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Wildlife Middle East NEWS

CONTENTS

Wildlife Middle East News is published quarterly. It contains papers, reports, letters and announcements submitted by veterinarians, biologists, conservationists, educators, and other animal care professionals working with captive and free-living wildlife in the Middle East region. Contributions are not refereed, although every effort is made to ensure the information contained within the newsletter is correct, the editors cannot be held responsible for the accuracy of contributions. Opinions expressed within are those of the individual and are not necessarily shared by the editors. Guidelines for authors can be downloaded from www.wmenews.com

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EDITORIAL

Almost one year since our initial launch and we've reached Issue 4 already. Since it's inception we have quickly gained subscribers and supporters, with the number now standing at more than 1300. To everyone who has supported us in this venture, our thanks go to you. We are looking to expand our membership even further, so please forward our website address to colleagues who you feel would be interested in receiving the newsletter. This newsletter relies on your enthusiasm, so please keep those articles coming in.

We continue our "focus on" theme within this issue where we look at some of the problems of the illegal trade in wildlife in Somalia. Osman Amir describes the worrying trend within the country of illegal wildlife trade with Gulf and South East Asian countries. He calls for international conservation organisations to help in halting this trade by assisting in the establishment of small reserves to protect the unique Somalian biodiversity and wildlife. Looking at one countriy's efforts at combating this, Priptal Soorae and colleagues give a detailed account of the current status of CITES regulations within the UAE. They describe the organisations who are responsible for the implementation of the local legislation to enforce CITES regulations. Looking at the veterinary implications and risks associated with the illegal trade in wildlife, Chris Lloyd describes one case of a cheetah presented with toxoplasmosis and highlights the potential threats this form of trade could have within collections.

As described in past issues there is a need for greater husbandry and veterinary management of the species held in collections within the region. As part of our collection management series, Mark MacNamara from Fauna Research describes how they used portable restraint equipment Tamer II and Tamer Jnr together with mobile corrals to safely restrain different species of ungulates at a particular collection in Al Ain, UAE. Jackie Strick concludes her article on the hand rearing of exotic felids and describes methods of enrichment, feeding and weaning of young leopard and cheetah cubs.

Our news section features articles on the satellite tracking of bald ibis and survey work being completed on the Hulayla mangrove wetland in Ras Al Khaimah, UAE. We also include a brief report from the recent Conservation Workshop for the Fauna of Arabia held at the Breeding Centre for Endangered Arabian Wildlife (BCEAW) in Sharjah, UAE. A second report on the Conservation of the Arabia Leopard which was again hosted by the BCEAW is available on line at www.wmenews.com. Unfortunately due to space limitations we were unable to include both reports.

Our literature review focuses on two theses describing natural reserves in the UAE and the reproduction in the Arabian leopard. Our final literature review describes the status and distribution of gazelle species in Egypt.

The editors

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Acknowledgements

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WILDLIFE MIDDLE EAST NEWS OBJECTIVES

- Raising awareness of environmental and conservation issues affecting wildlife in the Middle East.
- Distributing information to enable better management healthcare and welfare of wildlife.
- Providing a central contact point for practical advice and information on wildlife management in the region.

CALL FOR ARTICLES

The newsletter aims to contribute to the development of a network between zoo and wildlife professionals working in the Middle East with the objective of being the premier source of regional information on zoo and wildlife management, husbandry and care. The newsletter will publish articles with an emphasis on practical, useful and relevant material.
Proposed categories include:

- Conservation education & environmental awareness.
- Husbandry & nutrition.
- Design and management of zoological facilities.
- Capture and translocation techniques.
- Wildlife diseases and preventive medicine.
- Products, book reviews & research.
- Summaries of recent literature on Arabian animals.
- Letters, news and events.

WILDLIFE TRADE IN SOMALIA

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Somalia's fauna is rated among the most interesting in Africa, owing to its high species richness and level of endemism. The species richness reflects the high diversity of ecosystems and wildlife of habitats. About 142 vertebrates are endemic into the country, comprising 8 species of birds, 22 species of fresh water fish, 82 species of amphibians and reptiles and 30 mammals. The Somali fauna contains very highly adapted arid and semi-arid ecosystems of Northeastern Africa and is considered a high conservation priority. The initial objectives of the survey was to reassess the presence of Bulo-burte bush shrike *(Laniarius liberatus)* along the riverbank of Shabelle in Hiran region, and further the survey aimed to assess general impact of wildlife trade to the fauna in southern Somalia. However, the recent fighting between Mogadishu warlords and unions of Islamic courts made it impossible to achieve the first objective and therefore we had to execute the second objective. The refined objectives were to identify trade-affected species; routes of wildlife trade in Somalia and export destinations, as well as to assess the wildlife trade and its impact on threatened fauna in .Somalia

Somali wildlife has never been well protected, and important habitats harbouring Somalia's biodiversity have been overexploited since the arrival of pastoralists at the Horn of Africa. Most big game such as elephant *(Loxodonta africana)*, giraffe *(Giraffe camelopardalis)* and browse rhinoceros *(Diceros bicornis)* became already extinct in northern and central Somalia even before World War II. Hunting in Somalia required authorization by the Secretary of State for Forests and Game (law no. 65 of 13 October 1971). However, illegal hunting continued in many parts of the Somalia, sometimes causing cross-border problems with neighbouring countries. Most widely used traditional hunting weapons were a bow and arrow, but small antelopes such as duikers and dikdiks were also trapped with nets. The situation of hunting has completely changed over the last two decades of civil war, as automatic guns became available for everyone and everywhere in the country, thereby strongly increasing both the number of hunters and illegal wildlife traders. In addition, many hunters adopted new hunting and trapping techniques, and learned to care and handle live animals bound to be sold in foreign counties.

The survey of wildlife trade in southern Somalia in 2006 revealed a strongly increased illegal trade of various species at local markets and for export purposes. About 32 species of vertebrates were identified during the survey. The intensity of wildlife harvesting varies among species, depending on the local situation and market demands. Eleven of these species are listed in the IUCN Red Data Book in 2004 as critically endangered (1), endangered (1) or vulnerable (9) and many others were also listed in Appendixes of the CITES. The illegal trade appears to exert a great pressure on the fauna of the country, particularly on threatened species such as cheetah *(Acinonyx jubatus)*, leopard *(Panthera pardus)*, lion *(Panthera leo somalienis)*, elephant, dibatag *(Ammodorcas clarkei)*, hirola *(Damaliscus hunteri)*, beira *(Dorcatragus megalotis)*, Speke's gazelle *(Gazella spekei)*, Pelzeln's gazelle *(Gazella dorcas pelzelni)*, Haggard's oribi *(Ourebia ourebi haggardi)* and silver dikdiks *(Modaqua piancentinii)*.

Birds, such as ostrich *(Struthio camelus molibdophanus)* and bustards are hunted to prepare traditional medicines and as well for export. The bustards are also exported to the Gulf region for falconry purposes. Somalia harbours 8 species of bustards, representing 61 % of the total species bustards recorded in Africa (13 species). Birds of prey are also traded in Somalia and exported into gulf regions. Number of mammals, such as striped- and spotted hyena *(Hyaena hyaena and Crocuta crocuta),* hippos *(Hippopotamus amphibious)* and crested porcupines *(Hystrix cristata)* are hunted for medicinal purposes and exorcistic rituals. Some cat species such as lion cubs, cheetah and leopard, are traded in Somalia and exported into the Gulf region. The country harbours about 22 species of antelopes. Many species are nowadays exported to the Gulf region and Southeast Asia. The traded species comprise lesser kudu *(Tragelaphus imberbis)*, gerenuk *(Litocranius walleri)*, Speke's gazelle, dibatag, beira and dikdiks *(Madoqua guentheri, M. kirki, M. saltiana and M. piacentinii)*. The survey also revealed that there are large numbers of captive antelopes in Mogadishu and other parts of southern Somalia. Health conditions of these captive animals are usually poor because of the lack of proper feeding and adequate veterinary treatment. Furthermore, there are currently no rescue centres that would allow local authorities to confiscate captive wild animals and release them in their original habitats.

Several reptiles, such as hawksbill sea turtle *(Eretmochelys imbricate)*, green sea turtle *(Chelonia mydas)*, leopard tortoise *(Geochelone pardalis)* and Somali chameleons *(Chamaeleo spp.)* are collected mainly for medicinal purposes and considered as aphrodisiac and the turtle-derived medicines are specially used to treat lung diseases such as tuberculosis, asthma and cough. The leopard tortoise and chameleons are also being exported to the Gulf region and Southeast Asia.

An increasing demand of tortoise bones in China and Southeast Asia may apparently encourage the collection of leopard tortoises in Somalia.

During the rule of the dictator Siad Barre, the country had only three international airports, namely Mogadishu, Hargeisa, and Kismayo, and these exit posts for goods were controlled effectively by customs authorities. However, during the civil war a range of new small airstrips were established. These airports are operated by private people and entrepreneurs and lack any effective control of the import and export of goods. The majority of the Somali population covers its protein demand from livestock, and only few people depend on wildlife for their subsistence. Nevertheless, there is profound lack of national awareness of Somali's rich variety of flora and fauna, nor of its international importance. Therefore, the continued and uncontrolled wildlife trade along with the loss of important wildlife habitats threatens the survival of certain restricted species, some of which risk to drift into a bottle-neck situation such as silver dikdik, and the Speke's gazelle which are both landlocked.

Lesser kudu awaiting shipment. ©Osman Amir

International conservation organizations must do more to halt illegal wildlife trade, to establish without further delay a network of small reserves, to protect the most seriously threatened species, to support local NGOs working in the field of natural resource management and to promote more sustainable ways to generate income from wildlife. Somalia's outstanding biodiversity is a natural heritage in the first place, yet in a wider sense it is a common heritage of mankind. Thus, the loss of endemic fauna would impoverish not only Somalia but the world in general.

Editors note: a pdf of the full report by Dr. Osman on the Wildlife Trade in Somalia can be downloaded at www.wmenews.com/

IMPLEMENTATION OF THE CITES CONVENTION IN THE UAE

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Introduction

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Convention covers the international trade of species listed in the three CITES Appendices I, II & III which currently includes approximately 5,000 animal species and 28,000 plant species. The United Arab Emirates (UAE) joined the CITES Convention in 1990. There are two Management Authorities namely, 1) Federal Environment Agency for Abu Dhabi Emirate (www.feaapp.fea.gov.ae) and 2) Ministry of Environment & Water (MEW) for the Northern Emirates (www.uae.gov.ae/uaeagricent). As per CITES Conf 10.3 there is an independently designated Scientific Agency represented by the Environmental Agency-ABU DHABI (www.ead.ae).

CITES & National Legislation

There are presently 169 Parties (countries) which voluntarily implement the Convention and which does not take place of national laws – but regulates wildlife trade across international borders. To legally implement CITES at the national level the UAE has formulated Federal Law (11) of 2002 for "Regulating and Controlling the International Trade in Endangered Species of Wild Fauna and Flora". This law can be accessed from the Environment Agency ABU DHABI website at www.ead.ae. An Arabic translation of the species listed in the CITES Appendices was undertaken and this was officially gazetted so as to provide a list of species to which Federal law 11(2002) could be applied. Violations under this law are punishable by a fine and/or a prison term. The passing of this Federal Law has qualified the UAE for category 1 status in the CITES National legislation Project for implementing the CITES Convention at a Federal level in the UAE.

Raising CITES awareness

The CITES Management and Scientific Authorities have run several workshops within UAE to improve the capability of employees involved in monitoring and enforcing wildlife trade. These have been in the form of workshops and training courses targeting the staff of the CITES Management Authorities, customs, municipality staff. CITES awareness has also been raised through the production of a wildlife manual which lists common CITES and non-CITES species in trade within the UAE (Fig 1.) and this has been extensively distributed locally and within the GCC countries.

CITES Implementation & Enforcement

The major role of the Management Authorities are to issue CITES permits to applicants and to enforce national legislation to ensure that CITES listed species, products or derivatives are not being sold or possessed illegally without the appropriate CITES and other relevant documentation. Enforcement activities are undertaken through regular inspections of various commercial establishments such as pet shops for wildlife species, luxury good stores and gift shops for items such as ivory, animal furs and skins and supermarkets for items such as caviar. The various points of entry into the UAE – land, sea and air – are also manned by customs authorities and MEW staff to detect any illegal or suspicious shipments into the country. These enforcements actions have netted species and items such as falcons, tortoises, ivory products, furs of endangered species and caviar.

e-Government Initiative

To make the application of permits more user-friendly for the public the CITES Management and Scientific Authorities embarked on a system that first saw the development of a computer application which computerized the CITES permit application procedure which ensured all data was being stored in a database and was available electronically. This procedure linked the two Management Authorities, scientific Authorities and personnel at major points of entry in the UAE. The next step now is to develop the system in order to enable a more efficient use of the system and reduce the time wasted on physically applying for a permit by visiting the CITES Management Authority offices once all necessary documents have been uploaded and submitted with the on-line application.

Falcon Passports

The UAE has a strong cultural heritage linked to falconry and UAE falconers frequently travel within the region to practice falconry. To allow the frequent cross-border movements of falcons without the need for applying for CITES permits for each travel, the UAE introduced a Falcon Registration and Passport scheme (Fig 2.). The falcon passports allow the frequent movement of falcons and are issued to falconers with the appropriate documentation. The falcons are initially registered and then a 3-year valid passport is issued. There are some countries where falcon passports are not recognized, in such cases normal CITES permits are issued.

Animal Welfare Issues

The UAE is an official member of the World organization for Animal Health (OIE), and upon recommendations from the OIE, the Ministry of Environment & Water is in the process of drafting a national law on animal welfare and transportation. This law once drafted will cover the important issue of welfare of live animals, for both CITES and non-CITES listed species within the UAE.

Editors note:

A pdf of Federal Law (11) of 2002 for "Regulating and Controlling the International Trade in Endangered Species of Wild Fauna and Flora" can be downloaded at www.wmenews.com/

Fig 1. Cover of a species identification guide for customs officials produced by the CITES authority. ©P. Soorae

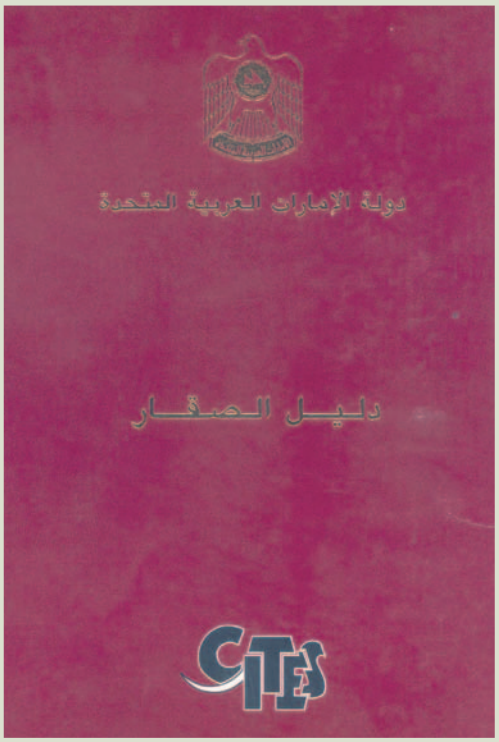

Fig 2. Falcon passport used in the UAE. ©P. Soorae

ACUTE DISSEMINATED TOXOPLASMOSIS IN A SMUGGLED JUVENILE CHEETAH *(ACINONYX JUBATUS)*

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A privately owned sixteen-week-old cheetah cub *(Acinonyx jubatus)* was referred to Nad Al Shiba Veterinary Hospital. The cheetah presented with anorexia, pyrexia, tachypnoea, anaemia and icterus. The abdomen was swollen and tender with palpable hepatomegaly. The cub had been in the owner's possession for 3 weeks and was suspected to have been wild caught. Despite treatment the cheetah died after 3 days.

Gross postmortem revealed hepatomegaly, splenomegaly and haemorrhagic congestion of all lung lobes. Histopathology revealed a multifocal acute necrotising myocarditis with intralesional basophilic protozoal tachyzoites consistent in morphology to *Toxoplasma gondii*. Necrotising lesions were also seen in the pancreas and liver. A severe diffuse sub acute interstitial pneumonia was present with extensive intra-alveolar haemorrhage and accumulations of proteinaceous fibrin rich fluid. Immunohistochemistry using *T. gondii* specific antibodies revealed positive labeling in multiple tissues including the lung, pancreas, liver, heart, spleen and urinary bladder. In addition a sample of frozen lung tissue submitted for PCR confirmed the presence of *T. gondii*. A frozen serum sample submitted for serological testing revealed a positive IgM titre of 20 and IgG titre of 100 (titres greater than 50 are positive).

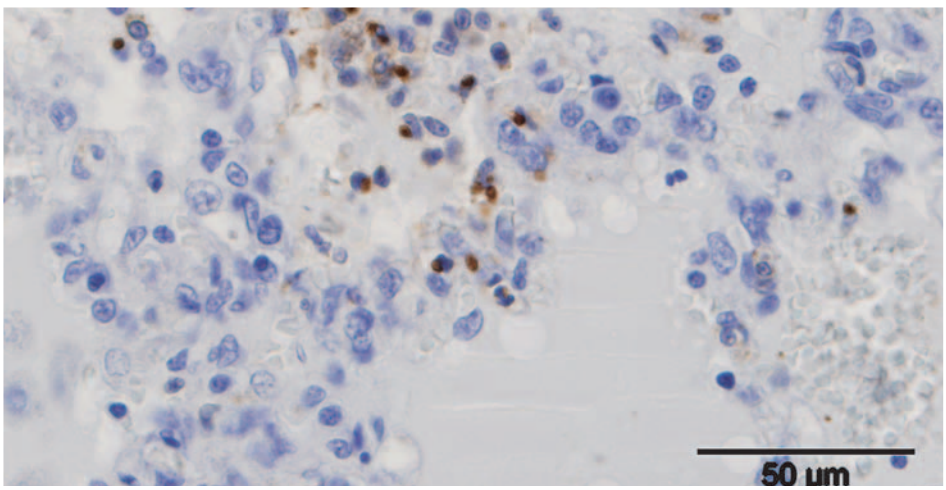
There are a number of reports of *T. gondii* exposure from cheetah in both zoological and free ranging populations. This appears to be the first report of an acute symptomatic infection in a cheetah. The diagnosis of toxoplasmosis is challenging. Faecal shedding of oocysts in cats suffering from acute toxoplasmosis is very rare and no oocysts were found in this case. It appears that as interstitial pneumonia is a common feature of toxoplasmosis, cytological examination together with PCR testing of lung or tracheal washes may be useful. Serological tests in this case were validated for use in domestic cats but not cheetah. There appears to be little information available on the optimal assay for serological use in non-domestic felids. However, results revealed elevated IgM which is commonly detected in the serum of clinically sick domestic cats during a period of active infection and does not last longer than 3 months post infection. It appears this is the first report of elevated IgM titres in a non-domestic felid actively infected with *Toxoplasma gondii* and indicates the need for further research into the use of this assay as a means of diagnosing toxoplasmosis in actively infected non--domestic felids using a single blood sample. IgG titres are commonly raised in exposed non-domestic felids, however, single samples do not aid in the diagnosis of active infection as IgG levels may be raised for months to years following exposure. The demonstration of a rising IgG titre (at least 4 fold) over a 2-3 week period may indicate recent or active infection in domestic cats.

Domestic and exotic felids are the only known definitive hosts of *T.gondii* with transmission via three routes, ingestion of feline faecal matter containing oocysts, transplacental infection and ingestion of bradyzoites in infected meat. The latter route appears the most efficient in domestic cats. In addition to the route of infection, the host age, presence of concurrent infections and immunodeficiencies are all known to affect the clinical outcome of toxoplasmosis in domestic cats. Unfortunately this cheetah was highly stressed having been captured from the wild, transported illegally and likely housed with other domestic and non domestic animals before being sold as a household pet. It seems probable that this contributed to the clinical outcome of this case.

The smuggling of illegally captured wildlife for the pet trade is a continuing problem in the Middle East. This case highlights the dangers this trade presents to both wildlife and humans. Toxoplasma gondii is a zoonosis, causing abortion in women and disease in immunosuppressed patients.

References and full text for this article will be found on the website www.wmenews.com after acceptance for publication.

Juvenille cheetah suffering from clinical toxoplasmosis and fitted with a naso-oesophageal feeding tube and iv line. (©Chris Lloyd)



Immunohistochemistry using T. gondii specific antibodies showing positive labeling of tachyzoites in cells within the alveolar septum. (©Dr David Buxton Moredun Research Institute)

Post mortem revealed severe haemorrhagic congestion of all lung lobes. (©Chris Lloyd)

THE USE OF PORTABLE CORRAL SYSTEMS AND TAMERS IN THE MANAGEMENT OF CAPTIVE AND FREE RANGE HOOFSTOCK.

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The responsible management of captive collections of exotic hoofstock begins with the proper identification and tracking of each animal together with the provision of preventative veterinary care based on the individual animal's biological history.

Essential and necessary equipment in this effort might include portable capture, sorting and holding corrals and TAMERS. The TAMER is a restraint device designed so that each animal can be physically and safely restrained without the use of immobilising drugs. Due to the variety of hoofstock species, with often large numbers of specimens in expansive areas, TAMERS are adjustable in size and are very easily transportable. Mobility allows collection managers to bring the equipment to the animals, rather than moving animals to established facilities that could be hundreds of kilometres away.

During a five day period in February, 2006 at the Endangered Wildlife Breeding and Conservation Center (EWBCC), in Al Ain, United Arab Emirates we used a portable corral system and two mobile TAMERS to individually handle 263 antelope and wild goats, including: 25 nubian ibex, *(Capra ibex nubiana)*, 82 transcaspian urial, (*Ovis* sp.) , 10 impala, *(Aepyceros melampus)* , 29 springbok , *(Antidorcas marsupialis)*, 45 markhor, *(Capra falconeri)*, 56 Cretian goats, *(Capra aegagrus cretensis)* and 1 sable antelope, *(Hippotragus niger)*.

Equipment: Modular corral systems were used to hold, sort, and move individual animals into the TAMER. These corrals are easily transported and erected quickly under most conditions. They consist of 1.22m wide by 2.44m high panels and gates that are connected together with steel pins and designed so that installation requires no specialist tools. Each panel and gate is constructed of 3.81 cm2 high-strength, galvanized steel tube covered with 1.27cm thick high impact plastic sheets. Swing doors and slide doors together with alleyway pushboards facilitate the movement of animals from the pens into and out of the TAMERS.

The TAMER Jr., a light weight (225 kg) drop floor chute, is designed to restrain small hoofstock up to 200 kgs. It was used at EWBCC to restrain, nubian ibex, transcaspian urials and springbok. Constructed of galvanized steel tube and plastic sheeting, it is adjustable and can accommodate a wide range of body sizes, from 10kgs to 200 kgs. It is easily operated and allows for unrestricted access to restrained animals for veterinary and management procedures. The TAMER Jr. can be moved, set in place by hand and can be transported by pickup truck or all terrain vehicle.

The TAMER II is a larger drop floor chute, approximately 2.44m long by 1.83m wide and 2.44m high. The TAMER II can safely, restrain animals such as roan antelope, *(Hippotragus equines)*, kudu, *(Tragelaphus strepsiceros)* waterbuck, *(Kobus lechee)* or oryx, *(Oryx,* sp.), amongst others. At EWBCC it was used to handle, sable, marhkor, impala, springbok, and Cretian goats. The TAMER II is equipped with over the road tires and can be towed by a tractor, truck or ATV.

Each TAMER was equipped with a TruTest electronic scale, consisting of a battery powered indicator and loadbars, so each animal could be weighed while in the TAMER. The weighing system was also compatible with Allflex electronic ear tags. Link 3000 software enabled the user to download the data from the load cell indicator into an ASCII file. Once downloaded, it can be imported to a spreadsheet or data base for later use.

Tamer II being brought on site ©Tom Bailey

Day 1 in Al Ain saw the TAMER Jr. used to handle Nubian Ibex, Urials, and Cretian Goats. Portable panels were put together to form a small catch pen where the animals were sorted, separated and individually run into the TAMER Jr.

Scimitar horned oryx being restrained in a Tamer II ©Tom Bailey

Day 2 involved a team of 5 erecting a 30m long by 1.2 m wide alleyway (in less than 1½ hours) to safely move 65 urials across a paved road that was separating two enclosures. Once across the road they were worked into the TAMER Jr. as before.

Day 3, 4 and 5 saw the addition of an alleyway and TAMER II to the end of an existing loading chute from a quarantine and holding facility. Markhor, impala, springbok, and sable were moved from holding pens into the TAMER II. A small crew of people; four animal handlers, one vet tech, and one veterinarian (without the use of immobilising drugs) ran 90 animals through the system and individually treated each one, without injuries or losses.

While restrained in the both the TAMER Jr. and TAMER II, each animal was given a regiment of several medications, vaccinations, a typical health exam and if required, a hoof trim, horn trim, or other veterinary procedure including minor surgery. Weights were recorded as above and each animal was tagged with an electronic Allflex ear tag.

Acknowledgements:
We thank Tim Bouts and his staff at the EWBCC for their help and support during this project.

HAND-REARING OF EXOTIC FELID SPECIES: Part 2

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Choice of Milk formula or replacer

Widely used formulas include Pet-Ag's KMR (kitten milk replacer) and Esbilac (puppy milk replacer) (www.petag.com). While KMR is specifically formulated for felids, there have been some reports of diarrhoea and some institutions prefer Esbilac. The recent replacement of the coconut oil by butterfat in both formulations has led to gastro intestinal problems in some exotic animals. The original KMR and Esbilac formulation are now marketed under Pet-Ag's ZOOLOGIC MILK MATRIX line of products as 42/25 and 33/40 and are recommended by the author. We have successfully reared both Arabian leopard and cheetah cubs on the Milk Matrix 42/25 formula. It is important to choose one brand of milk replacer as changes in the milk formula could cause gastro intestinal upset.

Feeding

Milk formula should be gradually introduced to the cub. The first feed should be pure electrolytes (Pedialyte®) followed by a dilute formula (25% formula / 75% electrolytes) that should increase in strength over the following 24 to 36 hours. Cubs consume between 15-20% of their body weight per day however the amount of formula offered at each feed should not exceed 5 - 7% of the neonate's body weight as this is the comfortable stomach capacity of carnivores. Thus divide the total daily volume of feed required by the number of feeds required each day. Decrease the number of feedings as the cub grows (see table 1) Formula can be prepared every 24 hours and kept refrigerated but should be heated to approximately 37.8°C before feeding. Formula can be reheated if necessary during a feed, but any heated formula must be discarded after each feed. Bottled drinking water should be used to make up the formula. Any neonate with diarrhoea should be bottle-fed electrolytes for one or two feeds before gradually reintroducing the full strength formula over 24 to 36 hours. A veterinarian should examine the neonate to determine the cause of the diarrhoea. Felid neonates should be fed while lying on their stomachs with the neck extended and the head up to reduce the risk of aspiration. Neonates that have fed from the mother often resist being bottle-fed and patience is required. Droplets of milk can be placed on their tongue allowing them to swallow and they may be more accepting of the nipple if it inserted into their mouth when they are half asleep.

Elimination

Neonates require massage of the anogenital region with a ball of moist cotton wool to stimulate urination and defaecation. Applying petroleum jelly to the ano-genital area after stimulation may help reduce irritation.
Some prefer to elicit elimination before the feed to make more space in the stomach for formula, others prefer to stimulate them after feeding to reduce the risk of milk contamination.

Weight gain

Weigh the neonate daily. While hand rearing on milk, expect a weight gain of 5% of the neonate's body weight per day and 8 to 10% once they are on solid foods. Occasionally neonates will not gain weight over a 24-hour period, but weight loss or no gain over a 48-hour period indicates a need to worry.

Age	**1 to 6 days**	**7 to 20 days**	**21 to 41 days**	42 days
Feeds over 24 hours	8: The 00h00 feed is eliminated first if the cub is sleeping.	6	5: Meat is gradually introduced from day 28.	4
Times	03h00, 06h00, 09h00, 12h30, 15h30, 19h00, 22h30, 00h00.	06h00, 09h00, 13h00, 16h00, 18h00 & 22h00.	06h00, 10h00, 14h30, 19h00 & 22h00.	06h45, 11h00, 15h00 & 19h30

Table 1: Recommended feeding frequencies for a healthy cub; adjustments should be made for each individual animal.

Weaning

Introduce solid food from 7-8 weeks, either by hand feeding small pieces of meat or by mixing meat in a bowl with milk formula. There is no fixed duration for the weaning process but cubs should be eating solids by 10 to 12 weeks of age. Once weaned the cub is fed 10% of its body weight per day which should be divided into 4 meals. Fresh quail and guinea fowl without the feathers or bones are minced up for the initial weaning diet and can be alternated with minced camel or beef. As the cub matures the degree to which the meat is minced can be reduced and at two to three months of age the cub can be fed meat on the bone. A vitamin and mineral supplement for carnivores (CARMIX® www.arieblok.nl.), manufactured specifically for carnivores should be added to the meat. The stool texture and consistency will change and darken once solid food is introduced to their diet.

Behavioural enrichment

The neonate's behavioural needs should be considered of equal importance to hygiene and diet. An enriched hand-rearing environment aims to meet the behavioural needs of the neonate and foster normal development. Rearing cubs with littermates is one method of achieving this. Never encourage a hand--reared felid to play with humans, imprinted wild felids can be dangerous animals. Cubs enjoy wrestling with cardboard rolls and boxes. Large soft toys can be played with while under supervision and inedible toys can be left with the cub to play with at other times. Ensure that the cub cannot ingest any part of the toy.

Arabian leopard cub © J Strick

WHAT'S NEW IN THE LITERATURE

El Alqamy, H and El Din, S. B., (2006), Contemporary status and distribution of gazelle species (*Gazella dorcas* and *Gazella leptoceros*) in Egypt , Zoology in the Middle East 39 pp 5-16.

Only two gazelle species are currently present in a wild state in Egypt. These are Dorcas Gazelle *(Gazella dorcas)* and Slender-horned Gazelle *(Gazella leptoceros)*. The latest information available about the status and distribution of these two species collected during the period 1997-2005 indicate the population size and range of both species continue to shrink at different rates. The conservation status of the two species is reviewed and a quantitative estimation for the species ranges' is provided using IUCN's Area of Occurrence and Area of Occupancy guidelines.

Matar Bani Malik, A. M., (2006), The Role of Natural Reserves for the Protection of the Environment in the United Arab Emirates, Unpublished MBA Thesis from the Sudan University for Science and Technology. banimalik2002@yahoo.com

The goal of this study was to shed some light on the situation of the natural reserves in the United Arab Emirates (U.A.E.), and to reflect on the role played by these reserves in the preservation and conservation of the environment. Specifically the study investigated to what extent these reserves contribute to environmental conservation and awareness raising among tourists and visitors. The study covered three reserves (SirBani Yas, Marwah and the center for regeneration of Arab land animals). The study depends on secondary data and primary data (Questionnaire) as source of information.

Some of the conclusions are:

- The Natural Reserves in U.A.E. contribute poorly to environmental conservation.
- Large number of plants, animals and birds has been introduced to these reserves without being accompanied by research or studies.
- There is no cooperation between the bodies in charge of these reserves and international organizations.
- Natural Reserves in U.A.E. lack technical and skilled labour.
- Natural Reserves in U.A.E. ignore the role they can play in activating and supporting National heritage and eco-tourism among tourists and the public.
- Some of the Natural Reserves in the U.A.E. lack the legal status which regulates their environmental work according to the federal law No. 24/99.

Some of the recommendations are:

- Support and promote the establishment of reserves in the U.A.E. according to the scientific and economic methods.
- Improve systems, national laws and legislation concerning the Natural reserves in U.A.E.
- Encourage cooperation and coordination between the different organisations working in the field of environmental conservation and Natural Reserves in the UAE.

De Haas van Dorsser, F.J. (2006). Reproduction in the Arabian Leopard. Cambridge, UK: University of Cambridge. Thesis.

© F. de Haas van Dorsser

The Arabian leopard is critically endangered and this project aimed to investigate the reproductive physiology of the subspecies and assess the role for reproductive technologies in its captive breeding. Half the total captive population was used for the project. Leopards demonstrated a predictable *hypothalamo-pituitary-gonadal axis* following GnRH challenge, which elicited an immediate release of LH in both sexes and a consistent rise in serum testosterone concentrations in males. Wild-caught males had significantly higher basal serum cortisol concentrations than those born in captivity, and in all cases, an ACTH challenge resulted in an unexpected rise in serum testosterone levels. Semen parameters and penile spines were described and showed individual, age- and season-related changes, which were associated with basal testosterone levels. Faecal progestagen and oestrogen concentrations were measured in females throughout the follicular cycle, during mating and for the duration of pregnancy. Females were polyoestrous and induced ovulators, with no reproductive seasonality except for a reduction in behavioural oestrus in summer. Mating induced ovulation in 60% of females and 25% of mating periods resulted in pregnancy. A new method for early, non-invasive diagnosis of pregnancy in leopards was developed by measuring urinary relaxin concentrations. Ultrasonographic examinations of the ovaries of inter-oestrous leopards showed ovarian follicles of <2mm diameter, which grew to 2-4mm in diameter following treatment with exogenous porcine FSH. Treatment with either porcine LH or human Chorionic Gonadotrophin (hCG) induced ovulation in all oestrous females, though hCG caused prolonged faecal oestrogen excretion patterns and aberrant luteal phases. Artificial insemination of females in spontaneous or gonadotrophin-induced oestrus was unsuccessful.

NEWS AND EVENTS

BALD IBIS ADULTS TRACKED TO WINTERING GROUND

Story from: BirdLife News Alert
http://www.birdlife.org/news/news/2006/10/bald_ibis.html

BirdLife partners in the Middle East, Africa and the UK have come one step closer to discovering what is preventing sub-adult Northern Bald Ibises Geronticus eremita returning to their breeding grounds in Syria. Using satellite tags, a group of ibises was tracked to the highlands of Ethiopia, where they were last recorded almost 30 years ago. Thirteen birds—two breeding pairs, six juveniles and three sub--adults—left the breeding site in Palmyra, Syria, in July. Ethiopian conservationists found the trio of tagged adult birds—plus a fourth adult—in the first week of October, although the birds are known to have been in Ethiopia since August. Mystery still remains as to where the subadult birds spend their time before returning to the breeding colony.

Despite breeding well in Syria where the birds are protected by Bedouin nomads and Syrian government rangers, the colony's numbers have not increased. Scientists fear that hunting, overgrazing or the heavy use of pesticides including DDT somewhere on the birds' migration route has been keeping numbers low.

"We are very hopeful that the other bald ibises from Syria are nearby and we will be making a second visit to the area next month to try to find them," said Mengistu Wondafrash, Team Leader at the Ethiopian Wildlife and Natural History Society (EWNHS, BirdLife in Ethiopia). "In Ethiopia, we will be doing all we can to implement conservation measures to help increase the numbers of this rare but special bird."

The Yemeni Environment Minister, Abdul-Rahman F. al-Eryani, also saw the birds while they were in Yemen. He said: "I was very excited to find that the birds could once more be seen in Yemen. We recognise the importance to our country of their migration and we will be waiting for them to return on their way back to Syria. We will do our very best to see them safely on their way."

"They have chosen their site well because Ethiopia is famous for its protection of wildlife and their last port of call was Yemen where the government is also supportive," said Chris Bowden of the RSPB (BirdLife in the UK), who has been involved with the project since the tiny Syrian colony—only the second remaining in the wild—was discovered four years ago. "We thought the birds would go to Yemen, Eritrea or Somalia and were surprised at the length of their journey—3,100 km—and the speed with which they covered the distance."

Northern Bald Ibises were last seen in Ethiopia in 1977, but their current site is remote and the terrain difficult, which may explain why they have not been seen since. BirdLife researchers will find out what local people know of past visits by the ibises to Ethiopia. Their work is being part-funded by the National Geographic Society.
Ibrahim Khader, Head of BirdLife Middle East, said: "We are optimistic that protection of the ibis in Ethiopia and Yemen will be good but the birds must still survive a perilous journey to get there each year, and it is our job to make that journey safer. If we can do that, this population will have a much better chance of survival."
Protection measures on the ibises' migration route could include replacing harmful pesticides and making hunters aware of how rare and vulnerable the species is.
Track the birds' progress at: www.rspb.org.uk/tracking/

Northern Bald Ibis and egrets in Yemen. (©Richard Porter)

Northern Bald Ibis (*Geronticus eremita*). (©Chris Gomersall/RSPB Images)

RAKBANK sponsors Ras al Khaimah nature reserve study

The National Bank of Ras al Khaimah has generously sponsored a series of biodiversity studies at the Hulayla mangrove wetland in Ras al Khaimah. These studies have been coordinated by the Government of Ras al Khaimah's Environment Protection and Industrial Development Commission (EPIDC).

Information gathered is being used to prepare a proposal for establishing a Hulayla Nature Reserve, which will be presented in early 2007 to the Crown Prince and Deputy Ruler of Ras al Khaimah, His Highness Sheikh Saud bin Saqr al Qassimi.

Hulayla wetland is unique in the UAE and Arabian Gulf for the following reasons. It is a vital spawning and nursery ground for commercial fish, and is nationally and internationally important as a feeding site for resident and migratory birds.
It possesses a regionally unique coastal vegetation community and its scenic importance and rich archaeological heritage add further value and tourism potential.

Greater Flamingo against a backdrop of the Ru'us al Jibal mountains (©Hanne & Jens Eriksen).

Mangrove, Avicennia marina (© R.Llewellyn-Smith/EPIDC).

NEWS AND EVENTS

Conservation Workshop for the Fauna of Arabia - Protected Areas, Short Report

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The Eighth Annual Conservation Workshop for the Fauna of Arabia was held at the Breeding Centre for Endangered Arabian Wildlife (BCEAW) in Sharjah, UAE from the 29th of January to the 1st of February 2007. The workshops are hosted by the Environment and Protected Areas Authority (EPAA) of the Government of Sharjah under the patronage of His Highness Dr Sheikh Sultan bin Mohammed al Qassimi.

In pursuing the recommendations of previous workshops, the discussions this year marked a significant departure from the usual workshop assessment format. Since 2000, the workshops have followed a similar evaluation process to that advised by the IUCN Conservation Breeding Specialist Group (CBSG) for assessing the status and distribution of species native to the Arabian Peninsula and formulating regional and national conservation action plans for their ongoing survival. Status and distribution profiles compiled at each workshop are submitted to the IUCN Red List for Threatened Species, which is a global database that is assessed following specific categories and criteria. The objective of these assessments is to determine the relative risk of extinction to each species and highlight those taxa that are facing a higher risk of global extinction (e.g. taxa classified as Critically Endangered face the highest threat of extinction). A common recommendation identified (for all taxa) by regional and international experts was the need to identify and establish suitable habitats able to support self sustaining wildlife populations. The topic prepared for the 8th annual workshop therefore aimed at assessing existing and proposed protected areas in Arabia. Facilitated by Dr. Anthony Hall-Martin, from South Africa and Dr. Philip Seddon, from New Zealand participants at the workshop debated this broad topic under four main headings, which were 1) Protected area establishment and management, 2) Nature based tourism, 3) Local community involvement, and 4) Trans-frontier conservation cooperation.

1) Protected Areas Establishment and Management

Dr. Anthony Hall-Martin is a leading expert in conservation biology, research and conservation management and specializes in biodiversity conservation throughout Africa. He used his experiences across the African continent to provide a practical insight into the many aspects of wildlife management and the requirements for proposing and establishing successful protected areas. Dr. Hall-Martin used regional protected area models to highlight the application of IUCN categories for the establishment of protected area networks. He further highlighted the need for such networks to include biodiversity hotspots, threatened, endangered, and relict species, and to take into account the protection of representative examples of intact ecosystems.

2 and 3) Nature based Tourism and Local Community Involvement

Dr. Hall-Martin was supported by Dr. Philip Seddon who is the Director of Wildlife Management, Department of Zoology at the University of Otago in New Zealand. One of Dr. Seddon's special interests is the environmental impact of nature-based tourism and he focused on guiding the working group discussions through this assessment phase. Nature-based tourism can provide important revenue towards sustainable management of selected protected areas, whilst offering unique opportunities to engage both the general public and local communities in conservation projects. Experiences from delegates of the countries represented provided examples of lessons learned concerning the integration of tourism development with reserve management to ensure that conservation benefits are fulfilled while impacts are minimised. Local community involvement in the establishment of protected areas was considered essential as an alternative to the mahmiyah approach of excluding people from culturally important regions. The restoration of the ancient Islamic concept of himã (an area set aside specifically for the sustainable use of natural resources by and for local communities) was a topic eagerly and extensively debated.

4) Trans-frontier Conservation Cooperation

Trans-frontier conservation cooperation is another area in which Dr. Hall-Martin has extensive experience. This topic was unanimously recognised by the participants as an area of future importance on the Arabian Peninsula. Various situations were identified where existing or proposed protected areas lie along the borders of two or more countries (or emirates). Co-operative cross-border protection would significantly enhance the conservation value of these protected areas, and would facilitate the natural movements of migratory species. Such an approach would also create a focus for international co-operation. This was a topic that was strongly recommended for further evaluation at future conservation workshops.

Editors Note:
Due to space limitations Conservation of the Arabian leopard – Workshop Report by Jane Edmonds could not be included here but is available online at www.wmenews.com and follow the links.

Dr Antony Hall-Martin leading a discussion at the Sharjah meeting. ©Declan O'Donovan.