



Wildlife Middle East

NEWS

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Children get it spot on to save leopards

SPREAD AWARENESS ABOUT ANIMALS FACING EXTINCTION



Arabian leopard in danger

Malachi Bailey and Christopher Houston dressed in theme. Pupils from the Horizon School in Dubai had a fun day as they took part in activities which helped them learn more about the leopard.

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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

It is impossible not to notice the breakneck pace of development in the Middle East. Drive down the roads and count the number of building sites, cranes and emergent skyscrapers. Open the newspapers and up until a month ago, when easy credit dried up, adverts tempted readers with the prospects of double digit profits on a luxury property development. One consequence is that the environment and wildlife populations of the Middle East are under tremendous pressure. Developers and decision makers appear to be disconnected from environmental consequences. But given that cracks are appearing in the regions environmental window that directly affect the quality of life of human and wildlife inhabitants, things may now change.

In our last Marine issue, we raised the issue of the potential damage that oil pollution could cause to both the natural ecosystems of the Middle East and the growing tourist industry. So much for 'Oil-gate'. Little did we suspect that Dubai would be hit by 'Sewage-gate'? The contamination of parts of the Dubai coastline, close to well known 5* hotels, was a problem that few of us could have imagined happening in a city keen to project itself as a high end tourist destination. This situation is caused by too many people producing too much waste and too little infrastructure in place to deal with the sewage.

Sammy the whale shark, originally a free resident of the Arabian Gulf, made headlines throughout the world, unfortunately not the right sort of headlines. What could have been a public relations coup for the newly opened Atlantis resort - a story about an organisation rehabilitating a debilitated shark back into the wild - turned sour when rumours circulated that fishermen had allegedly been paid to catch the shark from the sea and that Sammy was destined not to be released, but instead to become a tourist attraction. Fact or fiction? The public outcry became global and the last the editors heard was that pressure from local government may encourage Atlantis to release Sammy back into the sea. Congratulations to the officials in the UAE government who took up Sammy's cause. It could be said, tongue in cheek, that Sammy might prefer living in his clean Atlantis aquarium to be being released in a sea contaminated by raw sewage! In addition, as we read from Dr Hampel's article on the rehabilitation programme of turtles, the sea can be a dangerous place for marine animals due to frequent collisions with boats.

It may be that the credit crisis could offer breathing space for the regions much pressured environment. Saud Anajariyya and colleagues demonstrate clearly how our rubbish is lethal for Arabian oryx in Saudi Arabia. Plastic bags carelessly discarded by humans blow into the desert, get eaten by animals such as oryx and accumulate over time eventually leading to an agonising death as the bags obstruct the stomach.

Without an accurate estimate of animal numbers in a reserve, proper management is not possible. To quote Professor Rudi Bigalke, determining animal numbers is like "opening a can of worms" and the complexities of determining free ranging animal numbers are often not understood or appreciated. We are grateful to Peter Cunningham and colleagues who concisely explains the science of estimating animal populations in a reserve in Saudi Arabia.

While the plight of the Iran's critically endangered Asiatic cheetah has received much international attention, efforts to conserve the Persian leopard leave much to be desired. Dr Ghoddousi and colleagues update us on the problems facing the Persian leopard in Iran. The work of the Persian Leopard Project is a positive initiative but clearly, as the authors state, more resources and collaborative ventures are needed.

The use of synthetic ultraviolet lighting is now recommended by veterinarians and aviculturalists for environmental enrichment in birds housed indoors. Bailey and Lloyd provide an overview of research on ultraviolet lighting, including many positive benefits to captive breeding projects such as improved vitamin D3 synthesis, vision, and breeding and feeding behaviour.

Not all species are threatened, some species, like the house crow have expanded their range throughout the Middle East and have become pests. Ryell and Meier explain why there is concern over the regional spread of this species and suggest what steps should be considered by the authorities to limit the crow population.

Well-designed animal holding and handling facilities that incorporate manual restraint equipment are essential for the proper care of captive animals. Mark MacNamara and colleagues describe how handling facilities and behavioural conditioning provide a non-stressful environment for animals such as Prezwalski's horses. This has enabled the development of a research programme to investigate the reproductive biology of this endangered species.

Over 10,000 AED has been raised by the children of 4 primary schools in Dubai for the Yemen Leopard Recovery Programme through their 'Spotty Days'. At the same time, the Sanaa International School (where David Stanton, the founder of the YLRP works) had a sponsored walk. The money raised by the children will go towards the publication of a children's book called 'Vanishing Spots'. WME News is proud to promote projects that raise awareness of important conservation issues in a region where, if nothing is done soon, very little wildlife and nature will be left for tomorrows' children. The editors thank the Organic Café for distributing our newsletter flyers and magazines. Finally, thanks to Gulf News for allowing us to reproduce part of their article on Spotty Day as our cover image.

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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.

DETERMINING ANIMAL NUMBERS AN INTRICATE TASK

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Introduction

The complexities of determining free ranging animal numbers are unlimited and often not understood or appreciated. Managers need information on the carrying capacity of an area and stocking rate of animals and without any idea of animal numbers on the ground reserve management becomes nigh impossible. We use recent ungulate surveys employing different techniques and analyses thereof in the Uruq bani M'arid Protected Area - located approximately 750 km southwest of Riyadh and 12 500 km² in size with a Core Area of 2400 km² - as a case study.

Methods

Four techniques for estimating ungulate numbers from sample counts were used for comparative purposes. The counts were vehicle and aerial based. The vehicle surveys were conducted using three vehicles with one driver and two observers. All animals were counted although a strip width was determined for each transect depending on the general visibility along the various transects and varied between 400 m to 800 m. The counts were conducted over two days in March. An aerial survey (flying height - 500 ft & speed - 100 knots) using a predetermined strip width of 300 m was conducted in May for comparative purposes. The techniques used to analyse the data were:

- 1- Road Strip Count.
- 2- Strip Count using correction factors (area & species).
- 3- Drive Count (adapted for vehicles).
- 4- Aerial Survey using Strip Count.

Results

The vehicle survey covered 1166 km along six predetermined transects sampling 719 km² at four hours/transect while the aerial survey covered 749 km along 15 fixed transects sampling 449 km² at 4 hours and 41 minutes. The various techniques used resulted in the following extrapolated ungulate numbers:

- 1- Road Strip Count

Table 1. Road Strip Count Results.

Species	Total number seen	Calculation	Estimated number
Reem gazelle	36	$36 \times 7600 \text{ km}^2 \div 719 \text{ km}^2$	380
Arabian oryx	19	$19 \times 7600 \text{ km}^2 \div 719 \text{ km}^2$	200
Mountain gazelle	20	$29 \times 1200 \text{ km}^2 \div 144 \text{ km}^2$	242 or 121 [50% of habitat]

- 2- Strip Count using correction factors (area & species)

Table 2. Strip Count Results using Correction Factors.

Species	Total number seen	Total under <500 m	Area corr. Factor	Species corr. factor	Calculation	Estimated number
Reem	36	33	11.8	1.9	$33 \times 11.8 \times 1.9$	740
Oryx	19	7	11.8	2.9	$7 \times 11.8 \times 2.9$	240
idmi	20	22	10	1	$22 \times 10 \times 1.1$	242

- 3- Drive Count (adapted for vehicles)

Table 3. Drive Count Results.

Species	Total number seen	Fixed Factor	Estimated number
Reem	36	10.6	282
Oryx	19	10.6	201
idmi	20	10.6	307

- 4- Aerial Survey using Strip Count

Table 4. Strip Count Results – Aerial Survey.

Species	Total number seen	Calculation	Estimated number
Reem	5	5	n/a
Oryx	23	$23 \times 2400 \text{ km}^2 \div 449 \text{ km}^2$	123
idmi	3	3	n/a

Table 5. Summary of the census results conducted in March (vehicle) and May (aerial) 2008 in the Uruq bani M'arid Protected Area.

	Reem		Idmi		Oryx	
	Ground	Air	Ground	Air	Ground	Air
Total groups seen	19	3	19	3	8	12
Total individuals seen	36	5	29	3	19	23
Average group size	1.89	1.67	1.53	1	2.38	1.92
Range in group size	1-7	1-2	1-5	1	1-9	1-9
% Calves & sub adults	6	20	3	-	15.8	8
Estimated numbers	380	n/a	121	n/a	200	123
Sightings/100km	3.1	0.67	2.5	0.4	1.6	3.07

Discussion

Depending on the technique and consequent calculations used, extrapolations vary between 380-382-740 for Reem Gazelle, 121-242-307 for Idmi (Mountain Gazelle) and 123-200-201-240 for Arabian Oryx. These numbers are estimates based on extrapolations only with the value of this lying in regular – i.e. biannual – follow-up surveys to determine population trends over time. The advantages of such surveys are legion with numerous other data able to be collected at the same time – e.g. animal distribution & movement, animal and vegetation condition assessment, population structure, calving/lambing percentage, mortalities, etc. Aerial surveys are quicker – i.e. cover more ground, but have other problems, the biggest being the flying height (300 ft is recommended for smaller ungulates) and observer experience.

Although time consuming and often fraught with environmental problems, such monitoring is imperative for the efficient management of Protected Areas as ungulate stocking rates and determining a sustainable carrying capacity are based on such numbers and population trends. This underscores the importance of regular monitoring for effective management.

Acknowledgements

We acknowledge H.R.H. Prince Bandar bin Saud bin Mohammed Al Saud, Secretary General, NCWCD for his support towards conservation efforts in Saudi Arabia. Our appreciation is expressed for our intrepid pilot, Captain Jodeat and all the Uruq Bani M'arid rangers and staff. We also thank Ernest Robinson (Director KKWRC, Thumamah) for commenting on a draft of this note.

A full version of this paper is available for download at the WME News website



Fig1. A fixed wing Maule as used during the aerial survey (©Peter Cunningham).

IMPACT OF PLASTIC BAGS ON ARABIAN ORYX IN MAHAZAT AS-SAYD PROTECTED AREA IN CENTRAL-WESTERN SAUDI ARABIA

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In Saudi Arabia the Arabian Oryx reintroduction program was started in 1986 by the National Wildlife Research Center (NWRC) under the Wildlife Conservation and Development (NCWCD). Concurrent conservation programmes for the protection of large areas within the former range of the Arabian Oryx, and the captive breeding of oryx at the NWRC in Taif have together enabled the restoration of the species in the Kingdom. The first reintroduction took place in the fenced Mahazat as-Sayd Protected Area in 1990.

For several years Mahazat as-Sayd has experienced a drought and we have found hundreds of dead animals, mainly sand gazelles, oryx and ostriches. Young animals are more vulnerable to this situation because they require more energy and water per body unit than adults to satisfy their high metabolic needs (Ostrowski et al. 2003; Ostrowski & Williams 2006). Most animals died near the fence of Mahazat that prevents natural movements of animals, and artificially concentrates the ungulate populations, possibly in an unfavourable habitat.

Another problem is plastic bags that are blown by the wind into the protected area from the road that connects Riyadh to Khurma city. This road is 50 meters distance from the fence which marks the western boundary of the reserve and runs alongside the fence for some 70 km. We observed that oryx lick the plastic bags as these bags might be salty tasting and many will ingest the whole plastic bag.

We observed that several Arabian oryx and sand gazelles were wandering in the reserve in search of food and were attracted to the supplementary food provided for the ostriches. Exploiting this behavior we offered supplementary food to attract individuals into an enclosure. In 2007, we captured 30 oryx by these means. In January 2007, we observed a recumbent male which despite our repeated attempts would not stand up. Clinical examination showed anemia, low body temperature (28 °C) and a slow heart-beat. Surgical rumenotomy showed obstruction of the rumen. Approximately five kilograms of plastic bags and indigestible material such as rubber and wood were recovered from its rumen.

Over a period of a month, a total of seven individuals from the enclosure, five males and two females died. Oryx died at a rate of two individuals per week. They were subjected to post mortem examination which revealed plastic bags inside the rumen as the cause of death. Between two and five kilograms of plastic bags and undigested food were recovered from each individual's rumen.

The large number of animal mortalities necessitated the urgent collection of plastic bags by rangers and field researchers near the fence of the reserve. Plastic bag removal is now carried out throughout the

year and during the census. We also requested the municipality to help remove plastic and other garbage from around the fence.

NWRC has also been working on an information program to inform both local people in the vicinity of the species release area (Mahazat as-Sayd Protected Area), and the public at large about the conservation of reintroduced animals, in order to gain their support. The local support has been vital to the long-term success of re-introduction of the Arabian oryx.

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Fig1. Dead oryx that died of plastic bag impaction (© NWRC).



Fig2. Plastic bags removed from the stomach of one oryx (© Z. Islam).

PERSIAN LEOPARD PROJECT IN IRAN

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While most attention has been given to the plight of the Iran's critically endangered wild cat, the Asiatic cheetah (*Acinonyx jubatus venaticus*), efforts to conserve the Persian leopard (*Panthera pardus saxicolor*), leave much to be desired. Globally known as one of the largest of many subspecies of leopard, this felid is the only «big cat» nowadays surviving in Iran after the extinction of Caspian tiger (*P. tigris virgata*) and Asiatic lion (*P. leo persica*).

Until 40 years ago, the leopard was considered as a common or even pest species throughout Iran by reviewers of the nation's rich biodiversity. Leopards are distributed in diverse habitats in Iran, wherever sufficient prey is present, with the exception of vast plains and cultivated lands. Sporadic reports are received annually on the depredation by leopards on livestock, resulting in poisoning or shooting of the problematic animals. Unfortunately no proper conservation action has been carried out within the country for this «endangered» subspecies and the population is guesstimated to number 550-850 individuals. Due to ever-increasing threats to leopard survival from direct poaching, habitat fragmentation and prey loss, this «protected species» (by Iran's Department of Environment laws) is facing a drastic extirpation in low-density areas.

Since June 2007 research and conservation efforts on leopards in Iran has been coordinated by the «Persian Leopard Project» with the collaboration of international conservationists and scientists from around the world, Plan for the Land Society and the Department of Environment in Iran.

The pilot site of the Persian leopard project is Bamu National Park in Southern Iran which has been leopard habitat for a long time, but is now highly fragmented by human-dominated landscapes. As a first step, the project managed to implement non-invasive scientific methods to assess the status of leopard in Bamu. Since September 2007 a six month intensive camera-trapping survey was carried out. Seven individual leopards were identified through their unique coat pattern and a density of around 1.8 individuals/100 sq km was estimated. This is much higher than previous studies on Amur and Arabian leopard (*P.p. orientalis* and *nimir*) in Russia and Oman, but lower than previous guesstimates on Bamu leopard capacities. Parallel to this, other scientific studies on leopard signs (scrapes, tracks, scat analyses, etc.) and attractants (lures) have been initiated.

These days the project is becoming more conservation-oriented and includes public-awareness in surrounding villages, programmes to raise the awareness of the younger generation and even campaigning in cities to bring

attention to the Persian leopard. Connecting zoos keeping Persian leopard inside Iran and around the world would also help in global campaigning activities. A major threat to larger wildlife in Bamu is the high incidence of poaching in contrast to other protected areas of Iran. High poacher-warden conflicts and lack of motivation of game wardens are reasons behind establishing the «Persian Leopard Trust» among Bamu local communities and game-wardens. Basic educational courses on Bamu biodiversity, wildlife conservation and ecotourism capacities are going to be held with collaboration of international organizations. Equipping this Trust with modern conservation tools and techniques and bonuses on capturing poachers will be indispensable in the future and will need the support of different partners.

After compiling leopard status data and defining the preliminary conservation goals, the Persian leopard action plan for the long-term survival in Bamu National Park will be prepared and endorsed by different parties. Over the next year we will add to our project sites and would definitely welcome collaboration from interested people and organizations.

Acknowledgements

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Fig1. A camera-trap photo of Cyrus, the dominant male Persian leopard of Bamu National Park (©Plan for the Land Society).



Fig2. A typical landscape of Bamu National Park with a ridge-top route and a leopard scrape, the most common sign of leopard presence (©Taher Ghadirian).

REPAIR OF A FRACTURED PLASTRON IN A GREEN TURTLE (*CHELONIA MYDAS*)

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A cooperative turtle rehabilitation programme, under the umbrella of the Wildlife Protection Office has been running since 2004 in Dubai. Debilitated turtles are initially treated by Al Wasl Veterinary Clinic, and later husbandry is provided by the Burj al Arab Aquarium team. Final-stage rehabilitation is conducted, partly as a public awareness programme, within the Madinat, Jumeirah waterway complex. Species received by the rehabilitation project include both Green (*Chelonia mydas*) and Hawksbill turtles (*Eretmochelys imbricata*) of all sizes. Reasons for presentation range from post-winter debilitation to severe physical injury.

Green turtles are distributed throughout tropical areas of the Atlantic, Pacific and Indian Ocean. They are found in the Arabian Gulf and nest in large numbers in Oman. Adult Green turtles, can reach a maximum weight of up to 160kg and a maximum straight and curved carapace length of between 88-117cm. Adult Green Turtles are herbivorous and commonly feed on sea grass and algae. Juveniles are omnivorous feeding on fish, molluscs, crustaceans and sponges.

On 12th March 2008 a 30kg sub-adult Green turtle was found floating off 'Palm Jumeirah', Dubai. It exhibited strong positive buoyancy and had sustained a large plastron fracture as well as several injuries to the head and carapace (Fig 1). Wounds were washed with povidone iodine solution and rinsed with saline solution. Bone fragments were removed from the fracture site and the edges debrided.

Three fracture lines, in excess of 10cm length were present in the plastron, radiating from a central plastron deficit. The plastron moved freely at the fracture site with the weight and movement of the turtle. In order to immobilise the fracture screws were placed each side of the fracture. The screws used were sterile 12 mm self-tapping 316-grade stainless screws. A 2 mm pilot hole was drilled prior to fixing the screws. Whilst applying pressure to the plastron either side of the fracture, 30 G stainless steel wire was wound between the screws reducing the fracture gap. A single layer of sterilized fibreglass cloth, impregnated with freshly prepared, rapid polymerizing epoxy resin was used to cover the implants and fracture site (Fig 2). To prevent resin entering the deficit the fracture lines were packed with Dexpanthenol cream. When tack-dry, a second mix of resin was applied, this time including microfibre filler. This enabled the screw heads and entire repair to be planed smooth and prevent the repair fouling on any underwater structure.

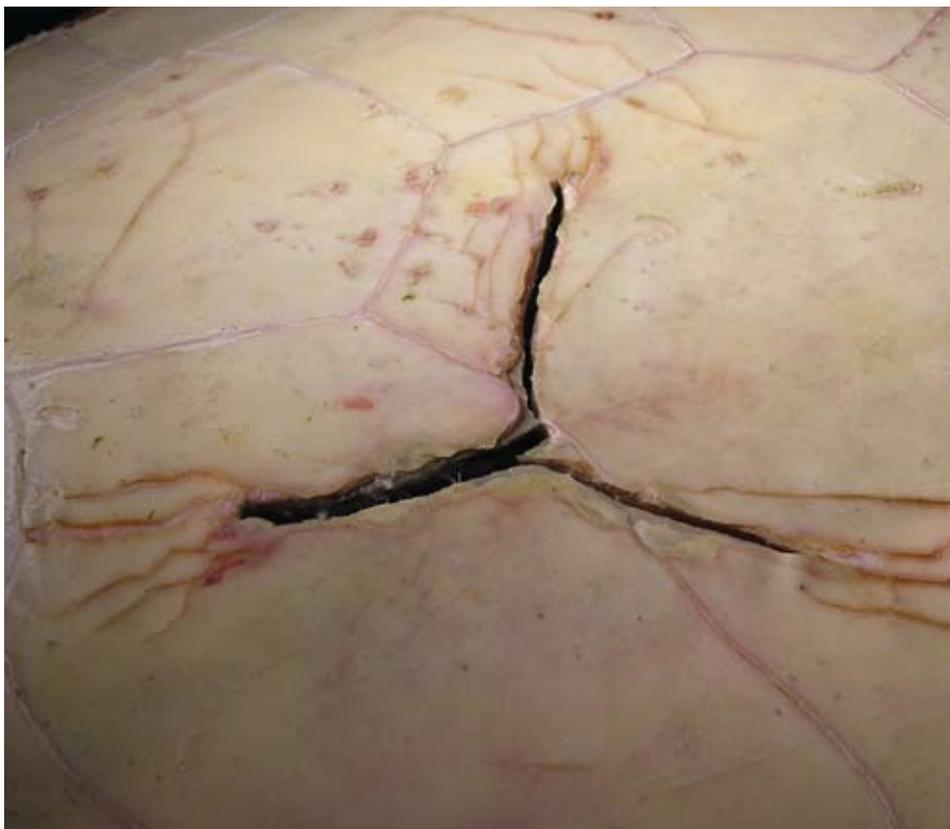


Fig1. A massive triangle fracture of the plastron (caudal, right hypastron) (© Hampel).



Fig2. 30 G stainless steel wire was wound between the screws reducing the fracture gap (© Hampel).

After curing, the turtle was put in a controlled enclosure maintained at 26°C and treated with Cefazidime 20mg/kg IM q 72 hr for 2 weeks. Initially positive buoyancy and distress were so severe that the turtle was unable to be contained in tanks, and was kept in a greatly reduced area to restrict movement and possible self-injury. After 14 days, transfer to standard quarantine tank was achieved without undue stress.

Regular blood examinations are ongoing, to monitor any adverse changes. To date apart from a mild increased stress related CK level at the first blood sampling, the haematology and biochemistry results have remained within normal parameters. The turtle is currently self-feeding aggressively on a diet of squid and mixed vegetables. Positive buoyancy is still a challenge, but appears to be reducing slowly. The turtle will remain in captivity until this is resolved. At that time it is hoped to release the turtle, which is an ideal candidate for post-rehabilitation survival and satellite telemetry studies.

Update:

On the 8th October 2008 the repair-structure detached from the plastron as one piece, including the screws. Underneath the healing process was revealed (Fig 3). The large triangular plastron fracture was smaller, and the edges as well as the screw holes were covered with new healthy tissue. As the turtle is currently self-feeding aggressively on a diet of squid and mixed vegetables, and the positive buoyancy is resolved, the animal has been relocated to an open rehabilitation pre-release enclosure.



Fig3. Healing process 7 months after surgery (© Hampel).

THE IMPORTANCE OF LIGHTING FOR ZOOLOGICAL COLLECTIONS IN THE MIDDLE EAST

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The Middle East has such an extreme climate during the summer months that many zoological species are maintained within the closed environment of buildings for part, or even all of their lives. The problem with 'artificial' environments is that the animals are totally dependent on the inputs provided by their human carers. Given our incomplete understanding of the biological requirements of the majority of the zoological species kept in captivity it is hardly surprising that things go wrong. When the 'inputs' are incorrect, then the animals tell us something is wrong by getting sick, by not breeding or by producing young that fail to thrive.

In aviculture, photoperiod, temperature, humidity and diet have traditionally been considered the key factors requiring precise management for projects breeding or moulting birds (Cooper 2002). However, the importance of providing the correct type of lighting in general and specifically ultraviolet (UV) radiation on the health and welfare of animals maintained in artificial conditions has only recently been realised. The authors have seen cases of nutritional secondary hyperparathyroidism in young animals, calcium deficiency in older animals and episodic epileptiform seizures associated with inadequate lighting in projects.

Why is UV light important for birds?

The eyes of most diurnal birds are, as in some reptiles and fishes, enabled for light perception in the UV spectrum, ie between 360 and 700nm (Varela et al, 1993; Korbelt, 1999). This ability is bound to special retinal cones with a maximum sensitivity within the light spectrum between 360 and 420nm. In comparison, the human eye lacks UV sensitivity (UV blindness) as UV light cannot pass through the lens which acts as a UV filter. Thus total light perception in man ranges from 400-680nm.

One of the earliest field studies to demonstrate the significance of UV perception to birds was in 1994 when scientists demonstrated that the urine and faecal scent marks of small voles are visible in UV light. European kestrels are able to see these scent marks in UV light and to use them as a sign of prey patches in a habitat (Vitelli et al, 1994). The role of UV perception in birds is summarised below:

- Sex recognition. UV reflection of the plumage can differentiate sexes.
- Food selection. Ripeness of foods assessed from their UV reflection.
- Calcium metabolism.
- Food intake.
- Comforting behaviour.

What about flicker frequency?

Normal neon lights emit a non-continuous light with a frequency of 50 cycles per second (on/off switching per second). While this frequency is not discerned by the human eye, birds possess a spatial frequency that can distinguish up to 160 frames/second and it is thought that the stroboscopic effect of neon light may lead to negative consequences. Indeed Verwoerd (2001) reported episodic epileptiform seizures in peregrine falcons maintained in a facility that used old neon lights that were observed visibly flickering to human eyes. These birds recovered when they were moved into outside pens and exposed to natural light. Korbelt (1999) has postulated that the stroboscopic effect of too low a flicker frequency for birds (50Hz) could lead to negative behaviour in birds, such as cannibalism and feather picking.



Fig1. Adult parrot with deformed long bones, a consequence of nutritional secondary hyperparathyroidism when it was a chick (© Tom Bailey).

Recent research

In 2007 the William Hunting Award was awarded to Mr Michael Stanford from the UK by the Veterinary Record, a leading professional journal for his paper "Effects of UVB radiation on calcium metabolism in psittacine birds" (Veterinary Record, 2006, vol 159, pp 236-241). This research was considered to have extremely important health and welfare implications for parrots and other exotic birds kept in captivity. Mr Stanford's study is the first, and to the authors knowledge the only major study of this subject in any bird species. The study took two groups of parrots fed either a seed or pellet-based diet and kept in an indoor aviary. In a carefully designed experiment over the course of a year, exposing the birds to artificial UVB lights (36W, FB36, ARCADIA, <http://www.arcadia-uk.info/>) for 12 hours a day increased concentrations of ionised calcium in the plasma of both groups of birds independent of the calcium and vitamin D3 content of their diet. On the basis of this research Mr Stanford recommended the provision of artificial unfiltered UVB light for captive grey parrots, in addition to a formulated diet with adequate levels of calcium and vitamin D3. This research has clear implications to other species of birds maintained in artificially controlled conditions and an increasing number of falcon and bustard breeding projects in the UAE are using full spectrum lighting.

Not only birds

Interestingly in the UAE the UVB and calcium issue is not just a veterinary problem, this is a medical problem and there have been numerous articles in the National paper (<http://www.thenational.ae/article/20080518/NATIONAL/253051252>) about the high numbers of human infants developing rickets because of a culture of not exposing children or adults to the sun. Indeed 95% of UAE National women are reported to be deficient in vitamin D which can be linked to colon cancer, liver or kidney disorders and multiple sclerosis, among other conditions.

New World primates

New world primates, in particular callitrichids may have higher requirements for vitamin D3 than humans. For this reason, it is recommended that indoor exhibits of New World primates should be furnished with UVB lighting (Thornton, 2002).

How much is enough UV?

There are no studies showing how much UV is necessary for optimum calcium metabolism, let alone all the harder to measure behavioural functions. More studies are needed. Francis Baines (UK) and Laura Wade (USA) and a small team of enthusiastic herpetologists have done a considerable amount of research on the use of UV light on reptiles (see: <http://www.uvguide.co.uk/>). What is clear is that too much UVB can be both dangerous and lethal. Ultraviolet light induced photokeratitis in parrots caused by aviculturalists using some brands of UV spectrum bulbs manufactured in China has been reported by Wade (2008). Potential users should pay great attention to sourcing UV spectrum bulbs from reputable companies.

Conclusion

The use of synthetic ultraviolet (UV) lighting is now being more widely recommended by veterinarians and aviculturalists for environmental enrichment in birds housed indoors (Wade, 2008). In addition to the positive effects on vitamin D3 synthesis, other benefits are thought to include improved vision and behaviour.

Acknowledgements

We thank Laura Wade and Francis Baines for their dedication in pioneering much of the work on UVB in exotic species and for their helpful comments.

References are available on the pdf version on the website [wmenews.com](http://www.wmenews.com)

HOUSE CROW IN THE MIDDLE EAST

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House Crows *Corvus splendens* are native to the Indian subcontinent but, for nearly 150 years, they have been expanding their range, primarily ship-assisted, throughout the Indian Ocean seaboard, its islands and beyond (Ryall 2002); quickly achieving pest status wherever they establish. House Crows are now common introduced residents in many settlements, towns and cities in coastal areas of the Arabian Peninsula and Gulf.

According to Barnes (1893), some House Crows were released in Aden by an officer of the Bombay Infantry in the 1840s, though it is widely believed locally that Parsee immigrants brought them in (Ash 1984). In any case, by the 1960s, they were common breeding residents, reaching pest proportions in the Aden-Lahej-Abiyan area. Michael Jennings (1992) reviewed their status in Aden and described attempts taken to control their numbers.

The importance of this Aden release is not only the initiation of the first population in the region, but also that the massive crow colony that has subsequently developed in this international port, has long acted as a major source of ship-assisted spread, both regionally and globally. This spread from Aden has without doubt been amplified by the arrival, on many occasions, of House Crows aboard ships coming directly from Indian and Pakistani ports to ports in the Gulf and elsewhere, but the relative importance of these two sources is impossible to assess.

Within Yemen, from Aden the crows have spread to many coastal towns eastward to Oman and northwards along their Red Sea coast to Saudi Arabia. They have recently established on Socotra on a ship from Aden (Al-Saghier 2001) and, despite attempted eradication, a small population persists. House Crows have been present in Muscat, perhaps, since the 1920s and then spread to coastal towns northwards to the UAE and southeast along the Oman coast at least as far as Masirah. In the UAE itself, Jennings (1981) reported many House Crows along the east coast in villages with palm plantations by the early 1970s. They were present in Dubai by 1977 (Richardson 1990) and, in 1987, were at Abu Dhabi airport and Hatta, Huwailat, a few km inland. Though not in Qatar until the early 1990s, they were by 1995 turning up in Doha and up to 60km to the north. In Bahrain, House Crows appeared intermittently up to the 1970s (Nightingale & Hall 1992), but from 1983 were permanent breeding residents in villages in the north. In Saudi, after their first arrival in Jeddah in 1978 (Jennings 1981) they quickly reached pest status and, since 1986 (Baldwin & Meadows 1987) a large population has developed in Yanbu, a port 300km north of Jeddah. Further north still, a few were present in Haql, on the Gulf of Aqaba in 1989 (Mike Jennings pers comm.), close to the long standing population at Elat/Aqaba. Though House Crows were first recorded in Kuwait in 1972, they are still absent from Iraq.

House Crow distribution in Arabia shows a strong preference for the coast strip, as is the case elsewhere in their introduced range, which reflects the distribution of human settlements on which the species is dependent. However, in recent years they have begun to follow development projects into more inland

sites. In 1989, Mike Jennings found House Crows to be common at Lahej, 40km from the port of Aden, and this still represents one of the most inland populations in the Arabian Peninsula.

House Crows are omnivores, scavenging on human waste and stealing food, and this dependence on man accounts for their widespread recognition as a pest. Adverse impacts include food theft, crop-raiding, damage to livestock, fouling of the human environment and water supplies, and bird strike risk for aircraft. As a gregarious and noisy species they are regarded as a nuisance, particularly around their large communal roosts in residential and tourist areas. Of particular concern in these days of West Nile Fever and bird flu is the House Crows' potential as a vector of human disease, by virtue of their close association with man. As yet, there is as no firm evidence for this, but they are proven carriers of potential human enteric pathogens, including *Salmonella* and *Campylobacter*, and cases of H5N1 infected House Crows have been found in the Far East, making this an important public health issue. In addition, in the Arabian Peninsula, House Crows are frequently observed raiding the nests of passerine birds, predated other small animals and harassing raptors, as they do elsewhere, often with devastating effects on avian diversity. Unsurprisingly, there have been numerous attempts at controlling House Crow numbers, but none of these, to date, can be considered successful.

There is an urgent need for specific behavioural investigations e.g. on foraging behaviour and spread of the species. Collaboration and information exchange, which is crucial in facilitating a region-wide approach to combating the House Crow invasion, is slowly developing; and will become ever more important with the rapid pace of large scale development that is taking place in the wider region.

References are available on the pdf version on the website wmenews.com



Fig1. House crows on garbage in Muscat (© Colin Ryall).



Fig2. House crow (© Colin Ryall).

RESTRAINT OF PRZEWALSKI'S HORSES *Equus caballus przewalskii* FOR REPRODUCTIVE STUDIES AT THE NATIONAL ZOO'S CONSERVATION AND RESEARCH CENTER

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Reproductive studies provide critical information and are the basis for most successful breeding programmes in zoological collections. Crucial to this is a well designed animal management and handling facility, utilising amongst other things, appropriate manual restraint equipment. Closely aligned to this, and fundamental to obtaining meaningful results, is staff training as well as the conditioning of the animals to the study procedures.

One such study is the Przewalski's horses at National Zoological Park – Conservation and Research Centre (NZP-CRC) which have been the subject of reproductive studies for over 3 years. From 2006, 9 different horses have been restrained 443 times using a hydraulic TAMER. The facilities (Fig 1), restraint equipment (Figs 2 and 3), and the training procedures used in these studies are described here. The results of the studies are reported elsewhere.

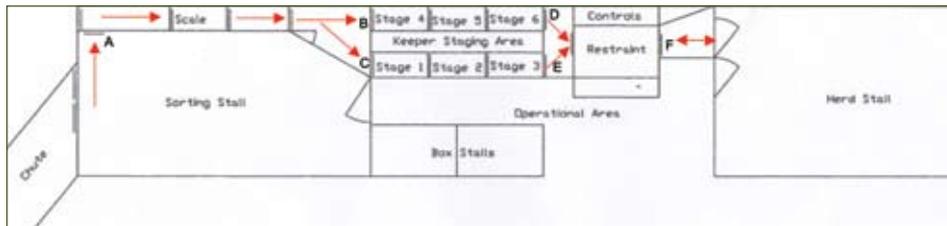


Fig1. Layout of the restraint area and chutes at NZP-CRC

Facilities

The handling facilities are located in a barn situated between two pastures and consist of a large sorting stall, an alleyway 11.5 m long with a built in electronic scale, 6 staging stalls. The upper portion of the staging stalls sides are vertical bars spaced 8 cm apart providing good visibility for the horses and keepers. There is also a protected keeper space between the staging stalls. This space allows keepers to encourage the horses to move towards the hydraulic TAMER. An observation stall at the exit of the TAMER allows animals to be held for observation after restraint and before being released to the larger herd stall and finally out to pasture. The substrate in the stalls is clay and bluestone dust is used for the alleyways. There is a 2 cm thick rubber stall mat as flooring within the restraint. Animal flow is generally left to right, although horses can enter the TAMER in either direction.

Animal Flow

Horses are brought into the Sorting Stall from the chute and enter the alleyway via gate A, proceeding across the scales and entering the staging stalls via gate B or C. Animals are then moved into the TAMER via gates D or E. When all work is completed, they move through the TAMER and into the observation stall before finally being allowed into the herd stall via gate F. From the herd stall they are either released directly to pasture 2, or, reversed back through the TAMER and staging stalls to return to Pasture 1. Restraint equipment comprises:

- The Hydraulic TAMER which is a hydraulically operated restraint device for large exotic hoofstock.
- There is a 1.2 m wide catwalk on each side of the restraint for animal handlers.
- 4 steel sliding doors and 4 smaller swing doors provide easy access to restrained horses.
- 10 cm thick high density foam pads with heavy-duty, rip-stop vinyl covers provide a secure and comfortable restraint.
- Hydraulic controls mounted on the unit with adjustable pressure control and an easy to read pressure gauge allow for firm, but gentle restraint.
- The padded sides open up to 183 cm wide and have a 61 cm lift capacity.
- The sides are controlled by 9 hydraulic cylinders for squeeze and lift movements.

Preparation for reproductive studies

In order to collect data (Table 1.) for reproductive studies each horse needed to be conditioned allowing it to be separated from the herd and eventually held in the TAMER and restrained for the various procedures. This was accomplished by incorporating the conditioning into their daily routine. Initially the horses were run through the facility with all doors and stops open so they could move through unobstructed. Once completely through the facility, the horses were rewarded by being given access to green pasture. As the process continued, additional rewards were added at strategic points such as food rewards (apples and fibre biscuits). Over time, doors were closed and horses were stalled individually for a few seconds before being allowed to proceed to the next stage. Again the reward was food and/or access to green pasture.

Table 1. Procedures carried out.

1	Female reproductive exam – rectal palpation, ultrasound exam, monitoring ovarian activity, pregnancy detection, hormone injections and artificial insemination after inducing standing sedation.
2	Minor veterinary procedures – injection of anaesthetics for artificial insemination; treatment of cuts and abrasions

Discussion

Well designed animal holding and management facilities that incorporate manual restraint equipment such as the TAMER line of products are essential for the proper care and welfare of captive animals. The facilities at CRC and the conditioning of Przewalski's horses helped provide a non stressful environment for the horses. These facilities provided researchers the tools required to develop a research programme investigating the reproductive biology of the Przewalski's horses and to develop an artificial insemination programme for the genetic management of this endangered species.

Acknowledgements

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Fig1. Hydraulic TAMER unit (© Lisa Ware).



Fig2. Injecting Przewalski's horse restrained in TAMER (© Lisa Ware).

REVIEWS AND NEWS

The camel from tradition to modern times: a proposal towards combating desertification via the establishment of camel farms based on fodder production from indigenous plants and halophytes

The proposal aims to establish more camel farms, and to decrease the numbers of wild roaming camels in the desert rangelands. This will serve as an active contribution to reducing desertification, and will allow natural ecosystems and habitats to recover from decades of overgrazing. It also suggests exploring means to feed the animals in farms with indigenous Arabian Desert plants, which are also to be produced in farms, and which are very likely to require no fertilizer, less pesticides, and significantly less freshwater irrigation. Furthermore, drifting away from cow farms to camel farms will allow the keeping of animals in shaded farms while still allowing the production of large quantities of milk. Cows require artificially cooled environments, as otherwise they produce very low amounts of milk.

Advantages in a nutshell:

- 1) Less freshwater consumption for fodder production;
- 2) Less fertilizer and pesticides for fodder production;
- 3) Rangeland rehabilitation and combating desertification
- 4) Healthier products for human consumption. More information can be obtained from Dr. Benno Böer, UNESCO, Qatar. e-mail: b.boer@unesco.org

Poison blamed for critical deaths

BirdLife News Alert

Mon Oct 27 12:00:00 2008 http://www.birdlife.org/news/news/2008/10/bald_ibis_poisonings.html

Three Critically Endangered Northern Bald Ibis *Geronticus eremita* have been found poisoned in a remote Jordanian desert, hundreds of miles from their breeding grounds in Turkey. The three birds were being tracked by satellite after leaving Birecik, south-eastern Turkey, where one of only four colonies of Bald Ibis remains. The birds were found 32 kilometres from the Jordanian capital, Amman. Autopsies have ruled out electrocution and shooting.

"The deaths are heartbreaking but they may not have died in vain. They came from a semi-captive population and the fact that they left the colony proves they haven't lost their migratory instincts", said Jose Tavares, the RSPB's Country Programme Officer for Turkey. "The birds flew via Palmyra in Syria, where a tiny colony hangs on, which means birds we release from Turkey next year could join the group in Syria."

The Northern Bald Ibis's migratory habits have baffled conservationists for years but in 2006, BirdLife International and the Syrian Government, tracked the 3,800-mile round trip of adult birds from Syria, finding new wintering grounds in Ethiopia. But young birds were never seen on migration and scientists fear they face mystery threats on an entirely different over-wintering route. Sharif Al Ibouir of BirdLife in the Middle East, who found the dead birds, said: "We know where the adults go but it's crucial we follow the young birds' migration route so that we can protect them in winter and help them return to Turkey and Syria to breed."

To solve the riddle, more Turkish birds will be tagged next year. The tracking project has boosted hopes for Northern Bald Ibis in the Middle East with conservationists now more optimistic that they can re-establish a completely wild population in Turkey.

Children get it spot on to save leopards

Gulf News 15/11/2008 <http://archive.gulfnews.com/articles/08/11/15/10259644.html>

Black spots on the wall, masks, leopard ears, posters hanging from the ceiling and glue stains on the floor - this was the scene as the Horizon School, Dubai was extending its support to the endangered Arabian leopard. Children from three other Dubai primary schools (Jumeirah English Speaking School, Dubai English Speaking School and Kings School) were also involved in their own 'Spotty Days' to raise awareness of the plight of the leopard and to raise funds.

On Spotty Day at Horizon School, each year group had an activity with the four and five year-olds making leopard masks. One of the pupils, Seinna Ryder, proudly showed off her mask and said: «My entire class is wearing spots today and we want to help all the leopards on the planet.» Another pupil, Thomas Haigh, said, «The Arabian leopards are dying. People should stop hunting them down.» Riley Teulon agreed saying, «I do not want the leopards to be extinct. Please try and save them!» Cyndi Teulon, a mother of two, volunteers at Horizon school and is a member of the school's 'Green Group', which comprises teachers and parents who want to help children become better global citizens (WME News Vol 3 No 1). She said, «I helped arrange this event so that children understand the concept of extinction.»

The 'Spotty Day' events focused on spreading awareness and collecting donations to support leopard conservation in Yemen. Over 10,000 AED was raised by the children in the 4 schools to help support the Yemen Leopard Recovery Fund (YLRP) and their publication of a children's book called 'Vanishing Spots'. At the same time as the Dubai School 'Spotty Days' were running, the Sanaa International School (where David Stanton, the founder of the YLRP works) had a sponsored walk.

Wildlife Middle East News thanks the staff, parents and children, as well as the media and professional people, who gave their time to make these events a success. If any teacher or parent would like information on how to organize their own 'Spotty Day' or Endangered Animal Day, contact the WME editor Theri Bailey.

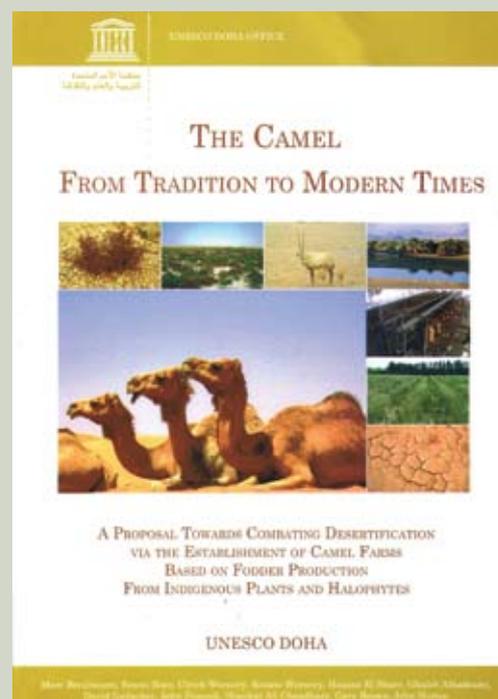


Fig2. Bald Ibis (©Andy Hultberg; www.rarebirdyearbook.com)



Fig1. Hannah and Malachi Bailey in Spotty Day costumes (©Tom Bailey).