



# Wildlife Middle East

# NEWS

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# EDITORIAL

Up until now Wildlife Middle East News has focused on terrestrial wildlife and conservation issues. This issue is exclusively devoted to marine life, making the editors feel a little like fish out of water themselves! We extend our thanks to Nick Pilcher from the Marine Research Foundation who has provided the exceptional cover image of a turtle for this issue. The editors were fortunate to hear Nick Pilcher speak earlier this year when he visited Dubai and gave a passionate talk on the biology and conservation of turtles at the offices of the World Wide Fund for Nature.

Turtles are the 'charismatic megafauna' of the marine world and as Nick discusses in his inspiring article on the opposite page, given their captivating nature they can be used as a catalyst to spur conservation and awareness action among local communities and their leaders. In her article on the activities of EWS-WWF Rashmi DeRoy gives an overview of the efforts that these organisations are making to protect the marine environment of the UAE.

But while turtles can spur conservation initiatives, not all initiatives to 'help' turtles end up being helpful. Intervention such as the head-starting project for hawksbill turtles described on page 2 may have been initiated with the best of intentions, but is a project that collects turtle eggs, overstocks rearing facilities, releases the weak and sick turtles and keeps the healthy hatchlings for longer than necessary head-starting or just plain handicapping? Ideally conservation initiatives should follow internationally established guidelines that are science driven rather than sponsor driven.

In our e-announcement we have included recent press releases on regional marine issues. Awareness by the media of the pressures on the marine environment is growing, particularly by the newly launched newspaper from Abu Dhabi, «The National». The Middle East is especially vulnerable to oil spills due to its high level of oil production and transport activities. Indeed oil slicks on the east coast, caused by ships dumping oil and petrochemical waste seem to be an increasingly reported problem. While oiled seabirds and oiled reefs can be invisible to the media (the exceptions being large spills with thousands of animals affected), mildly oiled tourist beaches always hit the headlines and make governments take notice. The negative effects on tourism revenue will hopefully spur the authorities to provide the necessary resources to the coastguards, enabling them to catch ships that illegally dump oil in the sea to save money, instead of bearing the cost of cleaning their tanks when they dock in ports. It is reassuring to know that there are organisations like Sea Alarm that are ready to provide information and assistance to interested parties seeking to increase the level of response preparedness in the Middle East region.

The spectre of 'over-development' and concretification are issues never far from the editorial pen, so it is with pleasure that the editors congratulate the Environment Agency Abu Dhabi who are introducing guidelines to encourage developers and industry to consider the reefs and other habitats. To quote the National paper (<http://www.thenational.ae/article/20080602/NATIONAL/670800541>) *Abu Dhabi and Qatar have the opportunity to avoid repeating the environmental disasters made elsewhere in the Emirates and to genuinely pursue the twin goals of ecologically sustainable development and biodiversity conservation.* It was always puzzling that Palm developer Nakheel announced a 'Think Blue' ([http://www.bluecommunities.org/page/think\\_blue](http://www.bluecommunities.org/page/think_blue)) initiative to consider coastal management about a year after the last bit of coast in Dubai was levelled for development! If anyone can explain this please e-mail the editors!

The future of a healthy tourism industry in the Arabian peninsula depends to a large extent on a healthy marine environment that is endowed with photogenic charismatic species, such

as turtles providing unique wildlife spectacles. Ras Sharma and Jethmun Beach in the Hadhramawt, forms one of the most important nesting areas for marine turtles in Arabia. However, despite it being declared a protected area by the Yemeni government it is worrying to learn from David Stanton that feral dogs are killing so many turtles. This would appear to be an issue that needs to be urgently addressed by the authorities and conservation organisations.

Amongst the gloom and doom it is always good to be able to report good news! Warren Baverstock and colleagues describe the rehabilitation of 'Dibba', a green turtle found with a horrific head injury on a beach in the UAE that was nursed back to health by the aquarium team at the Burj al Arab Hotel, Dubai and that was released with a satellite tag in February, 2008. So on this happy note we end our editorial and wish 'Dibba's' a long and productive life. You can follow 'Dibba's' meanderings at [http://www.seaturtle.org/tracking/?project\\_id=55](http://www.seaturtle.org/tracking/?project_id=55) as he swims around the Indian Ocean.

We'd also like to congratulate Gary Feulner who was presented with the Sheikh Mubarak bin Mohammed Annual Prize for Natural History by Sheikh Nahyan bin Mubarak, the Minister of Higher Education and Scientific Research. This was in recognition of Gary's 25 years painstakingly documenting the plant, insect and animal life of the UAE <http://thenational.ae/article/2008527575969>.

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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.

# ARABIAN GULF TURTLES: NEEDED AND IN NEED

**Nicolas J Pilcher**

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Marine turtles in the Arabian Gulf are the subject of an increasing interest and body of knowledge, but similarly the subject of increasing threats to their survival, and impacts to their environments. They are integral components of marine ecosystems, have both cultural and historical value to the people of the region, and are potential ambassadors for less obvious marine conservation issues through their obvious charismatic and endearing qualities. Turtles require certain key habitats throughout their life cycle without which the cycle is interrupted, and these include healthy feeding grounds (in the Gulf's case these are seagrass beds and coral reefs) safe, undisturbed beaches on which to deposit their eggs, and the open sea, as a developmental habitat and for nesting migrations.

Over the past couple of decades varying countries have invested energy in protecting turtles, primarily on nesting beaches. Oman has protected important beaches and turned them into National Parks. Saudi Arabia made them part of wildlife sanctuaries, other countries invest manpower and resources in daily protection of nesting habitats during the nesting season. The UAE has protected offshore islands and conducted valuable research. Even awareness is being slowly raised by sporadic efforts across the region.

But who is looking out for turtles at sea, where they spend most of their oceanic lives? Protecting turtles on nesting beaches represents only a minuscule fraction of their lives, and they are in dire need of help at sea. The very habitats they depend on for feeding need protecting, and fishery pressure needs to be of such a nature to be turtle-friendly. Land filling and dredging can impact turtle habitats, and these need taking into account during environmental impact assessments and maritime studies. Across the globe turtles get caught in trawl nets as the boats plough the seabed, but thankfully in the Gulf this is mostly prohibited. However gillnets and seine nets still abound, hundreds of thousands of meters of them, threatening our remaining turtle stocks. These two key threats are in need of immediate address.

Turtles can be used as a catalyst to spur conservation and awareness action among local communities and their leaders given their captivating nature, but hidden and deep-rooted environmental concerns exist which are linked to the rapid pace of development and increasing fishery pressure, and which threaten their very continued existence. Imagine a Gulf without turtles. No majestic emergences at night to lay eggs. No adorable hatchlings reaching the sea. No rhythmic cropping of grasses by green turtles, balancing the ecosystem of seagrass beds. No more hawksbill turtles feeding on sponges, preventing an ecological coup on coral reefs. The Gulf would be forever unstabilised.

Through various wonderful opportunities over the last fifteen years I have had the honour of working amongst local specialists and conservation agencies in the Gulf region, and know that at the grassroots level these majestic creatures feature prominently in conservation strategies. Back in the early '90s, at the height of the Gulf War, I was fortunate to be able to help turtles in Saudi Arabia, as they were washed up, oil fouled, on mainland and island beaches. Developing an artificial diet to revive them, we kept them in warmed children's wading pools, until the oil was gone and the waters warmer. Later in the year we were rewarded with nesting turtles, some of whom had been our 'guests' for many months. Since then I have stayed



Fig 1. A large adult green turtle looks back at the camera as if to inquire if he or she can help in any way. Turtles often rest on ledges and caves in coral reefs, and can have a varied diet including sea jellies, algae, and seagrasses (©N.J. Pilcher).

connected to the region and its people, and its turtles. In Qatar I have had the benefit of being involved from nearly the beginning of the 'turtle revolution' whereby the government, the private sector and general public have come together to do everything in their power to protect turtles and their environs. In Oman I have had the chance of liaising directly with rangers on the beaches and managers up in the government offices. In the Kuwait, Bahrain, UAE and Iran I have had the pleasure of providing advice to a number of key projects and people, many of who I continue to liaise with, all who carry the turtle torch.

So where are the conservation challenges, and where are our opportunities? Challenges are relatively straightforward, as alluded to above: Reduce or eliminate bycatch in fishing gears, and protect not only nesting habitat but also foraging habitat at sea. This will require some re-thinking of the value of our sea, or rather the seabed, and incorporation into development strategies and visions. It will ultimately rely on the understanding of the value of our turtles amongst leaders in the region.

But there are now opportunities to do the right thing within our grasp, which require but a small investment in effort and dedication to make conservation a reality: We have much of the technology, scientific knowledge and wherewithal to engage in proactive conservation. Not just the talk, but the action. We are at a stage whereby the private sector can become far more engaged in conservation than it has in the past, building on in-house social and responsibility ethics, and impacting ecological process as never before. Companies can choose not to exploit key coastal areas. Dredgers can choose not to dredge in key habitats. Surplus funds can be invested in critical research needs, such as tracking turtles using satellite technology from their feeding grounds to nesting grounds to establish key ecological linkages, or by supporting protection of remote pristine habitats. The time is ripe for conservation, amidst our enlightened world. I'm an optimist, and know it can be done. Contact me if you want to be part of this wonderful journey and adventure.



Fig 2. Juvenile green turtles reared in captivity as part of an experiment to try restocking local waters (which actually failed!). These turtles had lived in a pen over a reef for 18 months before being released to the wild - scientists are now mostly sure efforts such as these do little to promote turtle population recovery (©N.J. Pilcher).

# MARINE CONSERVATION INITIATIVES BY THE EWS-WWF, UAE

## Rasmi De Roy

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### Introduction

Emirates Wildlife Society in association with World Wide Fund for Nature (EWS-WWF) is an environmental NGO in the United Arab Emirates that has been engaged in the protection of the UAE's biodiversity since 2001. Their activities include field conservation, education and awareness, and addressing policy issues relating to species, habitats, natural resources (water), ecological footprint and climate change. Marine and coastal ecosystems are of high conservation priority on account of their biological importance as well as extreme developmental pressures on them.

### Biodiversity Of The Arabian Sea

The Arabian Sea is a Global 200 Ecoregion. This means that WWF places it among the 200 richest, rarest and most distinctive of all the earth's habitats. With extreme climatic regimes due to seasonal fluctuations in air and water temperatures, the Arabian Sea harbours excellent examples of ecosystem responses to natural environmental stresses.

A diversity of marine habitats exist in the Arabian Gulf (constitutes part of the Arabian Sea Ecoregion) including coral reefs with as many as 35 reef building coral species; and sea grass beds that provide vital breeding and nursery habitats especially for mollusks and several commercially valuable fishes. Sea grasses are also essential food for dugongs, the UAE population of which is, globally, second largest after the Australian.

Also found in the UAE waters of the Arabian Gulf are marine turtles (green and hawksbill), five species of dolphin (bottlenose and humpback among others) and seven species of whale (e.g. fin, blue and humpback).

Mangroves reach their northern limit in the UAE. Important for local fisheries, these mangroves are the most extensive in the region and are, therefore, important habitats to conserve.

### Project: Coral Reef Investigations In Abu Dhabi And Eastern Qatar

2007 was the third (and final) year of this bi-national research project that has surveyed and mapped the southern Arabian Gulf coral reefs, investigated their diversity and condition as well as assessed the status of reef fishes and benthic life forms. A coral reef conservation and management plan was prepared. Training and capacity building of national research personnel from Abu Dhabi and Qatar progressed through all research activities, both in the field and classroom. At the same time, awareness among stake holders was raised significantly.

The project was sponsored by Dolphin Energy, managed by EWS-WWF and implemented by Environment Agency – Abu Dhabi (EAD) and Supreme Council for Environment and Natural Reserves (SCENR), Doha, Qatar. National Coral Reefs Institute, Florida, USA was technical advisor.

Investigations have shown that the offshore islands and banks of Abu Dhabi and Qatar harbour some of the most extensive and biologically important coral reef resources in the southern Arabian Gulf. Severe thermal disturbances in 1996, 1998 and 2002 had caused large scale destruction of coral fauna, with live coral cover plummeting to less than 1% in many shallow waters. However, this project reveals that at least half of these corals are again firmly established in the study area.

Outputs of the project include a conservation and management plan, maps (large scale and fine scale) of coral areas, monitoring and training manuals, coral identification guide, project narrative in the form of a book, and a documentary film.



### Project: Monitoring Coral Reefs Along Uae's East Coast

Installation of coral reef monitoring stations, accompanied by a survey of reefs, was undertaken in early August 2007, along the coast of Fujairah, UAE. The operation was initiated by the Department of Environment (Fujairah Municipality), National Coral Reef Institute (Florida, USA) and the EWS - WWF. All four monitoring stations are positioned on the seabed between Fujairah city and Dibba. The purpose of monitoring stations is to study the re-growth and re-colonisation of corals damaged during Cyclone Gonu, which struck the coast of Oman, UAE (in the emirate of Fujairah), Iran and Pakistan in June 2007.

### Conference: Marine Conservation Forum

The five marine turtle species found in the Arabian Gulf fall into either the 'endangered' or 'critically endangered' categories, while two-thirds of the coral reefs found here are classified as 'at risk'. With threats persisting, EWS-WWF brought together concerned nations to strategize about the region's marine biodiversity.

At the Marine Conservation Forum held on September 11 – 14, 2006 in Abu Dhabi, over 80 marine experts, government officials, and environmental NGOs from the Gulf Cooperation Council (GCC) countries, Yemen, Iran and Eritrea gathered in the UAE capital to deliberate on the region's sea turtle and coral reef resources, the perils these face and possible conservation solutions. Sponsors of the Forum were First Gulf Bank (main sponsor), Tourism Development & Investment Company, TOTAL and Dolphin Energy.

Delegates at the Forum felt that much needs to be done if marine biodiversity is to be protected: establish more Marine Protected Areas; strengthen enforcement laws and regulations related to natural resources; and, significantly, reform the environmental impact assessment process.

### Project: Awareness On Marine Turtle Research

EWS-WWF teamed up with the Marine Research Foundation, Sabah, Malaysia, to create an awareness poster for fishermen and fishing communities throughout the Gulf region to spread awareness about marine turtle research.

Over 4000 bilingual turtle posters were printed and distributed in English, Arabic, Farsi, Urdu and Tigrinya. The posters were created in the form of a calendar to make them both practical and useful. The posters promoted awareness of marine turtle conservation needs and communicated what action needed to be taken when a tagged turtle is found.



Fig1&2. Coral reef investigations in Abu Dhabi and Eastern Qatar (©WWF).

# COMBATING THE DEADLY EFFECTS OF OIL ON MARINE LIFE

Hugo Nijkamp, Rosalie e'Silva & Roser Gasol

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Images of oiled wildlife are often the main focus of public concern and media attention during an oil spill incident. Despite this, it is one of the areas of oil spill preparedness that is the least developed in most countries outside the USA. This is surprising as oil spills of any size have the potential to significantly impact vulnerable populations of seabirds, marine mammals, sea turtles, and other types of wildlife that inhabit the world's coastal seas and shorelines.

Experience shows that the best way to ensure that wildlife affected by oil is successfully treated, including professional attempts to rescue, rehabilitate and release casualties, is to have a wildlife plan in place *before* a spill actually occurs. A major oiling event can potentially affect tens of thousands of animals, especially birds, and once washed up on shore, a country is faced with a significant animal welfare and management problem requiring immediate attention. Under tremendous pressure, and with the clock ticking for suffering animals, it is far more effective to put a well elaborated and tested plan into action than it is to improvise in the situation without adequate experience or knowledge of how to mobilize professional expertise.

The Middle East is especially vulnerable due to its high level of oil production and transport activities, combined with its significant marine wildlife populations. Numerous species of whales, dolphins and turtles frequent the waters around the Middle East, and a significant proportion of the world's dugongs inhabit the waters of the Arabian Gulf. Hundreds of species of migratory birds from Europe, Asia and sub-Antarctic regions also frequent the area.

In most countries, unprepared government agencies leave the issue of the rescue and rehabilitation of oiled wildlife to voluntary groups, including animal welfare, wildlife and environmental charities. Whilst most do an excellent job, they generally lack the resources needed to plan for oiled wildlife emergencies or to respond to major incidents. Co-operation between groups within a country or region can also be poor and levels of expertise and trained manpower are highly variable. The Brussels-based Sea Alarm Foundation, founded in 1999, has made it its mission to change this situation and improve the way countries respond to oiled wildlife incidents.

Since 2005, Sea Alarm has collaborated with Oil Spill Response and East Asia Response Limited (OSRL/EARL) to further the development of international oiled wildlife response capacity. OSRL/EARL is a non-profit making organisation that is wholly owned by the oil industry, and exists to respond effectively to oil spills wherever they occur. Membership is representative of the world's most environmentally responsible oil companies, accounting for over 60% of global oil production.

The joint programme agreed between Sea Alarm and OSRL/EARL unites the resources available from networks of NGOs (Sea Alarm) with those from the oil industry (OSRL/EARL). The programme's main activities significantly increase the international response capacity for oiled wildlife incidents. Special response equipment is stockpiled in OSRL/EARL's warehouses in the UK, and will soon also be stored in Bahrain and Singapore, which is ready to be sent out around the world at a moment's notice. Sea Alarm is on-call 24 hours 7 days a week to receive notifications of oiled wildlife incidents and requests for assistance and is developing a coordinated network of global wildlife response experts that are ready to respond within hours to an oil spill emergency. A database is being developed in which so called Country Wildlife Response Profiles are stored. The profiles contain the essential information

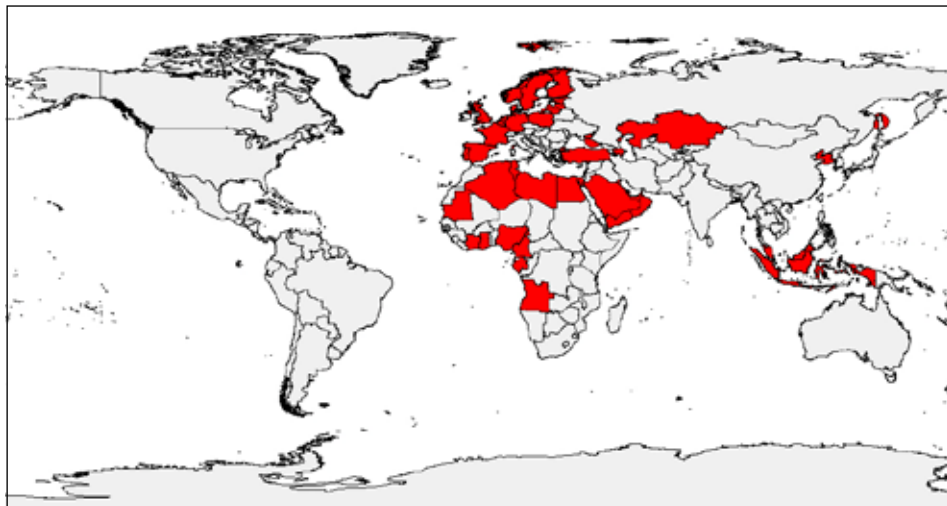


Fig 1. A map displaying the countries which are at present included in Sea Alarm's database of Country Wildlife Response Profiles (©Sea Alarm Foundation).

on the level of preparedness in coastal countries all over the world and the resources that could be called upon nationally and internationally. All these facilities are available to OSRL/EARL shareholders, and also to third parties on request.

In numerous countries, Sea Alarm has brought together government authorities, representatives from the oil and maritime industry, wildlife responders, and NGOs, and facilitated the cooperation between them. By building bridges between these key stakeholders, Sea Alarm assists in the development of pre-spill defined objectives and guidelines of good practice, and ensures access to quality information. At present, Sea Alarm is initiating and assisting in the preparedness and response activities in many European coastal countries. At the request of governments, environmental groups and the oil and maritime industry, Sea Alarm has provided on site assistance and advice to a number of oiled wildlife incidents, including the *Jessica* (Galapagos, 2001), *Prestige* (Spain, 2002), *Tricolor* (Belgium, 2003), Estonia (Mystery spill, 2006), *Server* (Norway, 2007), *Volgoneft* (Russia, 2007), and Germany (Mystery spills in 2007 and 2008), and distant support to a number of smaller European incidents.

Much remains to be done to protect wildlife from the damaging effects of oil pollution, but with the wealth of information and guidance currently available, countries are well poised to develop effective oiled wildlife response plans. Sea Alarm stands ready to provide information and assistance to interested parties seeking to increase the level of response preparedness in the Middle East region.



Fig 2. Black Sea Spill 2007 : A volunteer assisting in the collection of oiled birds (©Sea Alarm Foundation).

# MORTALITY AT A HAWKSBILL TURTLE (*ERETMOCHELYS IMBRICATA*) REARING CENTER

**Tom Bailey**

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The hawksbill turtle (*Eretmochelys imbricata*) inhabits tropical reefs throughout the central Atlantic and Indo-Pacific regions and is listed by the IUCN Red List as Critically Endangered<sup>1</sup>. Threats include shrimp trawling, exploitation for tortoise shell and loss of nesting habitat<sup>2</sup>. 'Head-starting' projects have been initiated as a popular response to declining turtle populations. In July 1999 an outbreak of mortality occurred at the turtle-rearing unit on a privately owned island in the Arabian Gulf. This report presents health findings, hatchery treatments and provides recommendations made to improve hatchling health at the facility.

**Background** Hawksbill turtles were raised in ten large (4m diameter) and 15 small (1.5m diameter) above-ground fibre glass tanks and unfiltered sea water was piped directly into the tanks. Turtles were fed on a standard turtle pelleted diet (45% protein, Aquamax Grower, PMI Nutrition International, USA). When investigations were initiated 1,200 live hatchlings were present; 152 had died and 370 had been released. The turtles had been hatched in June in the original nests on the beach of the island.

**Clinical history** Mortality for the first month after hatching was 2-3%, but during investigations (second and third months) mortality was 12.5%. The manager reported that intra-specific aggression was causing bite injuries to the necks and cloacal region, which developed into crusty-yellow lesions. Before death turtles became anorexic and showed retarded growth.

**Health investigations** Skin lesion samples from live turtles were submitted for microbiological investigation. The samples yielded profuse mixed growths of *Aeromonas hydrophila*, *Proteus sp.* and haemolytic *E. coli*. Moderate growth of mixed anaerobes were also isolated. Cytology demonstrated an inflammatory skin infection with bacteria and fungal elements. Five diseased hatchlings were euthanased, examined post-mortem and formalin-fixed tissues and clinical samples were submitted to Idexx Laboratories (UK). Water samples from two hatchling tanks and a sick turtle tank were collected and submitted to Idexx Laboratories. The water samples had a high bacteriological content. Results from the dead turtles and water are presented in Tables 1 – 3 in the pdf document on the WME News website.

**Diagnosis** The health problems were caused by aggression that resulted in traumatic injuries and secondary bacterial and fungal infections. Clinical and laboratory findings supported a diagnosis of fungal dermatitis and stomatitis with secondary bacterial infection. Histopathology was unable to demonstrate predisposing or unrelated pathology in internal organs, supporting the conclusion that injuries and contaminated water conditions predisposed hatchlings to infection.

**Treatments** Sick hatchlings were separated into small tanks for treatment for 14 days and given enrofloxacin (Baytril 2.5%, Bayer, UK) 5mg/kg i.m. every 48 hours and topical iodine tincture (1:2 dilution) on the lesions with a five minute contact time once daily. Of the 80 sick turtles, one group of 23 were in poor condition (anorexic, weak, thin) and a second group of 57 had skin lesions, but were in better body condition. Of the first group 11 (48%) died during the period of treatment and 12 (52%) recovered. All 57 of the second group recovered. After a week of treatment the skin lesions had regressed in the surviving hatchlings.

Recommendations were made to: reduce the stocking density of hatchlings; release only healthy turtles; assess the health of hatchlings before release; monitor water quality; clean the tanks with sick turtles after feeding.

**Conclusions** Head-starting is an attempt to reduce the mortality of hatchlings by rearing them in captivity to a size at which their mortality rate in the wild should be lower<sup>3</sup>. However, the benefits of head-starting are uncertain and because hawksbill turtles become aggressive ten days after hatching, some biologists consider that they should be released by day 15. As the Gulf hawksbill turtle population is not known to



Fig 1. Turtle hatchling with periorbital and neck lesions.

be declining, the rationale for initiating this project was questionable.

There is little information on the diseases of hawksbill turtles in captivity; systematic paecilomycosis has been reported in captive adults with multiple yellow skin nodules<sup>4</sup> and juvenile turtles are susceptible to developing traumatic ulcerative dermatitis caused by biting in overcrowded pens<sup>5,6</sup>. Fungi identified from necrotic skin lesions of hatchlings includes *Geotrichum sp.*, *Penicillium sp.*, *Scolecobasidium sp.*, *Fusarium sp.*, *Drechslera sp.*, *Paecilomyces sp.* and *Rhodotorula sp.*<sup>5</sup>. Unfortunately the causative fungal agent was not isolated from these cases. Marine fungi are fastidious and culture may have been compromised by transport to the UK.

Bacterial pathogens associated with ulcerative dermatitis, stomatitis and pneumonia in turtle hatchlings include *Aeromonas hydrophila*, *Vibrio alginolyticus*, *Pseudomonas fluorescens*, *Flavobacterium sp.*, *Micrococcus sp.* and *Bacillus sp.*<sup>5</sup>. It is also important to consider tuberculosis in the differential diagnosis of cases where granulomas are observed.

Unfortunately, the health problems arising at this center were also complicated by management decisions that included:

- 1) collecting more hatchlings (1500) than the facility capacity (200).
- 2) delaying release because the island owner wanted to see bigger hatchlings.
- 3) releasing diseased hatchlings because the island owner didn't want sick animals at 'his' facility.
- 4) no monitoring to measure the success or otherwise of the release.

Ideally to be successful, head-starting schemes should follow internationally established guidelines including a strong veterinary component<sup>7</sup>. Suboptimal care of juvenile turtles results in metabolic and physical changes that are not conducive to their long-term survival in the wild or captivity. As such abnormalities are not often apparent upon visual examination, the use of diagnostic tests is necessary to determine the health status of animals before release. However, while veterinary and biological protocols can be designed comparatively easily, the political aspects of wildlife projects in the Middle East can often be problematic!

**References and Tables are available in the pdf version on [wmenews.com](http://wmenews.com)**



Fig 2. Turtle hatchlings in treatment tanks.

# REHABILITATION AND SATELLITE-TRACKED RELEASE OF A GREEN TURTLE, *CHELONIA MYDAS*

Warren Baverstock<sup>1</sup>, David Robinson<sup>1</sup>, Kevin P. C. Hyland<sup>2</sup>

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In August 2006 an injured Green Turtle, *Chelonia mydas*, was received by the Wildlife Protection Office. It had suffered a severe head trauma and appeared close to death. It was recovered from a beach near Dibba, UAE. The turtle was housed in a temporarily empty fish quarantine unit at the Burj al Arab hotel. Physical characteristics of the unit consist of a circular diameter tank of 3.9m proportions with a fish-based re-circulating life support system consisting of sand filter, foam fractionation, ozone control and ultraviolet sterilization. In addition the temperature was maintained at a steady 26°C. Ambient sea temperature at the time of receipt was 35°C.

An initial course of ceftazidime injections was started (20mg/kg im). Veterinary support throughout the project was provided by the Al Wasl Falcon Hospital. A pronounced secondary infection on the top of the skull and neck occurred when ceftazidime was temporarily unavailable. This infection cleared over a period of 4 weeks when the course was resumed in late September.

The initial injury was so severe that possible blindness was suspected and the turtle showed no interest in self-feeding for three months. Throughout this time the turtle was provided with supportive care by the aquarium team at the Burj al Arab Hotel. Force-feeding was carried out using squid mantles stuffed with macerated vegetable matter. The mantles provided a means of feeding vegetables without the use of a gavage tube. In addition turtle vitamin tablets (Zoolife®) were inserted into the mantles at an inclusion rate of 1 tablet/10kg/week.

In November 2006 the turtle began self-feeding. In December 2006 the turtle was transferred to the final stage pre-release rehabilitation pen situated in the Madinat Jumeirah, Dubai waterways. This waterway is at ambient sea temperature. A lush seagrass bed had developed within the pre-release pen, which provided partial nutrition. In the first month the turtle stopped feeding completely and developed positive buoyancy, and so was transferred back to the warmer quarantine facilities. Ambient sea temperature at the time was 19°C, and was thought to be the primary cause of cessation of feeding. Normal feeding was rapidly resumed in the warmer quarantine tank.

In early summer 2007, when ambient sea temperature reached similar levels to the quarantine, the turtle was successfully moved back to the outside pen. No further treatment or force-feeding was necessary. The weight and blood parameters were monitored throughout the remainder of 2007. In Autumn 2007 we were presented with funding by the Jumeriah Group to purchase a satellite platform. The unit used was a Sirtrack model 0.5 watt KiwiSat 101 PTT, with an estimated operational life of six months. The most common capture method for satellite-tagging turtles is to apply tags to females as they return from beach to sea after egg-laying. Males remain at sea throughout their lives after hatching. Less common are studies of rehabilitation success, in terms of post-release survival. In the summer of 2007, our subject's tail became remarkably more prominent. Although unconfirmed, we conclude that our turtle was most probably a sub-adult male, making it an even less common subject for study. After thoroughly scrubbing the carapace with scourers, a freshwater washdown, and wipe over with alcohol, the Kiwisat unit was bonded to the carapace of the turtle using a standard polyester resin kit combined with woven fiberglass mat. A total of three layers were applied, allowing curing to tack stage between



Fig 1. Initial head injury on 'Dibba' (©Warren Baverstock).

each application. A final coat of antifouling, namely Micron Extra, manufactured by International paints, was applied to the fiberglass area. The Kiwisat unit is fitted with saltwater switch contacts, which preserve battery life by switching the unit on only when the turtle is at the surface and able to transmit. To ensure no interference from the antifouling, the contacts were masked and a one cm exclusion zone left around each contact. The turtle was released on the 16th February, 2008, and at the time of writing we are still receiving transmissions. Release data was a curved Carapace length of 85.4cm and a final weight of 84.6kg. The left flipper bears an Avid microchip, number 096592868. The Sirtrack platform is PTT 55885, ID JN16549. In addition the turtle bears Titanium flipper tags, numbered 74 and 75 in left and right flippers respectively, in the name of Wildlife Protection Office, P.O. Box 27942, Dubai.

Progress of "Dibba" the turtle, named after its recovery site, can be monitored by all via internet link on the Seaturtle.org website at:

[http://www.seaturtle.org/tracking/?project\\_id=55](http://www.seaturtle.org/tracking/?project_id=55)  
Group Visits to the turtle rehabilitation unit can be made with prior arrangement by contacting the aquarium team on [BAAAquarium@jumeirah.com](mailto:BAAAquarium@jumeirah.com)

The unit attracts over 1200 school visitors annually, thus increasing awareness of the plight of turtles in the Arabian Gulf, and active participation in our project is encouraged.



Fig 2. 'Dibba' fitted with Kiwisat PTT before release (©Sean McKeown).

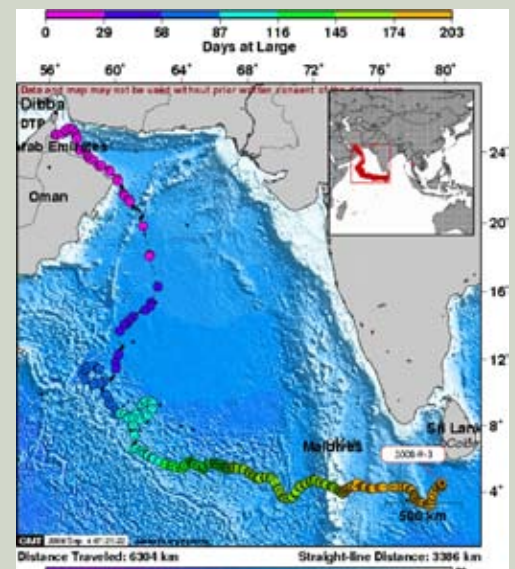


Fig 3. Map showing movements of 'Dibba' to 15/09/08 (©Wildlife Protection Office).

# RAS SHARMA PROTECTED AREA REMAINS UNPROTECTED

**David B. Stanton**

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Yemen is widely touted as the last great reservoir of Arabian wildlife, with Ras Sharma Protected Area being a site of supreme regional importance, because of the sea turtles that nest there. Unless this area receives real protection, however, the turtles that use it may disappear.

Ras Sharma and Jethmun Beach in the Hadhramawt, form one of the most important nesting areas for marine turtles in Arabia. Of particular importance to Green Turtles (*Chelonia mydas*) and Hawksbill Turtles (*Eretmochelys imbricata*), these beaches are also used by Loggerheads (*Caretta caretta*). Leatherbacks (*Dermachelys coriacea*) have been reported off the coast, and there have been unsubstantiated reports of Olive Ridleys (*Lepidochelys olivacea*). In the words of Khaled, one of the soldiers who guard the beaches, "In season they come in their thousands." While this may be exaggerated, it is obvious from the cratered surface that many turtles nest here. It is for this reason, that Ras Sharma was declared a protected area, one of four on the Yemen mainland including Jebel Bura', Ottmah, and Hawf. The Socotra Archipelago Zoning Plan designates an additional 12 terrestrial and 27 marine Nature Sanctuaries with about three quarters of the islands' area declared as National Parkland. For numerous reasons, the archipelago has been nominated as a UNESCO World Heritage Site, although this nomination is by no means secure.

Yemenis claim that Ras Sharma is 'off-limits' but, in my experience, visiting the area unimpeded is simple. Situated about 120 kilometers east of Mukalla, good tar roads approach to within 5 km of the site. A track passable by any car goes directly to the beach which is surrounded by a derelict wall. Money has obviously been allocated for protection, but the project appears defunct.

Threats to the turtles are many. Upon my first visit in December 2006, I saw as many as a dozen Yemenis combing the beach for ghost crabs after sunset. Those that I spoke with said they were off-duty soldiers moonlighting as fishermen, and that they regularly used the beach to collect bait. Given the sensitivity of the turtles that nest here, there is no doubt that many are inhibited by human traffic. Circular tracks show where turtles have pulled U-turns, returning to the sea after having been disturbed by people.

The presence of these turtles is well-known, and tourists visit Ras Sharma daily. In spite of posted regulations and a pamphlet issued by the Environment Protection Authority, many visitors don't realize how easily the turtles can be disturbed. Unchecked, curiosity seekers cause many turtles to abort their nesting missions, and once laying commences the mothers are easily scared off the pits that they struggle to dig in the sand. The eggs thus abandoned have no chance of hatching. Even the most sensitive and cautious tourist may inadvertently interrupt the nesting process.

It is possible also that human consumption of turtle meat and eggs plays a negative role in breeding success at Ras Sharma. Prior to Yemeni Unification on May 22<sup>nd</sup>, 1990, many soldiers of the former People's Democratic Republic of Yemen trained in Cuba where they developed a taste for turtle flesh and eggs. Dead, gutted turtles are frequently found on the beach at Ras Sharma although it is unknown whether they have been butchered, or are victims of natural mortality.

By far the greatest threats to the turtles at Ras Sharma, however, are the feral dogs that have discovered this seemingly infinite resource. Healthy canines romp on the beach, fueled by a diet of turtle eggs and

hatchlings. During late October 2007, I saw a bitch with seven chubby puppies lying contentedly, the size and condition of her litter underscoring the richness of her diet. Excavated nests are a common sight at Ras Sharma and the area is littered with dark piles of dog feces dense with miniature flippers.

Ras Sharma is one of the many areas of Yemen that host true wildlife spectacles. Yemen acted well in recognizing the importance of these nesting beaches by declaring the Protected Area. However, for this act to have an impact, it must be followed up with concrete action and enforcement. First, a humane eradication campaign to eliminate feral dogs should be effected. Simultaneously, a functional barrier to impede future canine immigration and control human traffic must be erected. Alternative beaches for bait harvesting can be designated. Finally, well-trained staff to regulate visitors' behavior would limit the damage caused by human intrusions and prevent further canine incursions.

Ras Sharma has been used by turtles for untold millennia. Nesting continues in spite of disturbance by man and his animals, although the future of this spectacle is by no means ensured. With the simple measures prescribed above, and a minimum of will and enforcement, the turtles of Sharma may enjoy a secure future for millennia to come.



Fig 2. A nest abandoned because of human disturbance (©Abe McCullough).



Fig 1. A green turtle nesting at Ras Sharma (©Abe McCullough).



Fig 3. Dog faeces dense with turtle hatchling remains at Ras Sharma (©Fadhil al Eryani).

# CORAL REEF INITIATIVES IN THE MIDDLE EAST

Declan O'Donovan<sup>1</sup> and Iain McDonald<sup>2</sup>

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## International Year of the Reef

The first ever **International Year of the Reef** was held more than 10 years ago in 1997 (IYOR 97), however, there remains an urgent need to increase awareness and understanding of coral reefs, and to further conserve and manage these reefs and associated ecosystems. To assist in this task, 2008 was designated the International Year of the Reef at the 11th International Coral Reef Symposium in Florida. The main threats to corals have been identified as climate change, destructive fishing, declining water quality from pollution, and the degradation of coastal habitats. Climate change has increased water temperatures and solar radiation exposure leading to coral bleaching and diseases that can result in mass coral mortalities.

IYOR 2008 (<http://www.iyor.org>) follows on from the IYOR 1997 event that was initiated in response to the increasing threats to coral reefs and associated ecosystems, such as mangroves and sea grasses. IYOR 97 was a global effort to increase awareness and understanding of coral reefs, and support conservation, research and management efforts.

IYOR 2008 aims to:

- Strengthen awareness about the ecological, economic, social and cultural value of coral reefs and associated ecosystems
- Improve understanding of the critical threats to coral reefs and generate both practical and innovative solutions to reduce these threats
- Generate urgent action at all levels to develop and implement effective management strategies for conservation and sustainable use of these ecosystems.

## Coral Reef Investigations in Abu Dhabi and Eastern Qatar

In June 2008, Dolphin Energy management announced the completion of a three year collaborative research project, 'Coral Reef Investigations in Abu Dhabi and Eastern Qatar.' The objectives had been to map, for the first time, the extensive range of shallow coral reefs lying in Qatari and Abu Dhabi waters. Coral reefs and their associated mangrove and sea grass habitats in the United Arab Emirates (UAE) and Qatar, are known to play important ecological, economic, recreational and cultural roles. These habitats provide food and shelter for numerous fish and marine species. They also protect coastal areas from storm surge, prevent coastal erosion and support commercial fishing and an array of recreational activities.

Over the three year period, various project teams undertook scale mapping of coral (using satellite imagery), as well as ground verification, accuracy reports, fieldwork around the islands, training of scientific personnel at Qatar's Supreme Council for the Environment and Natural Resources (SCENR) and the Environment Agency– Abu Dhabi (EAD), a coral reef monitoring training manual, production of the conservation master plan and completion of a definitive coral reef conservation management documentary. A new illustrated book, "Coral," and an associated DVD, will be published later in 2008 to commemorate the project. The project has proven to be a successful collaborative venture.

Through this study researchers from the EAD and SCENR were able to identify areas where the coral is thriving and even re-growing, despite extreme temperature conditions in recent summers. The study



Fig 1. Translocated coral (Qatargas)

also assessed the dangers involved in regional coastal developments and these were highlighted in the resultant Coral Reef Management Plan which shows that these are accelerating coral die off. The authors of the report are encouraging regional government authorities to review and implement effective legislation and policy strategies, so as to protect these essential marine habitats for the benefit of current and future generations. The work was sponsored by Dolphin Energy Limited and managed by the UAE's Emirates Wildlife Society (EWS) and the regional branch of the World Wide Fund for Nature (WWF).

## Coral Translocation by Qatargas

During April 2008, Qatargas completed a major environmental initiative involving the relocation of over 4,500 coral colonies from future pipeline corridors which would have been affected by proposed expansion projects. This programme is considered unique and the largest coral protection effort conducted so far in the region. The coral protection plan was implemented in close cooperation with the Supreme Council for the Environment & Natural Reserves (SCENR), Qatar.

An Environmental and Socio-Economic Impact Assessment (ESIA) was conducted in 2004. A key recommendation from the ESIA was to move representative coral colonies from the areas affected by the pipeline construction activities to a safe and sustainable location.

In 2004, 2005 and 2006, Qatargas contracted Continental Shelf Associates (CSA) to survey the marine seafloor to identify the coral colonies located along the future pipeline corridors. Following the selection of seven possible sites, visual surveys of one site south east of Al-Khor found it to be suitable. This location had the right water quality, water depth, hard sub-sea substrate and already contained live corals including those of the same species as the relocated corals.

Removal and relocation operations started in October 2006 and continued over five months. First the coral colonies were carefully detached by scientists and placed in basket-shaped storage containers on the seafloor until ready for transport. Once ready for transport the baskets were transferred onboard a ship where they were placed in large circulating seawater pools specially constructed for the project. The corals were then transported to the new location and reattached to the seafloor. The new colonies were then numbered and tagged for future monitoring.

Future work will include an environmental monitoring survey to determine the success of the relocation program. The coral's colour, health and any major changes to the surrounding habitat will also be recorded.



Fig 2. Shallow water coral (Qatargas)

## WHAT'S NEW (AND OLD) IN THE LITERATURE

**Abdulaziz H. Abuzinada, Hans-Jog Barth, Friedhelm Krupp, Benno Boer, Thabit Abdessalaam. (2008) Protecting the Gulf's Marine Ecosystems from Pollution. Birkhauser, Berlin. 285pp.**

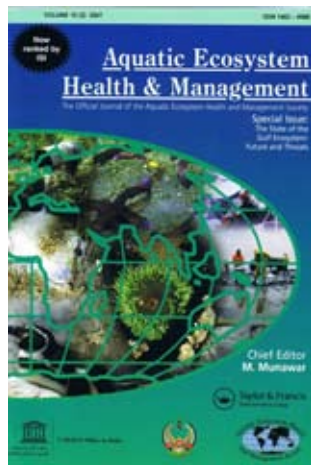
The Gulf is endowed with valuable natural resources and great biodiversity of plant and animal species. Sustainable living in the Gulf area depends upon such resources provided by the sea. Large areas of its coastal zone including important marine habitats are currently threatened by increasing stress on the Gulf ecosystems due to accelerated coastal development during the last few years. Some of the world's largest landfill and dredging projects are found in the coastal areas, and the world's main crude oil shipping routes pass through the open sea. A variety of human impacts are contributing to marine pollution, such as oil, sediments, waste, thermal, chemical, and other forms of pollution. This volume reviews present sources and levels of pollution in the Gulf, assesses their causes and effects on biota and ecosystems, and identifies gaps and obstacles currently preventing an effective integrated transboundary management of the marine and coastal resources. It highlights preventive and remedial measures reducing levels of pollution and mitigating adverse impacts.

The book is an important source of information for environmental managers, researchers, students, administrators, and decision makers, contributing towards improved environmental management.

**Munawar, M. (chief editor) (2007) Aquatic Ecosystem Health and Management. Special Issue: The State of the Gulf Ecosystem: Future & Threat. Taylor and Francis.**

These are the proceedings of the 1st International Conference on the State of the Gulf Ecosystem: Future & Threats. The conference took place in Al Ain, UAE, March 2006. It was suggested to follow-up at two-to three year intervals rotating between riparian countries of the Gulf. The next conference is planned for March 2009, in Manama, Bahrain, and will focus on ecosystem function and services, and especially on coastal development. The science-based contributions provide valuable information towards good science-based environmental coastal and marine management, which is crucial for the sustainable human living of people in the Gulf.

For more information on these volumes contact [b.boer@unesco.org](mailto:b.boer@unesco.org)



### Useful published literature on marine life available as pdfs on WME News website

While the following papers may have been published for many years it is surprising how many people working with turtles in the region are not aware of this material. Check the Wildlife Middle East website ([www.wmenews.com](http://www.wmenews.com)) for pdfs.

C D Silvanose (2008) A Short Report on Green Sea Turtle Microbiology. Unpublished Report.

J. H. Samour, J. C. Howlett, C.D. Silvanose, C. R. Hasbun and S. M. Al-Ghais (1988). Normal haematology of free-living green sea turtles (*Chelonia mydas*) from the United Arab Emirates. Comparative Haematology International, 8: 102-107.

R. Hasbun, A. J. Lawrence, J. Naldo, J. H. Samour and S. M. Al-Ghais (1998). Normal blood chemistry of free-living green sea turtles, (*Chelonia mydas*) from the United Arab Emirates. Comparative Haematology International, 8: 174-177.



Fig 1. A juvenile green turtle (*Chelonia mydas*) in crystalline waters (©N.J. Pilcher).