught by local fishermen. Formerly dugongs in the Arabian Gulf were hunted for their meat, which is considered a delicacy in many parts of the region, but this practice has been made illegal in the UAE in recent years, and no evidence of it continuing has been found, apart from a single near-adult caught after a two and a half hour struggle with a fisherman off Ras al Khaimah in the north east of the UAE in October. The incident was the first evidence for several years of dugongs still present in that area.

It is, however, unlikely, that any dugongs found live in nets are released, and dugong meat is still prized, and is eaten or sold. The number of animals caught by direct hunting methods has never been documented, but it is likely that incidental net captures equal or exceed this number. Increasing gill net fisheries and the Far East market for shark fins may be leading causes of dugong mortality.

The number of dead dugongs killed each year as by-catches in fishing nets is alarming. Many more probably die as a result of other man-made causes, such as dredging, which affects the seagrasses on which dugongs rely for food. It is a generally accepted rule-of-thumb that the maximum sustainable annual harvest of marine mammals is 2% of the total population. Based on observations made in Abu Dhabi waters during the course of 1995, the sustainable harvest limit of dugongs in the Arabian Gulf is probably exceeded (Baldwin and Cockcroft, *in press*). The obvious result of this is the steady decline in the number of dugongs until the population becomes extinct.

Proposals to carry out detailed research into the dugongs of Abu Dhabi have now been drawn up. The primary aim of the research, to be conducted by scientists from South Africa in collaboration with locally-based researchers, will be to collect the vital information needed to recommend conservation measures that can halt the decline and even lead to an increase in the dugong population. More support is needed if the work is to be successful, but initial study has already begun.

Skin and muscle samples for genetic analysis have been collected and sent to Australia for comparison with known DNA analysis for animals sampled in

Australia and samples under study from animals taken in Southern Africa. In total, over twenty skin and muscle tissue samples have been collected in Abu Dhabi waters.

Only three other samples collected in Southern Africa exist for the western Indian Ocean population of dugongs, and comparative analysis has already shown that the dugongs of the UAE are markedly different from those elsewhere in the world. Plans are now also being drawn up, in collaboration with the Abu Dhabi Islands Archaeological Survey Project and other archaeologists, to analyse remains of dugongs collected during the extensive archaeological excavations carried out in the UAE in recent years. Using advanced genetic analytical techniques, it may be possible to compare the genetic make-up of present-day dugongs with those several thousand years ago.

Other research that has begun concerns the feeding habits of dugongs. A stomach sample of one dead animal is currently under analysis. We already know that dugongs feed almost entirely on seagrasses. Conservation and management of dugong populations therefore requires an understanding of the distribution, productivity and seasonality of this essential food resource.

Seagrasses are the only flowering plants adapted to living in the sea. They spread primarily through growth of the rhizome-root system, but some species are prolific seed producers.

Only four species of seagrass are known from the Arabian Gulf (Price 1992): *Halodule uninervis*, *Halophila ovalis*, *Halophila stipulacea* and *Syringodium tsoetifolium*.

The Arabian Gulf is a stressful environment, particularly during summer when very high temperatures and salinity are common. In spite of this, seagrass beds are often both extensive and productive (Kenworthy *et al.* 1993). Recent observations around Bu Tini and Merawah and elsewhere suggested the presence of extensive seagrass beds in this region. Seagrasses are extremely important marine eco-systems; they form nursery grounds for many commercial species of fish and shellfish, as well as providing habitat for hundreds, even thousands, of different species; they stabilise sediments and reduce coastal erosion; they are very productive and provide vital nutrients (in the form of detrital organic matter); they may help to oxygenate sea water; and they are grazed by many species, including parrotfish, rabbitfish, sea urchins, green turtles, and, of course, dugongs.

Studies on seagrasses are needed, especially to quantify biomass, percentage cover and seasonal changes in seagrass beds over the dugong's range. Dugongs have a midgut caecum and hindgut microbial fermentation and consume 20 to 25% of their body weight each day. Preference foods may be inferred from gut and faecal samples and behavioural observations. They usually ingest entire plants and leave feeding trails over five metres long through the seagrass beds. Information is needed on feeding rates and quality of food supplies, and interactions between the dugongs and the plants. For example, grazing may stimulate

growth and dugongs may spread seagrasses via seed dispersal.

When investigating the possibilities of research in Abu Dhabi waters, it soon becomes clear that there is a great deal to be done, not only on dugongs and their habitat, but on many other aspects of a complex marine eco-system. Until now, relatively little research has been attempted, and without the necessary information, conserving marine resources for future generations is a near-impossible task.

The plight of dugongs has been highlighted due to the simple fact that the UAE may host one of the last remaining large concentrations of dugongs in the world. In view of the relatively little that is known about marine mammals, and especially dugongs, detailed scientific research conducted here will be of worldwide importance. The threats that dugongs currently face, both in the Arabian Gulf and elsewhere in the world, make an assessment of their status and protection in the UAE all the more imperative.

Acknowledgements

Fieldwork was carried out with the assistance of the office of Sheikh Mohammed bin Zayed al Nahyan and, through Abdul Latif al Hadidi, of Sheikh Hamdan bin Zayed al Nahyan, particularly with reference to access to the island of Merawah and the Bu Tini shoals and neighbouring waters.

Access to a boat for surveys was facilitated by the Arabian Seas Expedition, which also provided useful information on sightings of dugongs, while use was also made of records provided by the Emirates Natural History Group.

The fieldwork was carried out during the course of research into the UAE's cetaceans, funded by the Union National Bank, the interest and support of whose Chairman, Sheikh Nahayan bin Mubarak al Nahayan and Acting Chief Executive, Anwar Sher, was invaluable.

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Marine turtles of the UAE

by Robert Baldwin

Of the seven recognised species of marine turtles in the world, four, possibly five, occur in the waters of the United Arab Emirates, the Green Turtle (*Chelonia mydas*), the Hawksbill Turtle (*Eretmochelys imbricata*), the Loggerhead Turtle (*Caretta caretta*), the Leatherback Turtle (*Dermochelys coriacea*), and possibly the Olive Ridley Turtle (*Lepidochelys olivacea*). All five are listed as species endangered with extinction throughout their worldwide range.

Two of the five, the Green and Hawksbill turtles, nest on beaches in the UAE as well as feeding in UAE waters, and while little is known about the presence of the other three, the Leatherback Turtle has been seen feeding on the vast seasonal abundance of jellyfish (the sole component of its diet), in Arabian Gulf waters. The Loggerhead Turtle has been confirmed to occur in the Arabian Gulf waters of the UAE, but next to nothing is known about its status or distribution in this country. The Olive Ridley Turtle has not been officially recorded in the UAE, but it is known to nest on beaches in neighbouring Oman and Pakistan. It is likely that, even if it does not nest in the UAE, this species may be found in UAE waters from time to time.

Recent observations off the UAE coast allow for some comment about Green and Hawksbill turtles. The Green Turtle, in particular, has been seen with such frequency that numbers here may prove to be extremely significant in terms of the species' world range. Unlike Oman, where it nests in record-breaking numbers, it occurs primarily for another reason in UAE waters, although many of them do nest here.

Vast, rich and extensive seagrass beds and shallow coral reef environments, so characteristic of so much of Abu Dhabi's western coastal and offshore areas, are prime environments for feeding Green and Hawksbill turtles. During fieldwork geared primarily to the recording of marine mammals over the course of the last nine months, turtles have been regularly observed by boat and a more accurate reflection of their abundance was gained from sightings recorded from the air. In some areas, a density of several hundred per square kilometre was estimated.

Without a thorough scientific census, population numbers cannot be estimated. However, the population, especially of Green Turtles, is worthy of further attention. A study conducted in Oman by the World Conservation Union, IUCN, established the great importance of that country as far as Green Turtles are concerned. From initial observations, it seems likely that the numbers of Green Turtles feeding off the UAE may equal or exceed the feeding population in Oman.

Seagrass beds are the most productive of shallow, sedimentary environments in the sea. The turtles, like the

من المعروف أن أربعة فصائل في مجموعة السلاحف البحرية السبع تعيش في مياه دولة الإمارات العربية المتحدة. وقد دلت الأبحاث التي أجريت مؤخراً والتي تحتويها هذه الدراسة على أهمية هذه الظاهرة بالنسبة للبيئة البحرية.

Dugong (*Dugong dugon*), graze the seagrass day and night. Many of the Green Turtles have probably migrated great distances to reach rich feeding grounds such as those off the Emirates, and it is certainly a possibility that some of the turtles nesting in Oman spend much of the rest of their time feeding in the UAE and elsewhere in the Arabian Gulf. Thousands of turtles have now been tagged in Oman, which is good reason for careful observation of turtles in the UAE, which may bear the titanium tag at the base of the left fore flipper.

A knowledge of on what the turtles feed in the UAE can provide clues both to their behaviour and their distribution. Knowledge of the diet of Green Turtles also helps to identify habitats in need of conservation for their sake. Do they, for example, prefer one species of seagrass to another? Will other food, such as algae, provide a substitute for seagrasses if these are not available? Examination of the diet of the Green Turtles helps to provide answers to these questions, and many more that researchers of many disciplines and in many countries need to know. Some studies to date have already provided interesting results. A good example is the latest analysis of the diets of three Green Turtles, all apparently feeding in the same area around the island of Merawah, around 100 km west of Abu Dhabi.

The first had a mixed diet of elongate, single-stranded seagrass (*Halodule uninervis*), broad and narrow leaved seagrass (*Halophila ovalis* and *H. stipulacea*), algae, and even species of sponge. The second showed an apparent preference for just one species, eating only the broad leaved seagrass (*H. ovalis*). The third seemed to avoid the broad leaved seagrass entirely, and had a diet consisting of the single-stranded seagrass (*H. uninervis*) and the narrow leaved seagrass (*Halophila stipulacea*) in equal proportions.

Interpreting this information is difficult, but a preference for a particular food may be a matter of choice for the individual turtle, rather than for the species as a whole.

More likely, however, is the theory that turtles are opportunists, possibly preferring one species over another, especially if they are of greater nutritional value, but only selecting that if it is abundant. Otherwise, they will eat whatever is there for the taking. What was impossible to take into account in this particular case was the

age group of each turtle, a factor that may affect the diet.

In terms of the conservation of turtles, results of many such observations build up a good understanding of feeding turtles in the UAE, which is in all probability the major reasons for the turtles' presence here. Interestingly the diet of the Dugong may turn out to be very similar to that of the Green Turtle. If this is the case, then protecting the seagrass meadows as conservation areas will go a long way towards protecting both these animals at the same time. For once nature is making it easier for conservation officials, as it were, to kill two birds with one stone.

Certainly action regarding the conservation of turtles in the UAE is needed. Large numbers of Green and Hawksbill turtles are caught each year by fishermen, despite Ministry of Agriculture and Fisheries regulations forbidding their capture. In some villages, the carapaces of dead turtles number well into the hundreds. Many are disturbingly small, measuring no more than six inches in length, indicating an age of less than a year. Both Green and Hawksbill turtles may take over twenty years to reach sexual maturity, and even ignoring the numbers of turtles caught, the age at which many die could also affect the population.

Collecting of eggs also continues, although, like the

capture of live turtles, this is officially banned.

Without detailed knowledge of these populations in the UAE, many of these statements remain speculative. But is it worth taking the risk?

Acknowledgements

Fieldwork, particularly in the key areas of the islands of Merawah and Bu Tini and nearby waters, was facilitated by the office of Sheikh Mohammed bin Zayed al Nahyan, and, through the good auspices of Abdul Latif al Hadidi, by Sheikh Hamdan bin Zayed al Nahyan. The Arabian Seas Expedition provided access to its ships for offshore research work, while Dr. Saif al Ghais of the Emirates University in Al Ain provided useful data regarding Olive Ridley Turtles.

The fieldwork was carried out during a study of the cetaceans of the UAE, funded by the Union National Bank, whose Chairman Sheikh Nahayan bin Mubarak al Nahyan and Acting Chief Executive Anwar Sher provided continual support.

To all of them I am grateful.

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Why the Socotra Cormorant *Phalacrocorax nigrogularis* should be formally protected

by Simon Aspinall

Introduction

The world population of the Socotra Cormorant *Phalacrocorax nigrogularis*, a species endemic to the Arabian Peninsula, numbers somewhere between 600,000 and 1,000,000 birds. This total includes a substantial number of non-breeding and immature birds. 13 or 14 breeding colonies are currently known, only one or two of which are outwith the Arabian Gulf. The world breeding population is provisionally estimated to be around 230,000 pairs, some 95 per cent of which occupy colonies in the Arabian Gulf. Recent data is lacking in particular from Qatar and Iran. In view, however, of the small number of colonies, this species is considered to be extremely vulnerable, and its conservation is a topical, but controversial, issue.

Socotra Cormorants apparently remain in the Gulf year-round, with flocks appearing to be largely resident within a relatively small area. Offshore movements occur, but data is very limited. Seasonal movements, such as have been detected, may be related to fish migrations. The possibility of intra-Gulf colony shifts taking place, between Saudi Arabian and Bahraini colonies, or among

يعد طائر الغاق السوقي الفصيلة الوحيدة من الطيور في دولة الامارات والتي لا يوجد قانون رسمي لحمايته من الانقراض. هذا المقال يسلط الضوء على اختفاء عدد مواقع تكاثر طائر الغاق وذلك خلال السنوات القليلة الماضية مما يستوجب إصدار القوانين والتشريعات اللازمة لحمايته من الانقراض.

those of the UAE, for example, is currently being investigated and certainly any future research should properly be conducted using the entire Arabian Gulf as the study area.

Other than in the Arabian Gulf, small flocks (100-300+) are occasionally noted on the Gulf of Oman coast of the Arabian Sea. Flocks of 15,000 - 20,000 strong are often encountered off southern and eastern Oman (Eriksen, pers. comm.) although this relatively small population, breeding on the Kuria Muria islands, apparently remains geographically isolated from that in the Arabian Gulf.

The Current Situation in the UAE

The UAE population of Socotra Cormorant, which is possibly largely resident within UAE waters, numbers 150,000 - 200,000 individuals. This is 15-33% of the estimated world population. The UAE national breeding population, estimated to be 32,085-34,285 + pairs, represents around 15% of the world breeding population of the species. Only two recently occupied UAE breeding sites are outwith the emirate of Abu Dhabi, although one is now certainly extinct. Present breeding estimates for each UAE site are summarised below (Table 1). Note that several colonies that formerly existed are now indisputedly extinct, and likely to remain that way, although the feasibility of restoring one or more colonies is to be investigated.

About half of the estimated UAE population, including non-breeding individuals, can be found roosting in western Abu Dhabi (combined total from various islands) and in Sinaiya island in Umm al Qaiwain's Khor al Beida alone. Numerous roost sites are also known to exist, and these are currently being catalogued by the National Avian Research Centre.

Why the Socotra Cormorant should be protected

The Socotra Cormorant is undoubtedly of considerable significance to the cycling of nutrients that are vital to the maintenance of pelagic communities, including commercial fish stocks, in the Arabian Gulf. The Gulf is a shallow virtually enclosed sea, although part of the Indian Ocean Faunal Province, (Hayden *et al.* 1984). It takes between five and seven years for the waters of the Gulf to completely change or 'turnover.'

This has major implications for nutrient cycling. As a system, the Gulf is dominantly autochthonous, that is largely closed with little extraneous input. That which does enter has mostly been generated from within and just cycles continuously. Apart from toxic and non-toxic man-made inputs and, of course, energy from the sun, the only extraneous input is some freshwater along the eastern shores and at the Shatt al Arab at the north of the Gulf, together with transported organic and inorganic matter. These latter, at least, are useful components. Biological material such as algae blown in from the *sabkha*, which may contribute substantially, is included as being within the wide littoral zone, as is mangrove forest or mangal, although these are presently limited in the Gulf by comparison with their historical extent.

Table1. Most recent estimate of breeding Socotra Cormorant members in the UAE. Extinct colonies are shown in bold type.

SITE	NUMBER	YEAR (AND SOURCE)	COMMENTS
ABU DHABI			
ARZANAH	+	1982 (Gallagher <i>et al.</i> 1984)	Colony extinct
DALMA	2500	1975 (Gallagher <i>et al.</i> 1984)	Colony now extinct (NARC 1993)
DAYYINAH	8000-10,000	January 1995 (NARC)	
off DHABBIYA	c-300	January 1995 (NARC)	
GHAGHAH	6000+	January 1995 (NARC)	
GHASHA	+	1991 Richardson <i>in litt</i>	Absent 1994/5 at least (NARC)
JAZIRAT NA'ITAH	+	Extinct colony site (NARC 1994)	Precise year last used unsure.
NORTH YASAT	2000-2200	January 1995 (NARC)	
QARNEIN	'a few hundred'	Pre-1988/89 (Verhage <i>pers comm.</i>)	Colony now extinct
QASSAR SELAHA	c-80	January 1995 (NARC)	
SOUTH FURAYJIDAT	1338	1972 (Gallagher <i>et al.</i> 1984)	Winter survey required. Has bred in 1990s (NARC 1994)
UMM AL QASSAR	c-150	January 1995 (NARC)	Bred in preceding winter. Possibly an alternative site to Ghasha.
ZIRKU	15,000+	December 1972. Estimated from photographs	(above) Colony now extinct (post 1981 when '1000-10,000' remained.
OTHER EMIRATES			
SINAIYAH (UMM AL QAIWAIN)	15,555		
SIR ABU NA'AYR (SHARJAH)	+	October 1994 (NARC survey) Anon. (per C. Richardson)	Colony now extinct (Lehmann per C. Richardson)
NATIONAL POPULATION	Provisional total 32,085-34,285 pairs		

+ = Former colony size unknown

It is well-known that Socotra Cormorant eats fish. However, it feeds upon the copious 'uma' (*Sardine *Sardinella longiceps**) and were it not to do so, it is likely that there would be a food shortage for the fish themselves.

The overall tonnage of free nutrient-rich guano returned annually by the cormorants must be substantial. The supposition is that, should this not continue to be the case, then the system itself might well collapse. All forms of marine life would then be affected, the whole food chain from algae to dugongs and sharks to sea-birds.

Such a scenario is not without parallel. In Peru, the anchovy *Engraulis ringens* and Guanay Cormorant *P. bougainvillii* populations were mutually dependent and existed in an equilibrium. This continued until the natural oceanographic phenomenon known as 'El Nino,' which occurs every five to seven years, arrived in the 1970s and displaced the nutrient-rich Humboldt current. (Notice the periodicity is the same as the turnover for the Gulf which may be significant.) The fishing industry effort remained at the same level as in unaffected years and rapidly depleted the anchovy and other fish stocks. As a result the adult Guanay Cormorants failed to breed and quite literally starved, their numbers crashed, and, with the guano input stopped, the fertility of the sea dropped further and the fishery failed to recover. The cycle was broken, and an object lesson was learned the hard way. No fish, no guano (a valuable cash crop) and no ecotourism.

Continuing threats in the UAE and the future

The Socotra Cormorant is the only breeding bird in the UAE which is specifically not protected by law. An inherent dislike for this species means that it is persecuted by humans. Shooting for sport and by fishermen who regard it as being in competition has probably already eliminated some colonies. Residential and industrial development, together with recreational activities, has and may continue to displace colonies, while even irrigation and tree-planting are recognised to be threats to seabirds nesting on the offshore islands of the UAE. The ever-present threat of oil or chemical pollution requires no elaboration.

With so few breeding sites, and in order to maintain the fertility and commercial productivity of the Gulf, protection of the colonies from displacement as a result of any of the multifarious types of development listed above must be a national priority. Legal protection of the Socotra Cormorant from persecution and serious efforts to enforce the law are also required. All UAE breeding colonies for the species are to be recommended for protection in reserves, which, as intimated earlier, will also help to save and support other valued wildlife. The stat-

us of any reserve will not preclude fishing or other sustainable or non-damaging activities, in fact rather the converse.

Recolonisation of some traditional sites, currently extinct, is now precluded for most cases identified above, and there are almost certainly insufficient suitable new sites for the species to colonise, even if the solution were that simple. It is not known, for example, whether the 15,000 + pairs colony on Zirku was able either to relocate or was 'absorbed' by other existing colonies. However, as stated earlier, consideration is being given to the feasibility of restoring certain former colonies.

Acknowledgements

The data given here is a compilation of information gleaned verbally from colleagues in Saudi Arabia, Oman and the United Arab Emirates, too many in number to acknowledge individually. I am grateful for their assistance, and I hope that the conservation of the Socotra Cormorant and of other wildlife, as our common goal, will suffice as an excuse.

Surveys of breeding colonies carried out in 1994 and 1995 for the National Avian Research Centre were facilitated by Mohammed Al Bowardi, Manager of the Office of Sheikh Mohammed bin Zayed al Nahyan, to whom I am especially grateful.

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An annotated and illustrated checklist of Tiger Beetles recorded from the Al Ain/Buraimi region of Eastern Arabia (Coleoptera: Cicindelidae)

by Michael Gillett

Four species of Tiger Beetles are recorded from the Al Ain/Buraimi region: *Megacephala euphratica*, *Lophyridia diania*, *L. fischeri elongatosignata* and *Lophyra histrio*. The beetles are illustrated and additional information is given in note form.

Introduction

Tiger Beetles are medium to large sized predatory beetles that often have attractive markings and beautiful metallic colouration. Some members of the group are relatively well known to general naturalists, whilst the group as a whole (about 2,000 species worldwide) is best represented in the tropical regions. According to some entomologists, the Tiger Beetles are best regarded as a sister group, the supertribe Cicindelitae, to the large ground beetles of the supertribe Carabidae in the subfamily Carabinae (Erwin & Sims, 1984). Both groups are of ancient lineage and have apparently diverged with the evolution of specialised hunting techniques in both the larvae and the imagines of Tiger Beetles. However, another view is to regard Tiger Beetles as a separate family, the Cicindelidae and this is the way that the Arabian fauna has been treated in recent reviews (Wranik et al, 1991; Cassola & Rihane, in press). Three of the five tribes of Tiger Beetles are not represented in Arabia; these are the Ctenostomatini (Neotropical and Madagascan), the Collyrini (Oriental and Australian) and the Mantichorini (South African). The other two tribes, the Megacephalini and the Cicindelini, do occur in Arabia.

Checklist

Tribe Megacephalini

Megacephala euphratica euphratica Latreille & Dejean, 1822. (Fig. 1)

Distribution: Spain (Cartagena; Andalusia); Rhodes; Cyprus; North Africa; Sinai; Syria; Caucasus; Iraq; Iran; Pakistan; Kuwait; United Arab Emirates.

Arabian Records: Al Wafra and Jal al Zor, Kuwait (Apr.) (Al-Houty, 1989); Ain al Faydah, U.A.E. (Jan., May, June).

Status: This is the only member of the genus to penetrate the European and Oriental regions. Throughout its very wide area of distribution, the species shows little variation from the type form — body metallic green with violet reflections and legs, antennae and the lunules at the apex of the elytra testaceous. A blue form, var. *armeniaca*, Castelnau 1834, is described only from the northern part of the range. This Tiger Beetle was first recorded from the UAE on the basis of the discovery at Ain al Faydah in 1991 of larval burrows and a head capsule of a dead

هذا المقال يسلط الضوء على بعض فصائل الخنافس والتي تُعرف بخنافس النمر والتي توجد في منطقة العين.

beetle (Gillett, 1992). The larval site suffered several bouts of degradation in the form of fire, flooding and horticultural development and eventually disappeared. The beetle proved to be elusive, although an incomplete dead specimen was found in June 1993 and used to make the habitus drawing (Figure 1). Eventually live beetles were found by torchlight at night during May 1994. They proved to be relatively abundant in an area of salt-encrusted sand at Ain al Fahdah and larval burrows of all sizes are common in the same area. There is a further record for January 1995, when several of these beetles turned up in unbaited pitfall traps in the same general area. The beetle is not known from any other sites and the colony at Ain al Faydah may represent a relict population of the beetle that became isolated due to the climatic changes which have occurred over the past several thousand years.

Biology: Apart from its being a strictly nocturnal species, frequenting flat regions of salt-encrusted desert near to permanent water, little is known about the biology of *M. euphratica*. The larval burrows (15-30 cm deep) of this species occur individually and in clusters in exposed areas of firm sand. Larval prey is possibly ants, but that of the adult beetle is unknown.

Tribe Cicindelini

Lophyridia diania (Tchitscherine, 1903). (Figure 2)

Distribution: Iran; Iraq; Pakistan; Baluchistan; ?Kuwait; Oman.

Arabian records: ?Kuwait (as *C. lunulata* Fabricius, 1781) (Al-Houty, 1989); Wadi Aboule, Oman (Apr.- Jun., Sep.-Oct.)

Status: *L. diania* was first described from inland areas of Iran, but is reported by Fowler (1912) as common near to Karachi, Pakistan and also to occur in the "Persian Gulf." Its discovery in Wadi Aboule is the first confirmed record for Oman and Arabia. In Oman, the only records to date are from Wadi Aboule where the insect occurs exclusively on flat rocky beds over which channels of fresh water flow. It will probably be found eventually in many other fresh water sites in the Hajar Mountains. The insect is overall a dark metallic blue with white markings, in which the upper middle spot is always more or less confluent with the third lateral spot (Figure 2). A photograph in Al-Houty's book appears to be of this insect and accounts for the record given above, but this specimen may also be referable to *L. aulica* Dejean or *L. littoralis* Fabricius.

Biology: Little is known about the biology of this

species, except that it appears to be associated with fresh water. Like most diurnal Tiger Beetles, it is extremely agile and flies and runs very quickly. It also has the remarkable habit, for an insect with such long and delicate legs, of swimming to avoid capture. It is able to negotiate several feet of water quite quickly and, on reaching the shore, it then runs or flies away. This ability is shared with *L. fischeri elongatosignata* which is often found in company with the present species.

***Lophyridia fischeri* (Adams)**

ssp. *elongatosignata* (Horn, 1922). (Figure 3)

Distribution: The nominate subspecies occurs in Europe.

Arabian Records: This subspecies has already been recorded from Oman by Cassola & Rihane (in press), but was not found in Yemen (Wranik et. al. 1991). This Tiger Beetle is very abundant at sites near to running and standing water in the Hajar Mountains of the Sultanate of Oman (Wadi Aboule; Wadi Musah).

Status: Most of the specimens from Oman are dark brown with a coppery reflection and with lighter markings. The head, pronotum and legs have metallic green reflections. In some, the elytral markings (Figure 3) may be reduced in size. A small series of black individuals, including one with metallic blue reflections, was taken in Wadi Aboule (Nov.) and have similar light markings to the brown forms, but are distinctly less pilose, especially on the sides of the pronotum.

Biology: *L. fischeri elongatosignata* is much more abundant than the other species of Tiger Beetles in the Al Ain/Buraimi region and it is found throughout the year. It probably occurs in many other wadis in the Hajar Mountains in both Oman and the UAE, but this needs to be confirmed. In Wadi Aboule, larval burrows which probably belong to this species have been found in damp clay soils that are partly shaded by vegetation, including oleander bushes. The insect is diurnal and favours bright sunshine. It runs across the rocky beds of water courses, including parts covered with shallow water and is also found on floating mats of algae. It is very agile and takes to flight rapidly to avoid capture. Like *L. diania*, it will also occasionally make good its escape by swimming across pools of water.

***Lophyra* (s. str.) *histrio* (Tchitscherine, 1903). (Figure 4)**

Distribution: Pakistan; Iran; Oman; United Arab Emirates.

Arabian Records: Masira Island, Oman (Apr. 1976 - Wranik et al, 1991); Wadi Aboule, Oman (Apr.-Jun., Oct.); Al Ain (Al Muwaiji; Al Jimi), UAE (Mar., Oct.); Ain al Faydah, UAE (Apr., May). Not recorded from Yemen, Saudi Arabia or Kuwait.

Status: This species could be confused with two other very similar Asian species, *L. catena* Fabricius, 1775 (India; Sri Lanka; Burma) and *L. cancellata* Dejean, 1825 (India; China) which share the basic colour scheme of black-green, antler-like markings on an ivory background. They can be separated by a number of characters: the genae (cheeks) of *L. catena* are densely pilose, those of the others glabrous; the trochanters of *L. histrio* are dull red, those of *L. cancellata* are metallic. However, Fowler (1912) chose to separate the latter two

species on the basis of elytral markings by stating that in *L. cancellata* the dark markings join the dark elytral suture at three points near the base, middle and apex (Figure 4B), whereas in *L. histrio*, the confluence nearest to the base is missing (Figure 4A). The elytral markings of Tiger Beetles are renowned for their variability, and it seems that the elytral pattern of *L. histrio* in this region is no exception and specimens with the pattern shown in Figure 4B are actually commoner than those in Figure 4A, whilst intermediate types also occur.

Biology: In the Al Ain/Buraimi region, this species is by far the most widely distributed of the Tiger Beetles, but it is also the least common. It is diurnal in its behaviour and only found under bright sunny conditions. In the Omani wadis, it is usually found on the flat rocky surfaces near to running water, often in the company of *L. fischeri elongatosignata* and *L. diania*. Prey species in this habitat are probably varied and may include dipterous flies, ground hoppers (*Paratettix* sp.) and small hymenopterous insects. In Al Ain, the two records are for gardens without standing water, whilst at Ain al Faydah, it occurs in low sand dunes with some vegetation of the salt bush type and, although there is a *fajaj* channel with running water near to the dunes, the beetle does not seem to be strongly associated with water. Scattered larval burrows, probably belonging to this species, also occur in hollows in these dunes. The prey of both adults and larvae in this situation is likely to be ants.

Discussion

The original (unpublished) compilation of this report represented a small triumph in that the only literature source available to me covering Tiger Beetles, was an old one dealing just with the fauna of British India (Fowler, 1912). Yet this provided the key to unlocking the identity of three of the four Al Ain/Buraimi Tiger Beetles. The fourth, *L. fischeri elongatosignata*, was correctly identified by Dr. F. Cassola, who has also checked and confirmed the identification of the other three species. The Arabian Cicindelidae have received little attention over the years, but some new bibliography has recently become available. The fauna of Kuwait is dealt with by Al-Houty (1989), that of Yemen by Wranik et. al. (1991) and that of Europe including the Mediterranean region by Trautner and Geigenmuller (1987). A review of the Omani species of Tiger Beetles is currently in press (Cassola and Rihane).

In general terms, it must be recognised that poor habitat diversity is probably responsible for the relative paucity of Tiger Beetle species in the Al Ain/Buraimi region and in Arabia in general. The present checklist deals only with a relatively small inland area and, doubtlessly, there may be more species yet to be recorded from this area. However, any regional list would benefit more from surveys further afield, in sand desert and along the coast, both of which should have their own characteristic species.

Acknowledgement

The author would like to kindly thank Dr. Fabio Cassola for checking the identification of the Tiger Beetles and

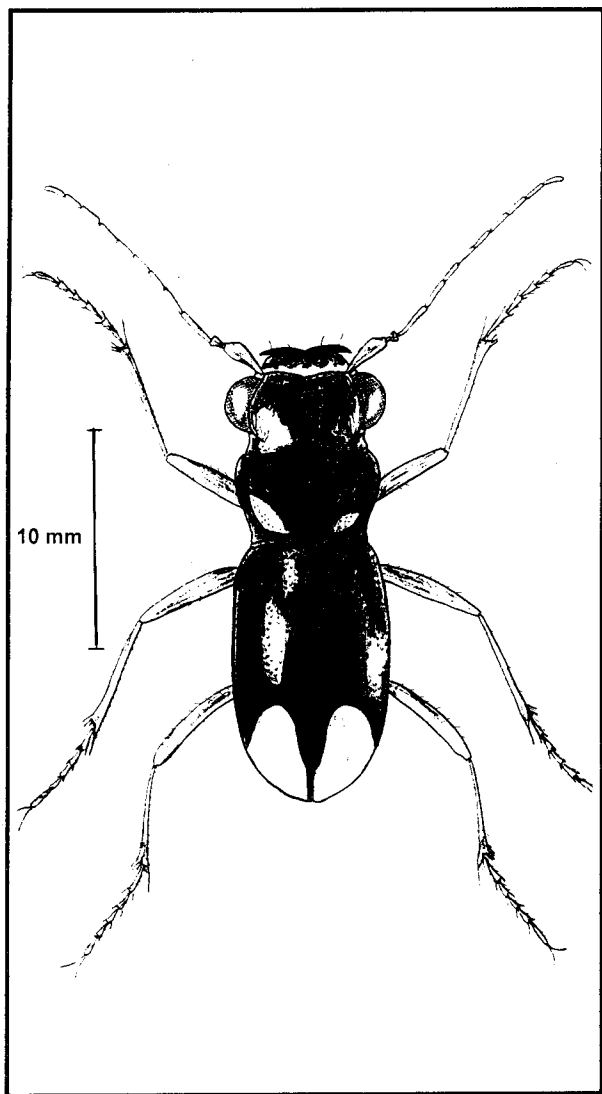


Fig. 1 – Habitus of *Megacephalus euphratica euphratica*.

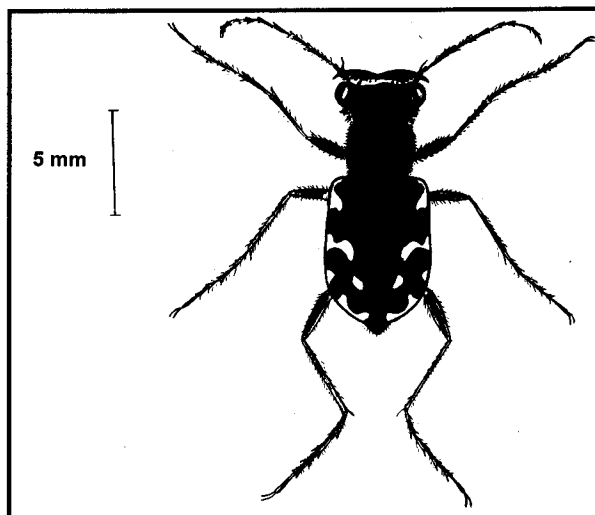


Fig. 2 – Habitus of *Lophyridia dianla*.

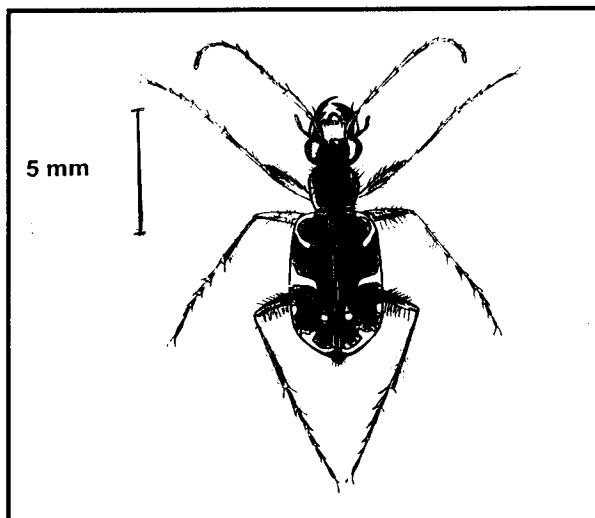


Fig. 3– Habitus of *Lophyridia fischeri elongatosignata*.

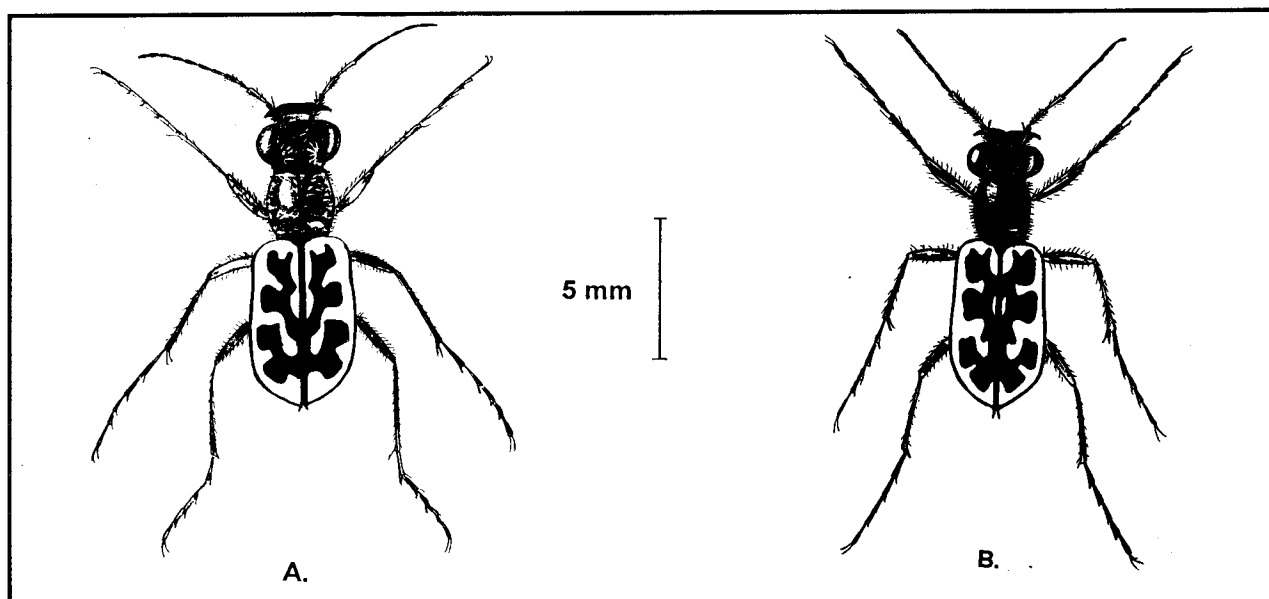


Fig. 4 – Habitus of *Lophyra histrio*. A. Elytral pattern of type form. B. Elytral pattern similar to that of *L. cancellata*.

for providing information on their distribution. Representative specimens of all four species have been retained by him, whilst material referable to *L. fischeri elongatosignata*, and *L. diania* has been sent to the Oman Natural History Museum, Muscat.

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An Updated and annotated list of butterflies recorded from the UAE, the Musandam Peninsula and the Buraimi - Al Mahdah region of Oman

by Michael Gillett

A new list of butterflies recorded from the UAE and neighbouring areas of the Sultanate of Oman (Musandam and Buraimi/Al Mahdah) has been compiled using new records made by the author and records from the literature. The list contains the scientific and English popular names of 47 species. Species newly recorded from UAE territory include the *Clouded Yellow* (*Colias crocea*) and the *Pomegranate Playboy* (*Deudorix livia*).

The first list of UAE butterflies was that given by Larsen (1984) in his book on Arabian butterflies in which some 27 species were recognised in the region; detailed records for these are given by the same author in a parallel technical publication (Larsen, 1983). More recently, Brown (1992) has compiled a list of 35 butterflies recorded by the ENHG from the UAE and the Musandam enclave of the Sultanate of Oman. The purpose of the present list is to update these previous ones, both by incorporating new records and by tidying up the scientific and the popular nomenclature of the insects that are included. I have widened slightly the area to which the list pertains by including those parts of neighbouring Oman which are easily and frequently reached by naturalists based in the UAE, namely the Buraimi-Al Mahdah regions and nearby wadis. The new list contains the names of 47 species, including nine recorded by the present author, but not given by Brown; these are shown in bold type in the list. Some of these additions represent new records for the UAE, whilst others are for butterflies found so far only in nearby Oman. Three species of lycaenid butterflies, not found in Brown's list and not encountered by the

هذا المقال يقدم قائمة حديثة ومعدلة حول جميع فصائل الفراشات في دولة الامارات العربية المتحدة.

present author, are also included on the basis of specific records given for the UAE or the Musandam by Larsen (1983). Where appropriate, the list is annotated with footnotes giving records and other information.

PAPILIONIDAE

Papilioninae

1. *Papilio machaon muetingi* Seyer, 1976. The Swallowtail
2. *Papilio demoleus demoleus* Linnaeus, 1764. The Lime Butterfly.

PIERIDAE

Pierinae

3. *Artogeia krueperi* ?devta (de Niceville, 1883). Krueper's Small White
4. *Pontia glauconome* (Klug, 1829). The Desert White
5. *Euchloe belemia belemia* (Esper, 1799). The Green Striped White*.
6. *Elphinstonia charltonia amsell* (Gross & Herbert, 1975). The Desert Black Tip.

7. *Anaphaeis aurota* (Fabricius, 1793). The Caper White.
8. *Colitis calais amatus* (Fabricius, 1793). The Small Salmon Arab
9. *Colitis phisadia phisadia* (Godart, 1819). The Blue Spotted Arab
10. *Colitis danae eupompe* (Klug, 1829). The Scarlet Tip^b.
11. *Colotis liagore* (Klug, 1829). The Desert Orange Tip
12. *Madais fausta fausta* (Oliver, 1804). The Salmon Arab

Coliadinae

13. *Catopsilia florella* (Fabricius, 1775). The African Emigrant^c.
14. *Euremia hecabe solifera* (Butler, 1875). The Common Grass Yellow
15. *Colias crocea* Geoffroy, 1785. The Clouded Yellow^d.

LYCAENIDAE

Theclinae

16. *Myrina silensus nzoiae* Stoneham, 1937. The Fig Blue
17. *Apharitis acamas hypogyas* (Butler, 1886). The Leopard Butterfly^a.
18. *Apharitis myrmecophila merecophila* (Dumont, 1922). The Desert Leopard
19. *Deudorix livia* (Klug, 1834). The Pomegranate Playboy^f.

Polyommatae

20. *Anthene amarah amarah* (Guerin, 1849). The Leaden Ciliate Blue^g.
21. *Lampides boeticus* (Linnaeus, 1767). The Pea Blue.
22. *Tarucus rosaceus* (Austat, 1885). The Mediterranean Pierrot.
23. *Tarucus balkanicus* (Freyer, 1844). The Balkan Pierrot
24. *Zizeeria karsandra karsandra* (Moore, 1865). The Asian Grass Blue
25. *Azanus jesus* (Guerin, 1847). The African Babul Blue.
26. *Azanus ubaldus* (Cramer, 1782). The Desert Babul Blue
27. *Pseudophilotes vicrama clara* (Christoph, 1887). The Baton Blue^h.
28. *Agrodiaetus loewii* ssp. (Oman ssp) (Walker, 1870). Loew's Blue
29. *Chilades parrhasius* (Fabricius, 1793). The Small Cupid
30. *Chilades galba* (Lederer, 1856). Lederer's Cupidⁱ.
31. *Freyeria trochylus trochylus* (Freyer, 1844). The Grass Jewel.

NYMPIALIDAE

Danainae

32. *Danaus chrysippus chrysippus* (Linnaeus, 1758). The Plain Tiger

Nymphalinae

33. *Cynthia cardui cardui* (Linnaeus, 1758). The Painted Lady
34. *Junonia orithya here* (Lang, 1884.) The Blue Pansy

35. *Junonia hierta cebrene* (Trimen, 1870.) The Yellow Pansy^f.

36. *Hypolimnas misippus* (Linnaeus, 1767). The Diadem^k.

Satyrinae

37. *Ypthima asterope asterope* (Klug, 1832). The Common Three-ring
38. *Ypthima bolanica* (Marshall, 1882.) The Baluchi Ringlet^f.
39. *Hipparchia parisatis* (Kollar, 1850). White Edged Rockbrown

HESPERIIDAE

Coeliadinae

40. *Coelides anchises jacunda* (Butler, 1881). The Giant Skipper^m.

Pyrginae

41. *Spialia doris doris* (Walker, 1870). The Desert Grizzled Skipper
42. *Spialia colotes semiconfluens* (de Jong, 1978.) The Transvaal Grizzled Skipper
43. *Spialia zebra bifida* (Higgins, 1924). The Zebra Grizzled Skipper
44. *Gomalia elma elma* (Trimen, 1862). The African Mallow Skipper

Hesperinae

45. *Pelopidas mathias mathias* (Fabricius, 1798). The Lesser Millet Skipper
46. *Pelopidas thrax thrax* (Hubner, 1821). The Millet Skipperⁿ.
47. *Gegenes pumilio* (Hoffmannsegg, 1804). The Pygmy Skipper.

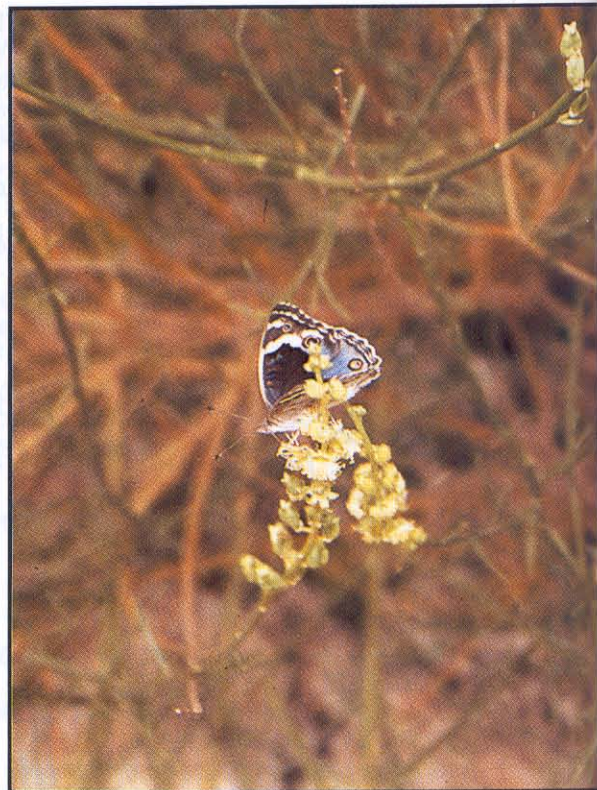
Notes:

- a. Dubai February 1994 — also old records in Larson (1983) for Sharjah and Musandam.
- b. Al-Mahdah (Oman) May 1992 at *Acacia tortilis* blossom with throngs of other pierid, lycaenid and nymphalid butterflies — otherwise only known in eastern Arabia from a few coastal sites in N. Oman.
- c. The Al Ain region witnessed the arrival of large numbers of this strong migrant in January and February 1995.
- d. New record for the UAE - Sir Bani Yas Island 17/11/94, but not surprising as this very strong migrant has been recorded from Kuwait, eastern Saudi Arabia, Bahrain and Qatar.
- e. Larson (1983) gives an old record for Al Ain — regularly found in Wadi Aboule near Mahdah (Oman).
- f. New record for the UAE with 2 female specimens observed on flowers in a garden in the Al Muwajji district of Al Ain in September 1994 and May 1995. Possibly as migrants or from breeding colonies in nearby data plantations. The species is widespread in Arabia.
- g. A record from the UAE is given by Larsen (1983).
- h. Not recorded by the author, but only known in Arabia from the Musandam (Larsen, 1983).
- i. A record from the UAE is given by Larsen (1983).
- j. Two specimens recorded from Mahdah (Oman) in May 1992 under the circumstances described for The Scarlet Tip above (b.). In late September and early October 1995, this very pretty butterfly was present in number in Wadi Mussah, Oman, at flowering shrubs and trees (including an unidentified yellow-flowered *Acacia*). Also collected at *Acacia* blossom in Wadi Aboule, Oman, 19 October 1995.
- k. Another strongly migratory butterfly; it was first recorded from Dubai in 1992 by Khan & Huda and was present in Al Ain January 1995.
- l. Larsen (1983) gives an old record from the zoo area of Al Ain — regularly found in the wilder parts of wadis in the Hajar Mountains (Oman), whereas *V. asterope* is found (often in large numbers) in the plantations in the same wadis.
- m. A single record from Wadi Aboule, Oman, at *Acacia* blossom on 19 October 1995. Apparently this unmistakable species is common in wadis on the east-facing side of the Hajar Mountains (outside the area covered by this list). Large numbers were present in Wadi Kitnah, Oman in late October/early November 1995.
- n. Regularly found in plantations around Mahdah (Oman) and because it is a known migrant, it probably also occurs in cultivated areas around Al Ain, but to date I have only found *P. mathias* there.



Lime Butterfly *Papilio demoleus demoleus*.

Picture by Edmond Llobrera (see p.16)



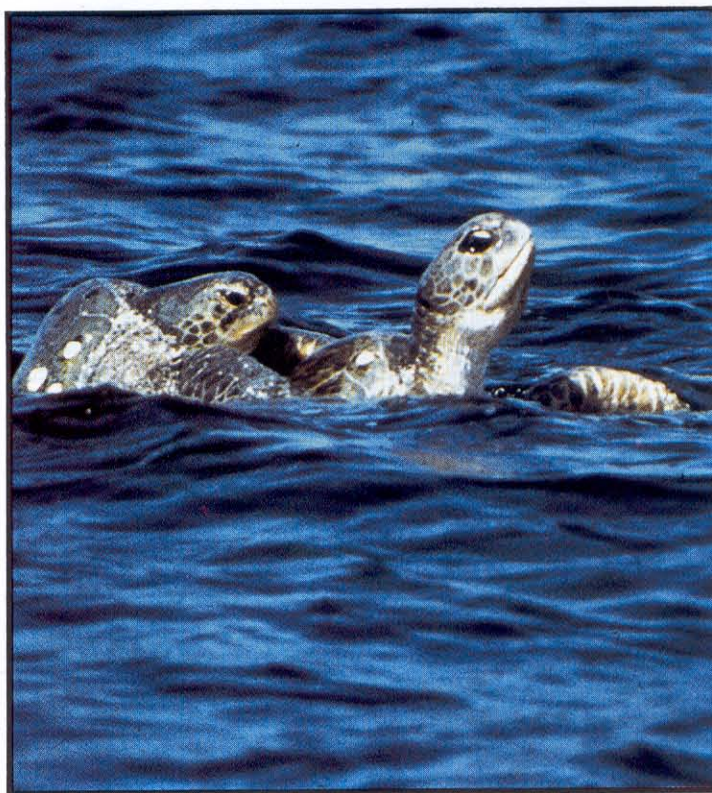
Female Plain Tiger (*Danaus chrysippus chrysippus*) feeding on nectar of the mignonette, *Ochradenus aucheri* (Wadi Aboule, Oman, April 1994).

Picture by Michael Gillett (see p.16)



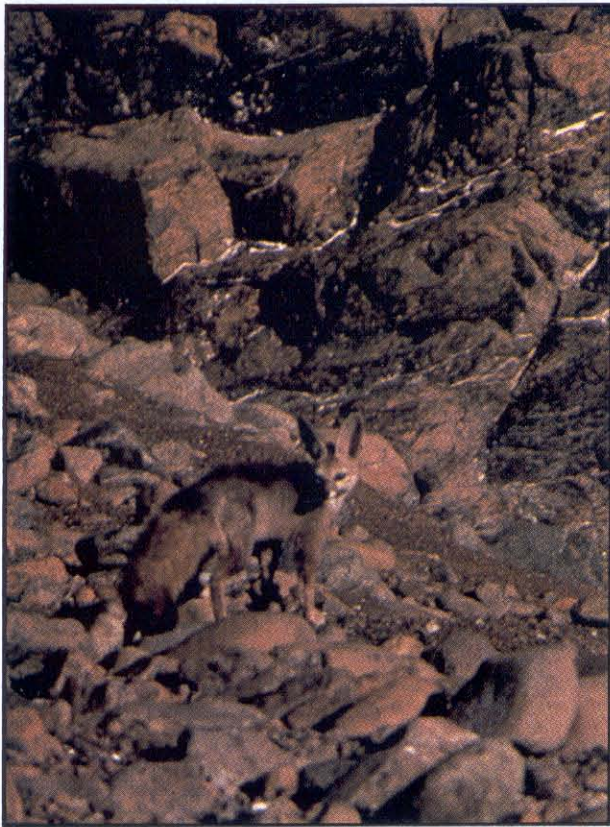
Female Blue Pansy (*Junonia orithya here*) at flowers of *Ochradenus aucheri* (Wadi Aboule, Oman, April 1994).

Picture by Michael Gillett (see p.16)



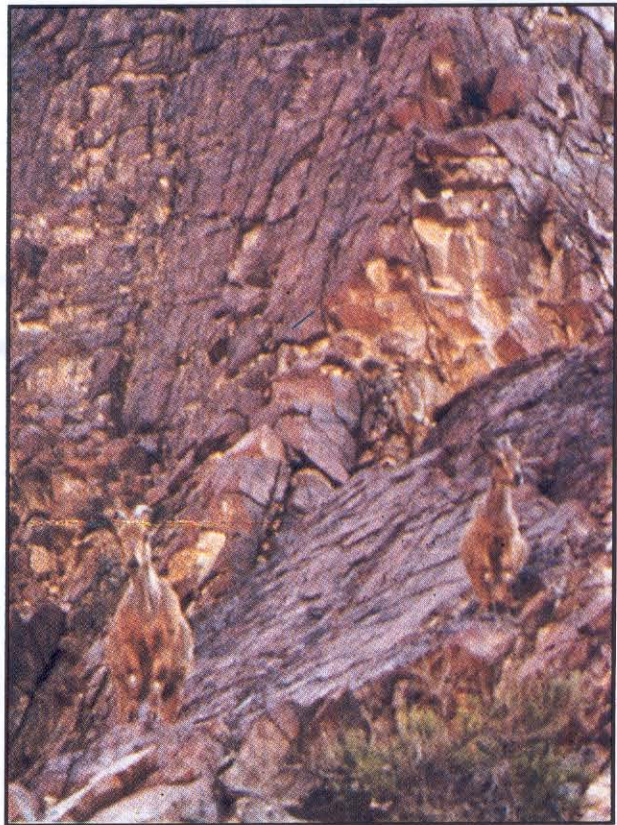
Green Turtle *Chelonia mydas*.

Picture by Robert Baldwin. (see p.9)



Blanford's Fox *Vulpes cana*.

Picture by C. & T. Stuart /Arabian Leopard Trust . (see p. 20)



Female Arabian Tahr *Hemitragus jayakari* with young.

Picture by C. & T. Stuart /Arabian Leopard Trust . (see p. 20)



Egyptian Spiny Mouse *Acomys cahirinus*.

Picture by C. & T. Stuart /Arabian Leopard Trust . (see p. 20)

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Mammals of the UAE mountains

by Chris and Tilde Stuart

Introduction

Between March and May 1995, the first detailed scientific study of the animals of the UAE's Hajar Mountains was undertaken by two expert South African trackers, Chris and Tilde Stuart, of the organisation African Carnivore Research in South Africa.

The study was undertaken for the Arabian Leopard Trust, established in 1994 by Emiri Decree by Sharjah Ruler and UAE Supreme Council member His Highness Dr. Sheikh Sultan bin Mohammed al Qassimi.

Following the completion of the study, the Stuarts produced a report for the ALT, entitled 'Minute to Midnight,' from which this article is taken.

ARABIAN LEOPARD *Panthera pardus nimr*

The original objective of this survey was to establish

- i. the distribution of the leopard within the United Arab Emirates and adjacent areas of Oman
- ii. at what densities they occur, and
- iii. what measures could be taken to ensure their long-term survival in the region.

Although we covered extensive areas within the mountain ranges of the UAE and adjoining sector of Oman, leopard signs (fresh tracks) was only found at one location. We examined several hundred trees for evidence of claw scratchings, checked numerous locations that we considered would be utilised by leopards if they were present, and walked in excess of 300 km along trails and 4WD tracks. In our experience in areas with low leopard densities one can expect to find some evidence of their presence, either in the form of droppings, urine scratch patches, tree scratchings, remains of larger prey (for example goat) and pug marks. In an arid environment, such as the mountains of the UAE, droppings remain intact for several months, as do the remains of larger kills, particularly as in this case where large scavengers are absent. As dung, urine and tree scratchings almost certainly serve a territorial marking function, had there been leopards resident in the area surveyed, we are confident that we would have found at least some evidence of this!

It is clear from reports of leopard distribution that the extreme northern territory of the Rus al Jibal (often referred to as the Musandam) is of critical importance to the continued survival of the leopard in this part of the Arabian Peninsula. Although it was beyond the brief of this survey to examine in any detail the situation in Omani territory some comments are necessary.

حتى الآن لم تلق الحيوانات البرية الجبلية في دولة الامارات العربية المتحدة نصيبها من الدراسة الكافية.. هذا المقال يلقي الضوء على دراسة اجريت في مطلع هذا العام وتؤكد وجود فصيلة من الحيوانات لم ترصد من قبل في شرق شبه الجزيرة العربية بأكملها بالإضافة الى فصيلة أخرى كان يعتقد سابقاً أنها قد انقرضت.

The Musandam as a whole is rugged, deeply incised, mountain country, with very low human population density. Little remains of the wild ungulate assemblage by all accounts, but remnant populations of wild goat, wild sheep, Arabian tahr and Nubian ibex could possibly occur. However, the few records available are old and no detailed survey of the mammal fauna of this area has been undertaken. Although leopards are opportunistic feeders there is little in the way of natural prey available to them and they almost certainly have to rely on domestic and feral stock, principally goats, thus placing them in constant conflict with man.

Although leopards are said to have been killed in the UAE sector of the Rus al Jibal, (one was shot and wounded near Shimal, in Ras al Khaimah, in August 1995. Eds) from evidence examined it would seem these animals were actually hunted within Omani territory. Nevertheless, given adequate protection in the form of a hunting moratorium and the proposed international reserve, leopards and natural prey numbers would almost certainly increase. Given the extent and limitations of our survey and based on our experience in other locations, it seem unlikely that more than 20 adult leopards survive in these mountains, and in fact there could be far less than this figure.

If one examines the remaining records one finds that they all fall to the west of the Dibba/Masafi/Fujairah road; two of these records are relatively old. We discarded a number of available records, because of lack of hard evidence and doubts about validity. We personally doubt whether there are at present any leopards resident in this north/south corridor, but the little available evidence indicates that individuals do move into the area on a temporary basis. Within the proposed "Hajar" reserve to the east, although the authors found no evidence of leopards, hunters reported that leopards do enter these mountains during the summer months, visiting the few permanent wadi pools. This makes them highly vulnerable to hunting, and naturally this applies to other species, such as the tahr, as well.

It is not clear whether these are animals dispersing from the Musandam but this seems most likely, as no verified records are further than 150 km from that range.

Certainly movement between the Musandam and the Hajar would present no difficulty to leopards and, given protection, it is almost certain that they would repopulate the latter range. What must be remembered is that leopards living in arid areas with low prey densities occupy home ranges of several hundred kilometres and therefore the proposed mountain reserves alone would be inadequate to conserve a viable number of these cats. This is why we strongly urge the authorities to proclaim the corridor to allow free and unhindered movement of leopards between the two proposed reserves. Because of the limitations of time it was not possible to adequately survey the area adjoining the Sultanate of Oman in the south, but this should be considered in order to establish what, if any, leopard movement is taking place from this area.

CARACAL *Felis caracal schmitzi*

The caracal has a wide distribution within the area surveyed and although concern has been expressed about its status, particularly the numbers killed by farmers, it is our feeling that the population can sustain these losses as yet. They would, of course benefit from the establishment of the reserves proposed in this report. In areas of South Africa where persecution of this cat is extremely high, numbers are maintained. Despite this it would be worthwhile to include this species within the hunting moratorium, but with the proviso that proven stock killers could be hunted under permit/guidance.

We collected a number of droppings, mainly from the Hajar study area, and these will be analysed as to content. cursory examination indicates a high incidence of goat hair, with some bird and reptile remains.

GORDON'S WILDCAT *Felis silvestris gordonii*

During the current survey we caught one male within the Hajar study area and tracks of this species were located to the north-east of Jebel Dad. The distance from any settlement would rule out a domestic or feral cat.

BLANFORD'S FOX *Vulpes cana*

This is a new record for the United Arab Emirates and constitutes a considerable extension of this fox's known range. The records included three individuals trapped and released at one locality, as well as tracks, hair samples and droppings at other sites. A complete report has been submitted to *Canid News* (IUCN/SSC Canid Specialist Group).

RED FOX *Vulpes vulpes*

This is by far the most widespread and abundant of the carnivores occurring within the areas surveyed. Although red foxes penetrate the larger wadis into the higher mountain ranges, densities were at their highest in the foothill area and in close proximity to small rural settlements. A large sample of scats was collected and the contents will be analysed in due course and the findings published.

ARABIAN TAHR *Hemitragus jayakari*

The sighting (photographic voucher material) of a female Arabian tahr accompanied by a kid of between two and three months of age during the survey was the first positive evidence that this ungulate still survives in the United Arab Emirates. This observation was made in the central area of the proposed "Hajar" reserve. This species is highly vulnerable to hunting as it needs to

drink every day and the perennial water holes are well known to local hunters. Another problem faced by the tahr, and the only other wild ungulate surviving here, the Arabian mountain gazelle, is severe competition for grazing with the high densities of feral goats and donkeys.

As we have suggested previously, the few permanent waterholes remaining during the dry season, both in the Hajar and the Musandam, should be located and monitored in order to attempt to establish surviving numbers of tahr and other species. The implementation of an effective preliminary three year hunting ban and the establishment of montane reserves are essential to the survival of this and a number of other species in the UAE.

ARABIAN GAZELLE *Gazella gazelle cora*

The only evidence of this small antelope discovered during the course of the survey was in the form of distinctive dung middens in the northern sector of the Hajar, within the proposed reserve. The middens were located on wadi plateaux but none contained fresh droppings. It is likely however, that small numbers do survive here.

EGYPTIAN SPINY MOUSE *Acomys cahirinus*

The first verified live records, with voucher specimens, of this spiny mouse from the United Arab Emirates, were collected during the course of the survey. They are now known to be present in the Musandam and the Hajar and further collecting will almost certainly show them to occur more or less continuously through these mountain ranges.

BRANDT'S HEDGEHOG *Paraechinus hypomelas*

This hedgehog was found to occur widely in the montane areas surveyed, as evidenced by roadkills, live captures and tracks. Densities were particularly high in the Wadi Shawka area where they were caught in traps set for foxes. The hedgehogs seemed to make extensive use of 4WD tracks for their excursions.

LOCALITIES OF THE MAJOR SURVEY AREAS

1.	Wadi Halilah	25°58'36"N	56°09'37"E
2.	Wadi Shah	25°53'27"N	56°07'32"E
3.	Wadi Hayl	25°51'05"N	56°03'55"E
4.	Wadi Bih	25°47'50"N	56°09'46"E
5.	Wadi Bih	25°48'49"N	56°11'16"E
6.		25°47'23"N	56°13'07"E
7.	Wadi Qada'a	25°46'29"N	56°05'31"E
8.	Wadi Qada'a	25°45'21"N	56°07'29"E
9.		25°35'25"N	56°08'30"E
10.		25°30'23"N	56°04'39"E
11.		25°30'47"N	56°07'28"E
12.	Wadi Ziqt	25°29'45"N	56°16'21"E
13.	Wadi Wurreyah	25°24'36"N	56°14'45"E
14.	Wadi Wurreyah	25°23'05"N	56°17'33"E
15.	Wadi Wurreyah	25°21'54"N	56°14'37"E
16.	Marbad	25°20'41"N	56°05'20"E
17.	Safad	25°13'17"N	56°18'00"E
18.	Wadi Farfar	25°09'47"N	56°11'46"E
19.	Wadi Sahem	25°06'52"N	56°12'45"E
20.	Wadi Shawka	25°05'37"N	56°03'23"E
21.	Fill breeding site	25°01'59"N	55°58'18"E
22.		24°59'01"N	56°16'00"E

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NOTES AND QUERIES

***Apsteiniella naviauxi* Baroud 1977 — an extremely rare scarab dung beetle from Al Ain (Coleoptera: Scarabaeidae: Aphodiinae)**

The following record represents a significant addition to my preliminary listing of Al Ain scarab dung beetles (Gillett, 1995). It documents only the third known specimen of the small aphodiine *Apsteiniella naviauxi* Baroud 1977 and represents the addition of both a new species and a new genus to the recorded fauna of the UAE.

The beetle was captured at about 20.00 h on 27 February 1995; a day on which several light rain showers were experienced in the Al Ain region. It was collected, together with a small number of other beetles, from the roof of a car parked beneath a fluorescent light in an open-sided garage at the Sheikh Khalifa Scientific Centre for Camel Research facilities in the desert between Hilli and Bida bint Saud. The beetles included two other small aphodiine dung beetles, two specimens of *Catharsius inermis* (Scarabaeidae: Scarabaeinae) and a small click beetle (Elateridae). The floor of the garage was littered with hundreds of dead beetles including *C. inermis*, *Scarabaeus cristatus* (Scarabaeidae: Scarabaeinae) and *Phylognathus excavatus* (Scarabaeidae: Dynastinae) showing that the garage's light acts as a powerful attractant for beetles and that the area contains a numerous and varied scarabaeid fauna.

The aphodiine dung beetles did not appear to be very exciting finds, but on arrival home, they were, nevertheless, examined with a hand lens. Surprisingly, the largest beetle turned out to be most unusual in that it had a large number of tiny teeth on the edges of the front part

of the head (clypeus). This suggested that the beetle did not belong to the large and common genus *Aphodius*. Eventually, using an article newly available to me (Pittano, 1984) the beetle was identified as *Apsteiniella naviauxi*. Only one other member of this genus has been described and is recorded only from central Asia.

Only two previous specimens of *A. naviauxi* have ever been recorded — the type specimen from Iraq and an example, captured in February 1982 at Ain Dar in the Eastern Province of Saudi Arabia, that was examined by Pittano. The beetle is, therefore, apparently extremely rare. However, it is also probably that the species may have been under recorded perhaps because it is active for only a very limited space of time. Future collecting in the Al Ain region at light and after rain showers in January-March may lead to further records.

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Defence mechanism of the darkling beetle *Priontheca coronata ovalis* Ancy 1881 (Coleoptera: Tenebrionidae)

Darkling or nocturnal ground beetles belong to the very extensive family *Tenebrionidae*. Many coleopterists find the tenebrionids rather dull and they are not favoured objects of study. Nevertheless as an amateur coleopterist working and living in the UAE, I find that I can hardly ignore these beetles since they dominate the local fauna. In fact when you get to know them, the tenebrionids, far from being "entomological untouchables," are interesting in their own right. One becomes increasingly aware of their great biological and morphological diversity and one can only admire the sheer survivability of the tenebrionids under the very adverse conditions imposed by desert life. Whilst the scarcity of food and the acquisition and conservation of water pose particularly severe problems for the survival of tenebrionids in deserts, defence from predators is also an important factor in the equation of survival.

Such defences in tenebrionids, depending upon the species concerned, may take several forms including effective camouflage, speed in running, the ability to "swim" in sand and the use of the base of spiny plants as a retreat when threatened. The cuticle of many tenebrionids is extremely hard (e.g. *Tentyrina* and *Mesostena* spp.) which not only aids in water conservation, but also makes predation by other invertebrates unlikely.

ly. Even the less well armoured *Adesmia cancellata* has been seen under field conditions to successfully resist determined attacks by the much larger carabid ground beetle *Anthia duodecimguttata*. Aggressive defence is also practised by many species and in most cases is chemical in nature. Many tenebrionids can squirt out jets of malodorous black fluid from the anus; this is an aqueous solution of quinones and contains other unknown chemical constituents. It is effective at deterring both invertebrate and vertebrate predators and its importance may be gauged by the diversion of precious water reserves in this way. Although many tenebrionids are of large size (e.g. *Blaps* and *Pimelia* spp.), they do not, like other beetles, defend themselves by biting. However, I have recently discovered one large species to have an aggressive mechanical defence, that is every bit as effective as biting.

I refer to the beetle *Priontheca coronata ovalis*, the largest of the UAE tenebrionids. This species has a curious morphology when compared with others. The edges of the wing covers are fitted with an unbroken line of sharp, thorn-like spines and rows of smaller spines are found along the inside edge of the middle and hind tibia. The beetle is widespread around the Al Ain region, but is not often seen. In October 1994, I came across

one of these beetles at night in sand dunes near the Al Markhaniya district of Al Ain. As I tried to pick it up with my bare hands, I experienced a painful series of concerted pin-pricks on my index finger and thumb, such that I was forced to let the beetle go by flinging it quite some distance away. No blood was drawn, and the skin, if not the ego, was unpunctured, but it appears that as I tried to seize the beetle, it used its middle and/or hind legs to pinch my fingers against the body spines. In retrospect, the use of the spines in this way should have been obvious, but at the time it was unsuspected. The device is reminiscent of the ones on the

forelegs of preying mantises which are used to seize prey. Certainly such a mechanism could be particularly effective in deterring vertebrate predators such as hedgehogs and foxes whose first contact with *Prionthe- ca* is likely to be with their noses. Significantly, when molested, *Prionthe- ca*, unlike the other large tenbrionids, does not offer any chemical defence. Is it possible that the evolution of the interlocking elytral and tibial spines has rendered chemical defence unnecessary? If so then the beetle would gain by not having to commit any of its water reserves of defensive purposes.

Dr. Michael P.T. Gillett

Archaeological investigations in the Wadi Safad, Fujairah, 1995

In April 1994, Dr Geoffrey King of the School of Oriental and African Studies, University of London, conducted a survey to identify archaeological sites along a 10 kms section of the Wadi Safad, located approximately 12 kms north of Fujairah City. He identified more than 20 sites, of which the majority are probably Late Islamic in date. The results of this survey are soon to be published by the Cultural Foundation, Abu Dhabi.

The Wadi Safad runs west to east down from the Hajar Mountains to the Batina coast. There is a track which follows the bed of the wadi, but at the time of writing, a modern road was under construction. Extant within the wadi are palm groves, *falaj* systems and agricultural terraces. Local informants also told Dr King that on the summits of the high ground along the sides of the wadi there were abandoned farms occupying cleared areas.

The use of the land in, and along the sides of, the wadi, manifested in the construction of terraces and farms, and *falaj* systems, though late in date is an ideal context in which to understand the archaeology of human occupation in the valley. In effect, the wadi can be viewed as one archaeological site, with its own history of land ownership and management, and village or settlement disposition.

Archaeological work in other parts of the world have shown that the study of upland agricultural systems, such as terraces and associated features, can be extremely rewarding. When carried out in conjunction with botanical and geomorphological investigations, not only can a history of terrace development be ascertained, but so can aspects of settlements and ancient ways of life come to light. With these concepts in mind, and as a continuation of Dr King's survey, I visited the Wadi Safad in April of this year. My visit would not have been possible without the assistance of the Private Affairs Bureau of HH Sheikh Hamad bin Mohammed al Sharqi, Supreme Council Member and Ruler of Fujairah, which arranged for my accommodation and provided a vehicle, and Saif al Attar, then Director of the Fujairah Department of Antiquities and Heritage, who arranged for me to be accompanied and assisted by a representative from his office. While in the wadi I also met up with Ali Ahmed of the village of Safad, who is a mine of information on the area, and welcomed us most generously.

The first field terraces occur in the wadi at more than 7.5 kms up its length. These are abandoned and situated on both sides of the narrow flood plain of the wadi, though the northern terrace system is more extensive

then that to the south. On the steeply sloping ground immediately above the northern terraces there are the remains of a settlement consisting of buildings and enclosures (constructed of random rubble), probable storage structures, and small flat, revetted areas which could have been cleared for temporary shelters. These remains are probably integral with the terraces, and illustrate how the upper, steeply sloping ground had been utilised for domestic requirements, while the flatter wadi bottom was made into terraces for effective agriculture. Further up the wadi at just over 9 kms there are more extensive terraces which extend intermittently beyond the motorable track. Some of these are still in use with extensive palm groves and *falajes*. There is a distinctive rocky hill around which the wadi bends, and upon its summit there is a small but notable *Husn* (castle).

Down the northern slope from this structure there is also a small mosque, and it and the *Husn* are described in Dr King's forthcoming survey publication. However, between these two structures and occupying the north-east, downward slope of the hill, there are the remains of a settlement with an associated graveyard. Within the occupation area there are sunken buildings cut into the hill slope, more substantial rectangular buildings, and the remains of enclosure or boundary walls. From what is visible on the ground today, it is obvious that this settlement consisted of 'arish and stone structures serving different functions, and that there was a social structure manifest in the architecture and settlement layout.

Although this hill settlement has been unoccupied for a substantial period of time, its location amidst and above palm groves and terraces still in partial use, and in conjunction with the *Husn* and mosque, point to it as serving an important role in the late Islamic history of occupation in the Wadi. These remains deserve further archaeological study, especially within the context of land use and landscape evolution in the Hajar Mountains. There is a further, more recently abandoned settlement amidst terraces on the opposite side of the wadi, west of the *Husn*, and this with its accompanying fields will need to be studied if the history of human occupation in the Wadi Safad is to be understood.

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New moss records from Eastern Arabia

Mosses belong to the phylum *bryophyta*: they are small, low-growing plants, with no true stems, leaves, roots, or vascular tissue. They do not have any outer waterproof cuticle, and thus they are susceptible to drying out. Most mosses therefore grow in moist habitats. Even in the hyper-arid Arabian region there are mosses to be found, and the bulk of information has been provided by Frey and Kurschner (1982; 1988). Bryological investigation in the region began only in the 1970s, and it is unlikely that any reports on bryological findings in Arabia were written before 1981. Only ten bryophyte

taxa were reported for the Arabian Peninsula up until 1982. By 1988, however, one hundred and eighty eight taxa had been recorded. Thus, Arabia is not a bryologically empty quarter, but bryofloristically, and bryogeographically very diverse, concerning life strategies in arid regions (Frey & Kurschner 1988). Knowledge on Arabian mosses however, especially of the U.A.E., is still limited. The table following provides some information on mosses that have recently (1991 - 1995) have been recorded in different areas in Eastern Arabia.

Table 1 : Recent moss records from the UAE and Eastern Arabia.

1. <i>Timmiella barbuloidea</i> (Brid.) Monk.	U.A.E., Masafi area	Northern slopes in the mountainous area.
2. <i>Hydrogonyum</i> sp.	Oman, Mahdah area	On moist loamy substrate at the bottom of a steep wadi slope.
3. <i>Splachnobryum</i> cf. <i>procerrimum</i> Dix. & Verde	Oman, Hajar Mountains in the Hatta area	On moist loamy substrate at the bottom of a steep wadi slope.
4. <i>Entosthodon durimi</i> Mont.	Saudi Arabia, Gulf Coast, Jinnah Island	On moist ground close to freshwater well, shaded by date palms.
5. <i>Bryum argenteum</i> Hedw.	Saudi Arabia, Jubail area	On irrigated flower bed, under <i>Casuarina</i> trees.
6. <i>Tortella inclinata</i> (Hedw.) Limpr.	Saudi Arabia, Gulf Coast, Jinnah Island	Coastal steep slope on loamy substrate.

Six mosses have been recorded, collected and sent for identification. *Tortella inclinata* (Hedw.) Limpr., *Timmiella barbuloidea* (Brid.) Monk., *Splachnobryum* cf. *procerrimum* Dix. & Verde., and *Bryum argenteum* Hedw. have been reported in Frey & Kurschner (1988) for Arabia. Three species of genus *Hydrogonyum*, such as *Hydrogonyum afrofontanum* (C. Muell.) Hilp., *Hydrogonyum ehrenbergii* (Lor.) Jaeg., and *Hydrogonyum fontanum* (C. Muell.) Jaeg. were reported by the same authors. Our specimens could only be identified to genus level. *Timmiella barbuloidea* (Brid. Monk) was recorded from the U.A.E. (Masafi area) by Dr. Ulrich Deil (University of Bayreuth). *Splachnobryum* cf. *procerrimum* Dix & Verde is also known from the U.A.E. (Hajar Mts. between Dibba and Masafi). Our finding of *S. cf. procerrimum* is the first record for Oman. *Entosthodon durimi* Mont. is new to the Arabian Peninsula. These moss specimen are best found at high

altitudes, especially on well shaded, moist ground of northern slopes.

I thank Professor Frey from the Freie Universitat Berlin, and Dr. Koponen from Helsinki for species identification.

Reference:

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Early Islamic site at Sweihan

Evidence of an archaeological site dating to the seventh century AD, around the beginning of the Islamic era, has been discovered at the headquarters of the National Avian Research Centre at Sweihan, around eighty kilometres east of Abu Dhabi.

During construction of a perimeter fence for the research station, a large decorated sherd of blue-green glazed pottery was found, while two similar sherds were found nearby a few months later.

According to the pottery specialist of the Abu Dhabi Islands Archaeological Survey Project, the pottery is typical of the late Sassanian - early Islamic period.

Although there have been discoveries of sites from the same period on islands in Abu Dhabi's Western Region, in particular Sir Bani Yas, this is the first archaeological evidence from the period known to have been found inland in Emirate of Abu Dhabi, although it is well-known in the northern Emirate of Ras al Khaimah.

NARC staff have undertaken a watching brief to record any more pottery that may turn up on the site.

Peter Hellyer

Sheikh Mubarak Natural History Prize

As usual, a number of nominations were received from members of the Group, as well as from members of the Al Ain and Dubai Natural History Groups, for the Sheikh Mubarak bin Mohammed Annual Prize for Natural History, established by our Patron, HE Sheikh Nahayan bin Mubarak al Nahayan.

The ENHG Committee decided at its June meeting to award the prize to Colin Richardson, the Secretary of the Emirates Bird Records Committee and author of the

standard work on UAE ornithology, '*Birds of the UAE*,' in recognition of his major contributions not only to the study of the country's bird life, but also to the promotion of knowledge of that bird life in ornithological and other scientific circles overseas.

The prize, the only one of its kind in the UAE, was presented to Colin by HE Sheikh Nahayan at a special award ceremony in early November and includes an inscribed silver dhow and a cash award.

A follow up on the Fujairah oil spill

In March 1994 sixteen thousand tons of mineral oil entered the waters of the Arabian Sea off Fujairah. Rapid impact assessments on inter tidal ecosystems revealed that a major disaster did not take place, and mangroves and salt marshes remained unaffected (Böer & Griggs 1994). Natural self-cleaning was taking place on sandy, and rocky shores, and marine organisms recruited the affected inter tidal areas. Only limited evidence remained on the coastline by October 1995.

A follow up survey was conducted on October 23, one and a half years after the spill, at the same locations as the previous surveys. The visual evidence of oil from the March 1994 Fujairah oil spill was limited. At two sample sites on sandy beaches, thin transparent oil sheens on the ground water were found. At two sample sites on gravelly beaches old weathered tar was found, smearing the surface. All rocky beaches were visually clean. Fresh tar balls from recent minor oil incidents were observed at several sandy beaches. The recruitment of marine organisms was happening at each of the 28 locations. A variety of organisms, such as crustaceans, fish, barnacles, snails, muscles, green algae, brown algae, and cyanobacteria were found, depending on the beach type.

In order to quantify the impact on the marine ecology, some competent long-term biological and chemical monitoring should be initiated, and the data should be compared with the pre-oil spill situation, and with unaffected control sites. Only this can reveal the real damage to the environment.

In case of future oil spills, major long-term impacts are expected in case of affected low energy beaches, such as mangroves and salt marshes, and minor short-term impacts are expected in case of smeared high energy beaches, such as rocky, gravelly or sandy shores. Even massive oil spills though, such as the 1991 Gulf War Oil Spill, do not necessarily have a detrimental impact on submarine wildlife (Richmond 1994; Vogt 1994; Robineau & Fiquet 1994; Krupp et al. 1994).

In comparison to historical oil spills, the March 1994 Fujairah incident was a minor disaster, and very limited evidence of continuing impact was found in October 1995. However, tanker activities off Fujairah are regularly causing oil spills, and several cases have been reported since March 1994 own observations. Urgent action is required.

Table 1: The coast was examined at the following locations:

Location:	Beach type:	Situation 3 April 1994	Situation 15 April 1994	Situation 29 April 1994	Situation 23 October 1995
24°58'45"N/56°22'32"E UAE Oman border	Sandy beach and mangrove	No impact	No impact	No impact Active fish and crustaceans	No visual impact on soils and water, intense activity of seabirds crustaceans, many dead fish close to fishing nets
25°00'48"N/56°21'45"E	Sandy beach and mangrove	No impact	No impact	No impact Active fish and crustaceans	No impact; few birds active; crustaceans
25°01'08"N/56°21'50"E	Sandy beach	No impact	No impact	No impact Hundreds of seabirds	No impact
25°01'58"N/56°21'59"E	Sandy beach	No impact	No impact	Oil water emulsion over a 100m strip. Dead fish. Oil film on sediment.	No impact crustaceans
25°02'38"N/56°21'49"E	Sandy beach	No impact	No impact	No impact emulsion over a 100m strip. Dead fish. Oil film on sediment. Fresh tar balls.	No impact; dead fish close to fishing nets
25°02'05"N/56°21'58"E	Sandy beach	No impact	No impact	No impact	No visible impact
25°08'35"N/56°21'18"E	Salt marsh	No impact	No impact	No impact	No visible impact
25°09'00"N/56°21'23"E	Salt marsh	No impact	No impact	No impact	No visible impact
25°09'33"N/56°21'23"E	Salt marsh	No impact	No impact	No impact	No visible impact
25°12'03"N/56°21'19"E	Salt Marsh	No impact	No impact	No impact	No visible impact
25°15'09"N/56°21'37"E	Salt Marsh	No impact	No impact	No impact	No visible impact
25°17'31"N/56°22'21"E	Sandy beach	No impact	No impact	No impact	No visible impact
25°19'12"N/56°21'39"E	Sandy and gravelly beach	—	—	Gravelly areas smeared. Crustaceans active on sandy sediment. Oil water emulsion.	Visible transparent oil sheens on ground water in 30 cm depth.
25°21'42"N/56°20'51"E	Sandy beach	oil accumulation 1-2 cm below surface	—	No visible impact	No impact
25°23'25"N/56°21'44"E	Gravel beach	No impact	No impact	No impact	No impact
25°27'10"N/56°21'37"E	Sandy beach	Oil impact. Sand and water coloured black. Dead Crustaceans on the beach.	No visible impact	No visible impact	No visible impact fresh tar balls washed ashore
25°27'41"N/56°21'42"E	Sandy beach	Oil impact. Sand and water coloured black. Dead crustaceans on the beach.	Oil was not to be found on the rocks nor on the adjacent sand. Oil emulsion in the water.	No visible impact	No visible impact; fresh tar balls washed ashore

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Benno Böer

John Norman Bishop Brown 1925-1995

J.N.B. 'Bish' Brown, the founder of the Emirates Natural History Group, a former Chairman, a former member of the Tribulus editorial board and the first winner of the Jashanmal Annual Award for Natural History, (now replaced by the Sheikh Mubarak bin Mohammed Annual Natural History Prize), died in England in August after a lengthy illness.

Rob Western, his oldest UAE friend and natural history colleague, pays tribute to 'the father of UAE natural history.'

I first met Bish at a Christmas party in 1977, given by his wife Beth and daughters Tigger and Pam, and was introduced to what became a feature of so many natural history get-togethers at their house - the famous Brown Curry Lunch. As a stranger newly arrived in Abu Dhabi, I was soon cornered by Bish, and by the time the chutneys arrived, I was a paid-up member of the Emirates Natural History Group. Such were the powers of his persuasion. And that evening began a deep friendship between us that lasted until the day of his death.

In those days, my main interest was archaeology, and New Year 1978 saw Bish and myself at the famous Site One, a forgotten caravan camp on the old Abu Dhabi - Al Ain route before the days of motorised vehicles. It was here, amid the dunes and *sabkha* and on a cold damp morning, that Bish began to instil in me a love not only of Abu Dhabi archaeology, but of all things related to natural history.

The same day we discovered a plant that sparked my subsequent deep interest in botany and study of UAE flora. It had tiny, sand-plastered leaves and spindly twigs, but was covered with a myriad of glistening yellow flowers. Neither of us knew the scientific name, so Bish immediately christened it 'Embassy No. 1,' in honour of a nearby cigarette packet. 'Embassy No.1' remained the plant's name for months until we finally identified it, but the memory of the nickname stayed with us. At the time, 'Embassy No.1' duly went into one of Bish's many, many notebooks of recordings, to be joined by a host of other nicknames for species we could not identify.

The next twelve years or so saw us in the desert at every opportunity, camping in all weathers and seasons. The best times were always early morning, at dawn, and after Bish's regulation mug of tea, when we would concentrate on photography and criss-cross the surrounding desert or mountain.

We had our share of incidents, being shot at by trigger-happy youths in Fossil Valley, behind Buraimi, or being nearly run down by a blacked-out convoy near Al Wign on the Omani border one night, or being covered by a sand storm as we lay on the ground in blankets below Jebel Hafit, but they never stopped us shrugging off the potential risks, and carrying on with our recording. I remember also the tranquillity of evenings around the camp fire, discussing the day's records and observations, writing up notes.

It was impossible not to look up to Bish as the elder statesman of Gulf natural history, as he regaled me with tales of his earlier expeditions in Kuwait. I felt utterly confident in his company, and in his insistence on meticulous preparations for any expedition, however short. We never ever had a vehicle breakdown and the logistics of water, food and equipment were always fully catered for.

During our trips, we were often separated during the day as we concentrated on our own interests, yet there remained a close understanding between us, and we would meet up hours later, even though we had started off with only vague notions of direction.

At the end of the day, Bish always took great interest in my own recordings, even though his interests were much wider. He was ever ready to learn something new, something that invariably would complement his own observations.

He once complained that he had tried to encompass too much of natural history, and felt that he might have specialised in one field. Personally, I am glad that he never did. His conversation was always the richer for the depth and variety of his interests and experiences.

With Bish's passing, we are all the poorer. As Marijcke Jongbloed puts it, he was "a role model for anybody involved in natural history in the Emirates."

Although I had reluctantly accepted earlier this year that he and I would never again make an expedition to our favourite haunts in the Musandam, or Jebel Hafit, or among the East Coast wadis, Bish remained a mentor to me even when he was not here in the UAE.

During his lifetime, he was fortunate to have achieved so much in a field about which he felt passionately. His influence on me and his contribution to the natural history of this part of the world will not be forgotten.

ROB WESTERN

R.A. (Bob) Richardson

Another former member of the Committee of the Emirates Natural History Group, R.A. 'Bob' Richardson, also died in the UK in August after a long and stout, but eventually unsuccessful fight against cancer. For a time the Group's Bird Recorder, Bob was co-author with Colin Richardson of the first full checklist of UAE Birds, (*Tribulus* Vol. 1.2, 1991), and in his years in the

Emirates brought an infectious enthusiasm and dedicated professionalism both to the Committee and to local birding. His birdwatching companions in Abu Dhabi and Dubai remember fondly his delightful companionship, in the field and elsewhere, and his optimism, determination and fortitude, an inspiration to us all.

— PH

RECORDERS' REPORTS

Archaeology

The summer months are, not surprisingly, a quiet time for outdoor archaeology in the Emirates, and the bulk of the work undertaken both by local teams and by those from abroad, taking place from the autumn to spring, has been most recently covered in *Tribulus* Vol 5.1, April 1995.

This summer, however, has been somewhat of an exception, at least as far as Abu Dhabi and the Group has been concerned, with the carrying out of a rescue excavation at Abu Dhabi International Airport by two archaeologists from the Abu Dhabi Islands Archaeological Survey Project, co-ordinated by the Group Recorder.

The site was first identified on a range of hills (a former coastline) adjacent to the Airport in February, when an extensive scatter of Late Islamic pottery was noted. Subsequent study revealed fragments of flint tools, provisionally dated to the Late Stone Age.

With ground levelling threatening the site during the summer, an emergency excavation was carried out in June and July, sponsored by Abu Dhabi Duty Free, on the instructions of Civil Aviation Department Chairman Sheikh Hamdan bin Mubarak al Nahyan, and also receiving support from a number of the ENHG's Corporate sponsors, including ADNOC, ADCO and ADPPOC.

The excavation, which involved a detailed surface pick-up, sieving of selected areas and clearing of two stone structures visible on the surface revealed important evidence of occupation during the Late Stone Age (c. 5,000 BC to 3,500 BC), including a number of finely made flint tools and scrapers, some made of locally available material, and others evidently imported in a finished state from inland, possibly from the well-known flint factories at Jebel Huwayyah (Fossil Valley), near Al Ain.

Pottery from the Umm an Nar period (2,700-2,200 BC) was also recovered, the first evidence yet known from this period on what was then the coast of the mainland, suggesting that the site may have been a terminus on the overland route exporting copper from Al Ain to Umm an Nar and thence to Mesopotamia.

Two stone structures proved to be wells dug deep into the sandstone, the first such wells known to have been excavated on the Abu Dhabi coastline, although others have been found in the Ad Door site in Umm al Qaiwain, dated to the first centuries of the Christian era. Dating of the airport wells proved impossible, since it was too dangerous to clear them to the bottom without special equipment, it is hoped to complete this work next spring.

The Late Islamic pottery confirms use of the site in recent centuries, probably as a stopping off point

before travellers crossed the *sabkha* salt flats to Abu Dhabi.

A detailed report will be published later.

The excavation was the first to have taken place near Abu Dhabi to which the public has had access for over fifteen years, and the ADIAS was delighted at the number of volunteers, including many Group members, who came out to help on the site despite the summer heat and humidity.

A guided visit for Group members was organised in early October.

One point worthy of note: the Recorder was informed by one volunteer, a member of the Mainland Hash House Harriers, that he and colleagues had frequently run over the site and had seen pottery, but had not known to whom to report it. Fortunately, the site was at least partly preserved in the nick of time before it was destroyed, but how many others have vanished because they were never drawn to the attention of anyone interested?

If Group members see, or hear of anyone seeing, pottery or other archaeological evidence while wandering about along the coast or in the desert, PLEASE report it!

Palaeontological work by the joint team of the Natural History Museum (UK) and Yale University (USA) was due to resume in mid-November with the support of our corporate member, the Abu Dhabi Company for Onshore Oil Operation, ADCO. Initial work was to involve a resumption of studies of the late Cretaceous outcrops to be found at Jebel Huwayyah and in Abu Dhabi's Eastern Region.

As usual UAE archaeology received considerable attention at the annual Seminar for Arabian Studies in Britain, with papers being presented on work undertaken in Abu Dhabi and Sharjah. This winter will see the usual combination of work by both foreign and local teams, including a return of our former speaker, Professor Ernie Haerincx, of the University of Ghent, to Umm al Qaiwain, and of another former speaker, Professor Dan Potts of the University of Sydney, to Fujairah. The Abu Dhabi Islands Archaeological Survey will resume work on the western islands in the New Year, while local and French teams will also be at work in Sharjah.

There will be some scope for volunteers to provide assistance this winter in some of the archaeological work, and anyone interested should contact the Recorder.

PETER HELLYER
Archaeology Recorder

Birds

April 1995

The weather remained surprisingly unsettled in April, although temperatures hovered around 30°C for most of the month, peaking at 38°C on 21st. A little rain fell on the morning of 7th and a freak storm hit the Arabian coastline shortly after dawn on 24th. One of the highlights of the month was a **Sooty Shearwater** which performed well for observers on the beach at Kalba on 30th, the first record for the UAE and only a second for the Arabian Sea coastline. Other interesting sightings included an **Imperial Eagle** at Khor Dubai on 8th, a **Baillon's Crake** at the Emirates golf course on 17th, a **Corncrake** (a rare spring migrant) in the middle of the desert near Jebel Dhanna on 23rd and a **Caspian Plover** at Abu Dhabi racecourse on 2-3 April. An **Egyptian Nightjar** was on Das Island on 26th. European Cuckoos were reported calling on territory at several locations in remote mountain areas to the north (their only breeding grounds in Arabia) while 3 **Bar-tailed Desert Lark** (another mystery breeding species) were found at a new site near Jebel Dhanna on 22nd. A **Blyth's Pipit** (10th record) was at Al Wathba on 23rd, single **White-throated Robins** were at Balghelam Island, and the Emirates golf course on 17th and up to two were at Das Island from 23rd-24th, **Hume's Lesser Whitethroats** were at several locations until 4th, a **Red-breasted Flycatcher** was at the Emirates golf course on 17th and single **Semi-collared Flycatchers** were at Sahil and in Bateen gardens in Abu Dhabi on 2nd. The country's 5th & 6th **Bay-backed Shrikes** turned up at Al Wathba on 15th and at the Emirates golf course on 16th, while in Hamranyah on 28th, several pairs of **Spanish Sparrows** were preparing to breed at the UAE's only known nest site. A male **Red-headed Bunting** at Abu al Abyadh on 18th was the 2nd record and a **Cinereous Bunting** at Al Jazeera Khor on 15th was only the 14th record.

May 1995

Although no rain fell on the Arabian Gulf coast throughout the month, the effects of the heat build-up caused a few late afternoon downpours in the eastern mountains. Temperatures rose steadily during the month from an average of 35°C to a very uncomfortable 45°C by the 25th after which migrants became very scarce.

Rather rare, single **Little Bitterns** were found at the Emirates golf course from 18-23rd and at the Zabeel fish ponds from 25-28th. Sea-watching produced the best results as the monsoon threatened to build up, pushing many South Pole pelagics into the Arabian Sea. Another **Sooty Shearwater** (2nd record) appeared off Fujairah on 11th, while two **Wilson's Storm-Petrels** showed well off Dhadnah on 26th. 200 **Red-necked Phalaropes** were present offshore on 2nd and hundreds of **Bridled Terns** were fishing on the horizon from mid-month. A very shabby-looking **Sabine's Gull** (2nd record) was feeding along the East Coast from 6-19th, while a **Sooty Tern** (2nd record) found itself at the desert research station of the National Avian Research Centre (100 kilometres inland!) in mid May. We await the photographs for this extraordinary record.

June 1995

Hot and steamy weather produced little in the way of migration during the early part of the month, with temperatures hovering around 40°C for most of the time, peaking at a scorching 47°C on 23rd.

An oversummering **Spotted Eagle** was at the Zabeel fish farm from 7-24th and a **Lanner Falcon** was seen over Al Ghar Lake on 9th.

With little else of interest to look at on land the handful of birders in the country turned their telescopes to sea-watching, with some spectacular results. By mid month, the east coast between Snoopy Rock and Ras Dibba was proving the most exciting with a constant flow of shearwaters, until on 23rd a spectacular line of 907 **Persian Shearwaters** were counted in just 1hr 20mins, the highest numbers ever recorded anywhere. Some wader passage was noted, with a **Caspian Plover** in Dubai on 27th and a 3rd record **Red-necked Stint** on 1-2 July. Meanwhile at Ras Dibba on 16th, the UAE's first **Common Noddy** was reported, about the same time as another first, a probable **South Polar Skua** which passed Snoopy Rock. On Qarnein Island, a record 4,200 **White-cheeked Tern**, 38,000 **Lesser Crested** and 2,600 **Swift Terns** were nesting.

Of passerines the country's first ever oversummering **Robin** was still in Bateen gardens on 30th along with a **Thrush Nightingale** on the same day. A **Rose-coloured Starling** was at Umm al Qaiwain on 10th. Not such good news for Das Island, **House Sparrows** were reported breeding successfully for the first time at the end of June, when numbers reached 13 birds.

July/August 1995

The weather in July and August was extremely hot and dry, with temperatures around 40°C most days. An exceptionally unseasonal four-day downpour in late-July broke all records and many parts of the country were flooded.

Evidence of good autumn migration included a record 29 **Squacco Herons** at Ruwais on 18 August, a **Red-footed Falcon** (a surprising UAE first) at Al Wathba from 9-21 July. A **Baillon's Crake** (a species rarely recorded even annually) was also at Al Wathba on 25 August and several **Collared Pratincoles**, including three at the Emirates golf course on 31 August. A summer-plumaged **Red-necked Stint** at Khor Dubai 1-2 July was the fourth confirmed record while the first two **Great Knots** of the season were seen at Merawah Island on 17 August. Other waders made an early autumn appearance including three **Pacific Golden Plovers** at the Emirates golf course on 31 August and 419 **Broad-billed Sandpipers** at Khor Dubai on 8 August. Rather unseasonal birds in Abu Dhabi over the summer included a **Thrush Nightingale** first seen on 30 June which stayed until 15 August and the now bright moulted eastern race **Robin**, still present to the end of August. Other goodies included a **Savi's Warbler** in Abu Dhabi on 27 August, 180 **Blue-cheeked Bee-eaters** at the Zabeel ponds on 28 August and an influx of **Rose-coloured Starlings**, with up to four on Das Island 27-29th July and a marauding flock of 25 seen at the Emirates golf course on 31 August. **Black-headed Buntings** were

rather scarce this year with three on Das Island 23rd-29th July being the season's first.

September 1995

Temperatures remained exceptionally high early in September, with 47°C measured inland at Al Ain during a birding trip on 1st. In coastal areas as temperatures slowly dropped by the 28th to a more comfortable 36 degrees. Humidities remained uncomfortably high and no rain was recorded anywhere.

The reedbeds at Ruwais revealed five **Little Bitterns** on 2nd, including an adult feeding young, making this the UAE's first breeding record (and long expected in such a wetland). Young raptors started dispersing on 1st September, with a **Long-legged Buzzard** at Al Ain and 17 **Sooty Falcons** on Sila peninsula. Seven **Lesser Kestrels** were on Das Island on 26th. Back at Ruwais, a **Purple Gallinule** (3rd record) was in the reedbeds joined by a **Little Crane** (10th record) on 3rd. Of plovers, 123 **Crab Plovers** were at Khor al Beidah 22nd and two separate **White-tailed Plovers** were at the Emirates golf course on 7th & 21st. Three **Caspian Plovers** were at Al Ain camel track on 1st, up to three at Abu Dhabi race course from 13-25th and three were at Al Habab 29th. An immature **Kittlitz's Plover** in front of the grandstand at Abu Dhabi race course from 23-25th, caused a panic as local birders tried to identify it, for the country's 2nd record. The first **Pintail Snipe** of the season arrived at the Emirates golf course 7th September. Ramtha lagoons, now starved of freshwater since dumping ceased in June, managed to attract 322 **Slender-billed Gulls**, 106 **Saunders' Little Terns** and 26 **Whiskered Terns** on 22nd. A **Scops Owl** and a **Semi-collared Flycatcher** were on Das Island on 26th and very early **Stonechats** were also on the island 5-7th and 23rd-26th September. An **Eastern Pied Wheatear** arrived at its regular stake-out at Qarn Nazwa on 13th, remaining to the end of the month.

The first *Sylvia* warblers of the season commenced with an exhausted **Ménétries' Warbler** and a **Barred War-**

bler at Sila on 1st (the earliest ever autumn records), a **Desert Warbler** on Das Island on 21st and four **Desert Lesser Whitethroats** in Bateen gardens on 22nd. Unseasonal autumn birds, a **Masked Shrike** was at Mushref gardens from the 23rd and eight **Pale Rock Sparrows** were at 'Hanging Gardens,' near Al Ain on 1st.

October 1995

The temperature stayed hovering around the 36°C mark for most of the month, except for a hot spell on the 22nd when it topped 41°C. So with no spectacular weather systems affecting bird migration rarities were relatively few and far between.

Having said that, there was some interest at Zabeel fish ponds on the 23rd when another **Purple Gallinule** (4th record) was seen near the reed bed. The 3rd record, at Ruwais, was still showing well until the 26th. Five **White-tailed Plovers** were reported at Ramtha tip on 2nd, with three at Umm al Qaiwain tip on the 20th. Nearby Khor al Beidah also produced its first **Great Knot** on the 20th. Bateen gardens (now signboarded) produced a number of good species in mid-month, including a **Forest Wagtail** (7th record) from 16-23rd and a **Radde's Warbler** (2nd record) on 16th. The latter proved rather elusive and was not seen again in spite of a thorough search on the 17th. The Abu Dhabi race course produced its first **Blyth's Pipit** of the year, a good stake-out for the species, and only the 11th record.

Thanks to the following observers for their reports:

Simon Aspinall, John Bannon, David Bradford, Jon Buxton, Gary Feulner, Christian Gross, Abdul Hakim, Peter Hellyer, Jenny Hollingworth, Steve James, Marijke Jongbloed, M.R. Khan, Len Reaney, Alec Rollo, Chris & Tilde Stuart, Gavin & Val Thomson, Andrew Tynham, Alison Waller and Mike Wood.

COLIN RICHARDSON,

Secretary,

Emirates Bird Records Committee.

Book review — Birds in Bahrain

Regular readers of *Tribulus* and anyone interested in the birds of the Arabian Gulf will recognise the name of Erik Hirschfeld, former member of the Emirates Bird Records Committee, who succeeded in adding several new species to the UAE Bird List during his stay in the UAE in 1993 and 1994.

Prior to his arrival in Abu Dhabi, Erik spent nearly three years in Bahrain, and a book reporting and analysing his bird records during that period has now been published by Hobby Publications, of Dubai and Liverpool.

Birds in Bahrain: a study of their migration patterns 1990-1992 is a masterly example of just how records should be presented for the ornithological record, summarising status, using histograms, tables and graphs, and identifying, where possible, likely sub-species, and also including a full Bahrain checklist.

There is a particular emphasis on the country's important migrant wader population, and all the study sites are also described and mapped.

The book is further enhanced by a series of vignettes by top illustrator Hans Larsson.

In his five years in the Gulf, Erik Hirschfeld made a major contribution to ornithology in the region, and is now helping to popularise it by bringing Swedish birders here on holiday. This book shows just how professional an ornithologist he is, although, with some 200 scientific papers to his credit, one shouldn't be surprised by the quality of this small publication.

Can we perhaps now hope for a similar publication detailing the results of his years of study in the UAE?

Anyone seriously interested in Gulf ornithology should make sure they obtain a copy quickly before they sell out.

Birds in Bahrain: a study of their migration patterns 1990-1992, by Erik Hirschfeld, Hobby Publications, PO Box 50394, Dubai, U.A.E. Dh. 50.00 or UK pounds 8.00, post free.

PH

More Copy Wanted

With five years of *Tribulus* now completed, the magazine has begun to win a reputation as a valuable source of scientific information on the archaeology and natural history of the Emirates, as can be seen from the increasing number of references to articles in the magazine that are appearing in other scientific books and journals. In particular, the Editorial Board is pleased that the magazine has been able to attract wide support from scientists working in the Emirates, including many who have no connection with the Group. The lengthy article, in Vol. 3.2, for example by Noel and Solene Morris on the four new species of molluscs discovered on the East Coast was the first formal scientific description of these species, the kind of paper normally found in well-established and highly scientific journals. *Tribulus* has also been the first to announce, for example, the discovery of the pre-Islamic Christian settlement on Sir Bani Yas, while articles like the first list of UAE Butterflies, by Bish Brown, in Vol. 2.1, and the updated list by Mike Gillett in this issue represent the only data available on the subject.

While the Editorial Board is delighted that scientists see the publication as a worthy place in which to report their findings, however, we hope very much that amateur enthusiasts, whether members of the various Emirates Natural History Groups or not, will continue to feel that there is room for their contributions as well.

One of the most valuable parts of the magazine is the 'Notes and Queries' section, for which we would welcome short items on any topics related to the archaeology and natural history of the Emirates, regardless of how little scientific language is used.

The editorial policy of *Tribulus* is to provide a place in which both professional scientists and others may publish, with the only guidelines being that items should, as far as possible, be scientifically accurate, but that they should also at the same time be intelligible to the interested amateur.

We look forward to receiving more contributions of this type.

GROUP PROGRAMME - January to June 1995

January 2nd	:	Two films from the BP 'Web Of Life' series
January 16th	:	AGM, plus 'The Liwa,' by Anthony Harris
February 6th	:	'The Life and Times of T.E. Lawrence,' by Tim Wilford
February 20th	:	'The National Avian Research Centre,' by Dr. Richard Hornby
March 6th	:	'The Musandam,' by Juha Leppanen
March 20th	:	'Camels,' by Dr. Ulrich Wernery
April 3rd	:	'An Update on the Sir Bani Yas excavations', by Dr. Geoffrey King
April 17th	:	'Canada's indigenous peoples', by Gerarda Sullivan
May 1st	:	'Birdwatching in the UAE', by Steve James
May 15th	:	'North Yemen', by Harry Mueller
June 5th	:	'Caves and Mountains in Oman, by Cheryl Jones
June 19th	:	'Bugs and Beasties', by Alan Dickson

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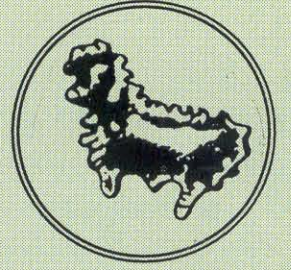
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