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Dendrinos, P. & A. Demetropoulos. The Mediterranean monk seal in Cyprus. 8th International Congress on the Zoogeography and Ecology of Greece and Adjacent Regions, Kavala, Greece.

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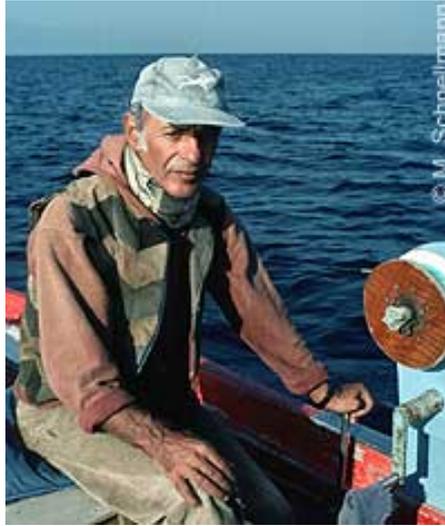
Perspectives: From the sublime to the ridiculous, monk seal quotations spanning 3000 years



## Guest Editorial

### LESSONS IN PERFECTION

Şevki Avcı



When I was at primary school, my teacher defined a human being as "the most perfect creature in the world, who can think and reason." The lesson wasn't lost on us. Like most people, as far as I can see, we came to think of ourselves as above the rest, a creature who was always looking down on the rest of the world's creatures. On the other hand, during our history lessons, we were taught that the human being is the most ruthless and efficient killer of all. It was as if no one even realised our confusion over these two apparent contradictions. The most perfect creature and yet the best killer!

If there have been enough wars and massacres in history to prove that human talent for killing, there have also been enough destroyed landscapes and extinct animals and plants to prove that human beings consider themselves superior to all the rest.

In everything, human self interest comes first. If it is a question of a wetland or a holiday resort, the wetland will be drained and filled with concrete. If it is a question of a forest or a road, the trees will soon be falling before the bulldozers. Many people don't even mutter a word in protest. Why? Because it has been drummed into them since they were little boys and girls: "Human beings come first." In other words, if the factory or the road or the tourist village isn't built, "people won't find work" and "people won't benefit."

The idea that such investors might work together with concerned citizens to produce a development plan that will *not* destroy the environment hardly even crosses peoples' minds. Why? Because there is no need. If people benefit, what else is there to think about?

The village I was born in is an old Armenian settlement. Garmirik (nowadays it is known by some other name but it's still Garmirik to me), was built on a hill over the river Çoruh, and because all of its houses were built on rocks, all the surrounding farmland was preserved. Now I live in Foça. Foça is one of the 12 Ionian cities (ancient Phokaia). Ionians, Persians, Romans, Greeks and many other peoples have lived in the city. Greeks and Turks, they lived together for ages, until 1922 tore them apart. All of these nations (including the Turks) protected the town's farmlands, its nature and archaeological heritage. But after 1984 the town's historical sites and natural environment were pillaged. Archaeological sites were opened for construction. Secondary houses were built where age-old olive trees used to live.

The question is, is the human urge to destroy an illness or a result of human egotism?

I have met a lot of hunters who have hunted a lot of animals. Because they are not all the same, I distinguish them as destroyers and hunters. Destroyers act in a hostile manner to both themselves and their surroundings without even being aware of what they are doing. With the gun they own they spend their ammunition indiscriminately, seeing almost everything that comes in their way as a target – including traffic signs. It doesn't matter whether the target is a youngster or pregnant or whether she is suckling her pups. The important thing is to shoot and, if they can manage it, to kill the target. Maybe most of them don't even realise that they are cutting the branch they are sitting on. Somehow there must be a way of letting these people know that it's impossible to live in a world without these natural beauties and living things.

Think of all the animals that are simply thrown away because they do not have any economic value. For example, the purse seiners are catching very young anchovies, sardines and other fish without giving them the chance to lay even their first eggs. But because they can't find any profitable market for their catch, most of these fish are thrown away or are sent to the fish-flour factories or are used as bait. Undersized breams are caught and sold to stock fish farms because they fetch a good price. In many places, fish farms are stealing their supply from nature instead of producing their own fish.

Here in Foça, there is a protected area for monk seals, where fishing with seines, trawls and *trata* gear is forbidden. Despite this prohibition, some people continue to fish here illegally. Although it is banned, divers are also night-fishing with harpoons. Tourists, especially people from ClubMed, go diving near the seal caves, and some daily tour boats also invade the area.

The people of Foça, the fishermen and most of the tour boat operators, support the protected area, but trouble is caused by a few greedy individuals who have come to realise that the legal sanctions are not effective. As a result, they don't take them seriously. SAD-AFAG and the Fishermen's Co-operative are struggling to prevent these kinds of illegal activities, but effective guarding and legal sanctions are essential if the protection of this area is to be successful. Perhaps the real solution is through education, but that is a long-term occupation.

With the seas and the earth and the air being ruined all around us, and with technology out of anyone's control, and with people still grasping for the same things that are causing all this destruction, it is hard to think of the teachers who are still fooling the children with the idea that we are "the most perfect creature on earth, who can think and reason."

There is a question in my mind which gives me a headache whenever I think about it. How to explain the behaviour of those who cruelly destroy nature? I guess the basic problem is a lack of love – people who are incapable of loving their fellow humans and fellow creatures, even of loving themselves and their own children. But I believe the most powerful weapon we have is love. With love we can overcome our egoism, with love we can learn how to share and with love we can build up a world without hunger and wars. We do not have any other choice. The only ecosystem we can live in is this one. There is no other world.

**Sevki Avci, a fisherman from Foça, Turkey.  
October 2000**

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## WWF reports urge Mediterranean action

### Tourism, overfishing, pollution & coastal development cited in wave of destruction

Four recently released reports issued by the World Wide Fund for Nature urge governments and industry to take urgent action to protect the Mediterranean sea before it is too late to save already threatened and endangered species and habitats. WWF has made the reports available for download in the [Monachus Library](#) and one, [The Mediterranean – Four Thorny Issues](#), is also published as this issue's Cover Story.

Another of the WWF reports, the **Mediterranean Marine Gap Analysis**, seeks to identify the most important unprotected coastal marine areas in the region – "gaps" that should be filled through the establishment of new reserves and management policies.

The report calls for the "protection and sustainable management" of at least 10% of marine and coastal areas of the region over the next 10 years. The study claims that 14% of the Mediterranean coast is already heavily damaged, and that some areas are so degraded that they can already be classified as "lost." They include the Italian Adriatic coast, the coast between Syria and the mouth of the Nile, the coast which links the mouth of the Rhône in France to Spain, and the Spanish coast from Barcelona to Valencia. The report also points out that currently less than one percent of the coastal Mediterranean sea is protected.

The study identifies overfishing, pollution, intensive agriculture and coastal tourism development as the main culprits in the degradation of the region. WWF believes that concerted action must be taken within the next 10 years if the Mediterranean's unique cultural heritage – its remaining pristine landscapes and its endangered species – are to have any hope of survival.

The report's recommendations include a ban on coastal trawling from a depth of 0-50 metres (where 80% of marine biodiversity is found), a ban on coastal construction in 13 of the most important areas identified in need of protection, and the consistent application of international pollution laws. Identified as being of particular importance to the monk seal are the Aegean and Turkey's Cilician Basin, two areas where the WWF Mediterranean Programme (MedPO) have been active in funding conservation efforts.



Two other WWF reports have been issued under the **Responsible Tourism in the Mediterranean** banner, one focusing on tourism's threats to the Mediterranean ecosystem and the industry's so far largely unrealised opportunities to improve its own track record, and the other presenting WWF's own proposed Code of Conduct for tourists, for Industry (tour-operators, hotels and airlines) and government.

Both of these reports (**WWF MedPO. 2000. Responsible Tourism in the Mediterranean: Current Threats & Opportunities / Principles & codes of conduct**) are available for download in the [Monachus Library](#).

Those seeking further information on tourism's impact upon the monk seal and its habitat should also check out:

[Bacquet, Xavier Jacques](#). Tourism in the Dock. Letters to the Editor, The Monachus Guardian, this issue.

[Kıraç, Cem O. & Harun Güçlüsoy](#). Küdür under renewed threat, The Monachus Guardian, this issue.

[Merforth, Peter](#). Hikers and seals on Samos, *The Monachus Guardian*, this issue.

[Aga Khan, Sadruddin](#). 1999. Guest Editorial: A little imagination. Why the billion dollar mass tourism industry should do something to save the Mediterranean monk seal. *The Monachus Guardian* 2(2): November 1999.

[Johnson, William M. & David M. Lavigne](#). 1999. Mass tourism and the Mediterranean monk seal. The role of mass tourism in the decline and possible future extinction of Europe's most endangered marine mammal, *Monachus monachus*. *Monachus Science*. *The Monachus Guardian* 2(2): November 1999.

[Johnson, William M.](#) 1998. Monk seal myths in Sardinia. *The Monachus Guardian* 1(1): May 1998.

[Savas, Yalcin](#). 1999. *The Monachus Guardian* 2(2): November 1999. How tourism has ruined the coastal habitats of the monk seal on the Bodrum Peninsula, Turkey.

## Mystery Sightings in the Caribbean

Several mystery seal sightings off Pensacola Beach, Florida, in 1995 have recently surfaced in a U.S. kayaking forum, again leading to speculation that the Caribbean monk seal (*Monachus tropicalis*) may not be extinct after all. In reporting his sighting, list member Bob Griebel stated:

"In '95, my first vacation with kayak at Pensacola Beach, I came across a lone seal, close up and in clear view, each time I paddled over the first three days. I even watched one feeding in shallow water off the beach from the eighth floor balcony. It happened so regularly and in varying places separated by miles that my impression was 'Wow, I didn't know there are THIS MANY seals in the Gulf!' Choppy water as Hurricane Opal was brewing off Yucatan halted paddling and sightings the second half of that week.

Toward week's end, I stopped at the visitor center at Gulf Islands National Seashore to learn about seal species. The ranger said there are NO seals in the Gulf and tried to show me pictures of nutria [coypu], beaver, etc. READ MY LIPS, IT WAS A SEAL!!!!

I've since learned that the last sighting of the extinct Caribbean monk seal in the Gulf happened in the 50s, I believe near Galveston. A monk seal professor at the University of Hawaii has asked several times whether I've learned anything more, but I haven't been back to Pensacola and I'm still waiting to find the next person who'll admit to seeing a seal in the Gulf...

So, I again pose the obligatory question: Are there any other crazies out there who think they've seen a seal in the Gulf?" – Bob Griebel

As noted in previous issues of TMG (see [Has Anyone Seen a Caribbean Monk Seal?](#), [Caribbean Monk Seals – Are they Extinct?](#) and [Caribbean X-Files](#)) mysterious Caribbean seal sightings do not necessarily point to *Monachus tropicalis*. Indeed, extralimital records of other pinniped species – such as harp and hooded seals – have long muddied the Caribbean waters as researchers struggle to find any trace of *tropicalis*. In the case of the Pensicola Beach sightings, experts we consulted suggested various possibilities, including: a hooded seal pup... a wayward harp seal (less likely), a harbour seal or grey seal... or even an escaped fur seal or sea lion...

## Bibliography sees light at tunnel's end

Following two years of exhaustive research, an international effort to compile an electronic bibliography (see TMG 2:2, [Letters](#)) dedicated entirely to the Mediterranean monk seal, is at last taking shape. Comprehensive research in public libraries (Berlin, Bern, Guelph, Manchester, Thessaloniki, Zürich) and in private collections (e.g. the IMMA/Keith Ronald Library in Guelph and the MOm library in Athens and Alonissos), yielded more than 1300 references relating to *Monachus monachus*. While predominantly comprised of print media (journal articles, books, conference proceedings etc.) the bibliography also includes audiovisual material and Web-based information. The references cover a wide range of alphabetised monk seal topics, allowing electronic search by subject keywords.

During the current and final phase prior to publication, we intend to crosscheck entries for accuracy. Wherever possible, authors and/or organizations will be contacted to provide information on missing or erroneous references. – Project Coordinator, Alexandros Karamanlidis

For more information on the monk seal bibliography and how you can help, contact: Alexandros Karamanlidis, c/o Dr. M. Jones, Department of Biological Sciences, Manchester Metropolitan University, Chester Street, Manchester M1 5GD, U.K. Or email: [00961865@mmu.ac.uk](mailto:00961865@mmu.ac.uk)

### EndQuote

The zoology exhibit, when we saw it, was not impressive. It consisted of several glass cases of stuffed animals. Some appeared rather moth-eaten, and the stuffing was coming out of others. However, it is the only such collection which has survived intact from that time [end of the 19th century]. Some of the animals, such as the large crocodile from Nahal Taninim, may have been the last surviving member of a particular species. There is a leopard from the Judean Desert, as well as an ocelot from the desert east of the Jordan. There is a fresh-water monk seal from the Jordan River and a number of vultures no longer seen in our skies.

– **Architecture and stuffed animals at one go, The Jerusalem Post, January 5, 1999.**

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## Hawaiian News

### Rare birth on Kauai

Although historically rare around the main Hawaiian Islands, as many as 70 monk seals may be scattered along the coasts of Hawaii, Oahu, Maui and Kauai, according to sources at the National Marine Fisheries Service (see TMG 3:1, [Monk seals in the main Hawaiian Islands](#)).

A monk seal birth on a popular tourist beach on Kauai on 6 July served to focus public attention on the species' tenuous hold on these heavily exploited island shores, and on the risks of harassment from curious onlookers. The pup, born in front of the lifeguard station at Poipu Beach Park, was only the fourth known monk seal birth on Kauai in the last decade. Since none of the previous offspring survived, local conservationists were keen to maximise security for both mother and pup. The last known Kauai pup was born on a heavily symbolic 4 July 1999, but was later found dead under mysterious circumstances (TMG 3:1, [Fourth of July pup probably killed by boat](#)).

Kauai Monk Seal Watch posted volunteers to shield the animals from disturbance, both from human onlookers and dogs. However, according to unconfirmed reports, camera flashes disturbed the mother while suckling her pup.

Other sources of harassment were averted at the eleventh hour. Following some bad publicity, the Kauai Surfing Association reluctantly agreed to move its planned body-boarding, swimming, and canoeing festival – expected to draw 1500 people to the beach – to an alternative location.

Meanwhile, environmental critics believe there can be little chance for the endangered monk seal to recolonise the main Hawaiian Islands while the species comes in a poor second to tourism, development and military interests. In July it was announced that the US Navy was seeking a second 5 year permit to blast the undersea environment north of Kauai with high intensity sound. Ecologists have voiced concern that such experiments may pose dangers for marine mammals, particularly those that rely on echolocation.

### Harassment continues on Maui

While official efforts are being stepped up to learn more about the distribution of the species around the main Hawaiian Islands, intermittent reports continue to emerge of monk seals being harassed and persecuted – sometimes in ignorance, sometimes in malice.

In May this year, it was reported that a juvenile seal hauled out on a Maui beach was pelted with rocks by one youth, and surrounded by people posing for pictures.

According to one credible source, when a concerned neighbour berated the youth for his stone-throwing, the boy's belligerent reply was: "Do you own the seal?"

Disturbing events of this type, say observers, are an indication that public awareness campaigns are currently failing to protect monk seals on the main Hawaiian Islands. Although it is technically a federal offence to come within a 100 feet (~ 30 metres) of a monk seal, the rarity of the animal has tended to act as an irresistible magnet to curious onlookers, both locals or tourists.

The most recent harassment incidents follow the notorious 1998 case of a Hawaiian man brought to trial for throwing stones and a coconut at the seal designated as Q39 – the first-known pup to be born on Maui, according to the National Marine Fisheries Service (see [The life & times of Q39](#) and ["He didn't eat the seal, did he?"](#)). The case attracted additional controversy when the judge hearing the case – reasoning that the perpetrator had not actually eaten the seal – imposed a \$50 fine and a 100 hours community service – a sentence widely condemned as too lenient. Under state law, the maximum penalty would have been a one-year jail term and a \$1,000 fine.

### More leaking fuel for marine sanctuary

A long-line fishing vessel that ran aground on Pearl and Hermes Reef on World Environment Day (5 June) this year proceeded to leak 16,000 gallons of diesel fuel into the surrounding ocean. A similar incident in 1998 at Kure Atoll (TMG 2:1, [The Old Woman Who Swallowed the Fly](#)), also involving a fishing vessel, resulted in at least 4000 gallons

of fuel being dumped. Both atolls lie in the Hawaiian Islands National Wildlife Refuge and are important breeding sites for the Hawaiian monk seal. The National Marine Fisheries Service (NMFS) been at the brunt of criticism – and an Earthjustice Legal Defense Fund lawsuit – for mismanagement of the lobster and bottomfish fishery in the Northwestern Hawaiian Islands (TMG 3:1, [NMFS policy on trial](#)). Critics suspect that monk seals are starving to death in certain areas because of overfishing pressures.

## NMFS ducks judgement

**"The data strongly suggest that the fishery contributes to the starvation of the monk seals..."**  
– Federal District Court Judge Samuel King

Despite years of fending off criticisms of its fisheries policy in the Northwestern Hawaiian Islands, it appears that NMFS may now have buckled under the combined weight of shifting scientific opinion within its own ranks and legal action in federal court.

Just days before the judge hearing the case was due to rule on a preliminary injunction requesting such action, NMFS imposed a moratorium on lobster fishing in the Northwestern Hawaiian Islands.

Environmentalists quickly hailed the decision as a victory. NMFS had recently become increasingly isolated in its attempts to maintain the lobster fishery, facing criticism from, among others, the Marine Mammal Commission and the Hawaiian Monk Seal Recovery Team. Supporters of the ban, which is scheduled to extend throughout the year 2000 season, hope that the incidence of young seals starving to death, particularly at French Frigate Shoals, may diminish if the dwindling lobster population can begin to recover. Recent scientific research has suggested that weaned pups and juvenile monk seals inexperienced in catching faster prey may be particularly dependent on lobster as a source of nutrition.

The U.S. District Court Judge hearing the case against NMFS announced in his 5 June ruling that the injunction request was now moot given the agency's voluntary moratorium. The Earthjustice Legal Defense Fund, however, which was representing a coalition of environmental organisations in the case – including Greenpeace, the Center for Biological Diversity and the Turtle Island Restoration Network – later announced that it would continue to act on its clients' behalf in an attempt to secure longer-term protection for the Hawaiian monk seal.

According to the Honolulu Star-Bulletin, the presiding judge voiced the opinion that Earthjustice would have won its court injunction if NMFS hadn't voluntarily closed lobster fishing for the year. In his 30-page decision he went on to state, "The data strongly suggest that the fishery contributes to the starvation of the monk seals." He went on to warn NMFS that if it intends to lift the ban it must first notify the court.

As few as half a dozen fishing boats, accounting for roughly 45 crew, are thought to be affected by the NMFS decision. Most are expected to compensate for the seasonal loss of lobster earnings by increasing activities in other areas, such as longline fishing.

A few raucous voices did condemn the decision, mainly on the grounds of state interference. A gem of a letter published in Honolulu Star-Bulletin read in part:

"I don't believe government statistics; they're all lies anyway. And none of these animals have helped me pay my bills. So to hell with them. We should shoot 'em, eat 'em and make shoes and jackets out of their skins."

### Published sources

Honolulu Star-Bulletin, 22 June 2000; 12 July 2000

## Another lawsuit hooks NMFS

Another lawsuit was aimed at NMFS in July for allowing unregulated longline fishing in the Pacific, allegedly violating the Endangered Species Act. "A 60 Day Notice of Intent to Sue" was filed against NMFS and the Departments of Commerce and Interior on behalf of the Turtle Restoration Network, the Center for Biological Diversity, and the Recreational Fishing Alliance. The suit provides evidence that the longline fishery causes injuries and mortalities to several threatened and endangered species, including leatherback and loggerhead turtles, Hawaiian monk seals and the short-tailed albatross. The plaintiffs demanded NMFS action within 60 days to correct the alleged violations, and served notice that a failure to comply would result in NMFS being sued in Federal Court.

The longline fishing industry is already at the brunt of legal action in Federal Court. Federal District Judge David Ezra has ordered that every boat in Hawaii's longline fishing fleet must carry a federal observer in an effort to cut interactions with threatened and endangered species. The ruling, originally to have been carried out within thirty days, was postponed in June to allow the government and industry sufficient time to comply. A shortage of trained observers is hampering compliance.

Meanwhile, Hawaiian monk seals continue to get snared on one type of hook or another, including those used in fishing from shore. In April this year it was reported that a monk seal born on Midway Atoll had been discovered at a beach on Molokai with a large fishing hook lodged in the base of its tongue. Although the adult female was expected

to make a full recovery following extraction of the hook, concerns were raised about the potentially lethal impact that lost or discarded fishing hooks pose to monk seals in less favourable circumstances. At least seven Hawaiian monk seals have been reported with hooks lodged in their mouths around the main Hawaiian Islands of Maui, Oahu and Kauai since 1991, and some observers fear that these casualties may represent only the tip of the iceberg.

**Published sources**

MARMAM, 30 July 2000  
Honolulu Star-Bulletin, 27 June 2000  
Kula Daily Planet 5 July 2000

## Marine debris on the table

Marine debris continues to kill millions of seabirds and hundreds of thousands of marine mammals every year. The problem is particularly acute in the Northwestern Hawaiian Islands, where Hawaiian monk seals are at serious risk of drowning after entanglement in lost or dumped fishing gear. Coral reefs also face damage.

So far, more than 35 tons of ghost nets have been removed from Hawaiian reefs and shorelines, but according to NMFS estimates, 2000-3000 tons remain.

Because entangled seals may become shark bait before they can be counted by researchers, reliable estimates on mortality remain elusive. NMFS, however, is reported to have documented 196 deaths since 1982.



According to ideas presented at an August conference at the Humpback Whale National Marine Sanctuary in Honolulu (International Marine Debris Conference on Derelict Fishing Gear and the Ocean Environment), clean-up efforts could be drastically improved with the deployment of high-tech sensing equipment. Such methods would see planes and satellites mapping marine debris by sensing its chemical or reflective signature. This, the NMFS reasons, would be a far more efficient approach in tackling the problem since all human and technical resources that are currently committed to finding marine debris could instead be channelled towards collection.

Preventive methods under discussion include mandatory tagging of fishing nets to permit identification of offenders.

Some critics, however, remain unconvinced, reasoning that such methods were already abandoned in the 1980s because of lack of international agreements on reporting, enforcement and penalties.

The fact that much of the debris plaguing the Northwestern Hawaiian Islands is being washed in from the far afield is fuelling calls for an international solution to the problem. The Honolulu conference went some way towards addressing that issue with participation from of the Pacific Rim culprit nations, including Japan, Russia and the United States.

For detailed background information on the conference and the marine debris crisis, check out the following website: <http://www.hihwnms.nos.noaa.gov>

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## Albania & Croatia

### Sightings reported off Palagruza and Solta

For three weeks during July and August, Zagreb's [Mediterranean Monk Seal Group](#) (Grupa Sredozemna Medvjedica) committed itself to fieldwork, mainly around Palagruza. This remote Adriatic island group, lying almost halfway between Italy and Croatia, boasts some of the last known sightings of *Monachus monachus* in the region. MMS Group put together an international team for the expedition, including 4 members from Rome's Gruppo Foca Monaca, 2 members from Ljubljana in Slovenia and 3 members from its own ranks in Zagreb. The international team investigated the Palagruza coastline by swimming around its constituent islands (Vela Palagruza, Mala Palagruza, Kamik od Ostra, Kamik od Tramuntane), and two previously uncharted caves were discovered which were judged suitable as monk seal habitat.

Although no tracks, scats or other signs of monk seal presence were detected, Palagruza's lighthouse keeper reported seeing a seal approximately 20 metres from his boat on 12 February 2000.

In addition, postcard questionnaires distributed along the Croatian coast yielded three independent sightings reports from the southwest side of the island of Solta (off Split) on 22 July 2000.

Following the Palagruza research, several educational monk seal lectures were held on the islands of Komiza and Vis, including an open air art workshop where children aged 2-10 participated.

### Joint project draws to a close

Following further research and educational activities, the cooperative venture involving the MMS Group and its partner NGO in Albania, [Aquarius](#), has successfully drawn to a close (see TMG 2:1, [Croatia](#)). The joint project was funded by the Regional Environmental Center for Central and Eastern Europe in Budapest, Hungary. Both groups will continue their efforts to protect the monk seal and its habitats in their respective countries.

### Eco-Oscar award

The Mediterranean Monk Seal Group has been awarded an ECO-OSCAR 2000 award by the Croatian Ministry of Environment. The award was presented in recognition of the organisation's efforts in preserving biological diversity.

As an added bonus, the MMS Group received financial support for 2000 from the same Ministry, from funds earmarked for the support of NGOs.

Through press and media work in the country, the organization continues to draw public attention towards the plight of the monk seal and its threatened habitats in the Adriatic.

## Bulgaria

### Poster promotes Ropotamo

An impressive colour poster has been published by the Strandja-Ropotamo Project of the Bulgarian-Swiss Biodiversity Conservation Programme, to commemorate the 60th anniversary of the Ropotamo Nature Reserve, one of Bulgaria's few surviving pristine wildlife wetland areas along the Black Sea coast. Once a favourite haunt of the monk seal, the Ropotamo protected area remains an important site for migratory birds, and conservationists are renewing their efforts to have the area declared a Ramsar site by the Bulgarian Ministry of Environment. Scientists

have also voiced the hope that protection of vital coastal habitat might eventually encourage recolonisation by the monk seal, which is now virtually extinct throughout the Black Sea.

### Coin commemorates monk seal

A monk seal coin that has largely escaped the attention of the conservation community was minted by Bulgaria last year to commemorate the species in the Bulgarian Black Sea, where it is already thought to be extinct. The coin, depicting adult seal and pup, is worth 10 lev. Thanks to P.J.H. van Bree for bringing the coin to our attention.



## Greece

### MOM scolds government inaction

MOM has released the text of an open letter addressed to several key Greek ministries, criticising the government for its inaction on monk seal conservation issues. The move was prompted in part by the reactions of Greek and foreign tourists, thousands of whom visit MOM Information Centres every year.

The letter tells ministers that Information Centre visitors often ask the same question when acquainted with the facts of the monk seal's precarious hold on survival: "What is the Greek government going to do about all this?" MOM's reaction, the letter continues, has always been to assure the public of the government's own promises, among them:

- The establishment of a management body for the National Marine Park of Alonnisos-Northern Sporades, with funding for five years of operation originating from the 3rd EU Structural Fund.
- The establishment and operation of the National Marine Park of Kimolos-Cyclades, with alternative development opportunities for the island pursued as a matter of priority through special national and EU channels.
- The establishment and operation of the Olympos Eco-development Area in North Karpathos and Saria, together with the provision of adequate infrastructure and any additional measures necessary for the rational development of the area.
- The commencement, without any further delay, of the second phase of the National Program for the Protection of the Mediterranean Monk Seal, thereby ensuring an effective response to threats to the species and its habitat throughout coastal Greece.

The letter, addressed to the ministers and deputy ministers of Environment, Agriculture, Culture, Development and Finance goes on to say that, when told of government promises, visitors either smile in hope or in irony.

Although technically a non-governmental organization, MOM continues to shoulder responsibilities normally undertaken by governments or government-affiliated institutions, most notably guarding activities in the National Marine Park of Alonissos-Northern Sporades, and the operation of the EU-funded Biological Research Station at Gerakas.

Despite these duties, government commitments and funding have often proved erratic. The organization has faced a major funding shortfall during its current fiscal year because of bureaucratic bungling in Brussels (see [Winners and losers in LIFE](#), TMG 2:2 1999.) and apparent indifference in Athens.

### Baby boom in the Sporades

The first newborn pup of the season was recorded by MOM researchers in the Northern Sporades Marine Park (NMPANS) on 4 September. Since then, an additional 10 pups have been counted, including 6 infant seals in one cave on Piperi, an event considered unprecedented in recent history, and a testament to conservation efforts in the region. Eight of the 11 newborn pups were found in the strictly-protected core zone of the Park.

Although the NMPANS covers some 2200 square kilometres of Aegean sea and islands, its core zone, Piperi, is strictly off-limits to fishing, tourism and other forms of human disturbance.



During ongoing research of designated Natura 2000 areas in the Aegean (see TMG, *passim*) MOM researchers have found 6 newborn pups in the Kimolos & Polyaiagos complex, one of which was dead. Around North Karpathos and Saria, researchers have so far counted 2 pups. – Panos Dendrinou, MOM

## The Ports of Ulysses

MOM's research vessel IFAW-Odyssia completed its expedition to Andros and Tinos during the summer months, two Aegean islands that are part of the NATURA 2000 Network. The voyage formed part of a developing cooperation between MOM and the Cyclades Development Enterprise in elaborating 'The Ports of Ulysses,' an EU programme, financed by the INTERREG II Community initiative and by the Ministry for the Aegean, to promote alternative types of quality tourism. MOM hopes that its participation will further its aims in establishing alternative development opportunities in the buffer zones adjoining new monk seal protection areas. – Vrassidas Zavras, MOM

## Stories about seals

In recognition of its growing international membership list, MOM is producing an English-language version of its quarterly news bulletin, *Stories About Seals*. Readers considering MOM membership should write to the organization at the following postal or email address: MOM, Solomou Str. 18, GR-10 682 Athens. Email: [info@mom.gr](mailto:info@mom.gr). – Maria Dimitropoulou, MOM

## Network gathers data

MOM's Rescue and Information Network continues to gather valuable data on monk seals throughout coastal Greece. Its 1300 members report sightings of injured, orphaned or ailing animals, provide valuable information on the distribution of the species, and also spread the conservation message among local people.

Since its founding in 1991, RINT has gathered 1,600 reports of live monk seals and 142 reports of dead seals [editor's note: numbers of reports should not be confused with numbers of individual seals].

An analysis of the data contained in these reports indicates that:

- Contrary to conventional wisdom, the species remains widely distributed throughout both island and mainland coastal areas of Greece.
- Aside from already known sites in which the species breeds (either protected or slated for protection), reproduction has been reported from a further 28 areas around Greece.
- Despite their hostility towards *Monachus monachus* as a competitor for increasingly scarce fish resources, local fishermen are receptive to conservation initiatives that can be specifically designed to tackle both their own fisheries problems and the conservation of the monk seal. These potentially significant attitudes among fishers are also reflected in a comparative study using data collected both in Greece and in Cornwall in the UK to be published in *Mammalia* (S. Adamantopoulou, S. Kotomatas, D. Glain. *In Press*. Fishers and seal conservation: Survey of attitudes towards monk seals in Greece and grey seals in Cornwall. *Mammalia*.)
- The species is capable of covering considerable distances, despite its often sedentary reputation. For the first time, monitoring the movement of three monk seals without the use of technical means was made possible by members of RINT and MOM researchers. All three seals had characteristic markings that helped in their identification: an adult female in Chalkidiki, an adult male in Karpathos and a young male in the Northern Sporades. According to the evidence collected, the greatest distance covered by one of the three seals was 159 nautical miles within 3 months, whereas another individual covered a distance of 28 nm in 2 days. These results were presented in two recent conferences (*8th International Congress on the Zoogeography and Ecology of Greece and Adjacent Regions, Kavala, Greece, 17-21 May 1999* / *13th Biennial Conference on the Biology of Marine Mammals, Maui, Hawaii, 28 November-3 December 1999*) and are pending publication in a scientific journal.

While MOM applauds the efforts of its Network of correspondents, it also has a few words of caution for those who might suddenly find themselves in close proximity to such a critically endangered species:

- If the monk seal is in a cave, move away immediately.
- If the animal is on the beach, do not approach, attempt to feed or to push it back into the sea.
- Notify MOM immediately by calling the special hotline: 01 5222 888 or 01 3304 688.
- Because of the value of sighting reports for the conservation of the species, try to keep a detailed account of the animal's characteristic features (colour, size, wounds, patches, pattern of fur *etc.*), as well as its behaviour.
- However blurry or imperfect they may be, send copies of any photographs or videos to MOM H/Q in Athens. – Stella Adamantopoulou, MOM

## Karpathos

MOM opened a new Information Centre on 17 June 2000 in the coastal village of Diafani in North Karpathos. All children, from primary through high school, embraced MOM's initiative, and became a continual source of life for the Information Centre. They made honest and accurate observations and were keen volunteers in various activities. This was made evident by the children's whole-hearted, cheerful and efficient participation in the major beach cleaning operation at Diafani, which took place on 26 June. Together with MOM's own volunteers, the children needed more than 4 hours and 15 large rubbish bags to clear the beach of litter, while at the same time they set aside a large number of bulky objects (tyres, wood, car batteries etc) for later removal by the community truck. – Vasilis Stravaridis, MOM

## Monk seal shot in Zakynthos

Necropsies were performed by MOM specialists on two monk seals found dead during the summer months. A young seal less than a year old was discovered dead on the beach of Yialia in SW Alonnisos on 17 July. In an advanced state of decomposition, the animal was missing the entire lower part of its body making identification of its sex and the cause of death impossible.

In the Ionian Sea, an adult female seal was found dead on 9 August in the Lake Keri area of Zakynthos. Alerted by members of the Greek WWF team and by the Zakynthos Port Authority, MOM dispatched its own specialists to the island. The animal, well known to locals, was of an advanced age and was known to have given birth to a number of pups. The necropsy revealed that the seal had been shot in the abdomen with a shotgun and had died shortly after of hemorrhagic shock. – Vrassidas Zavras, MOM

## Camping Festival

From 11-20 August MOM took its monk seal conservation message to the Camping Festival, an annual youth event held on a 150-acres of forested coast below Mount Olympos. Live music, horse riding, gliding, mountaineering and other outdoor activities were complemented by the presentations of various humanitarian and environmental organizations, including MOM, Doctors without Borders, the Hope Foundation for the Child and the Family, Arktouros, and the Greek Center for the Relief of Wild Fauna. – Maria Dimitropoulou, MOM

## IFAW provides funding bridge

MOM reports that the International Fund for Animal Welfare (IFAW) was the only international organization to respond to its emergency appeal for funds following disruption in expected EU financing (see TMG 2:2, [LIFE funding rejected for new millennium](#); TMG 3:1, [Guarding continues despite funding crisis](#)).

Heeding the cash crisis, IFAW provided \$30,000 to maintain essential guarding activities in the National Marine Park of Alonissos, Northern Sporades for the year 2000. Expressing its gratitude for the grant, MOM voiced the hope that other NGOs would follow in IFAW's footsteps.

A long-term collaborator of MOM, IFAW has previously provided funds for the organisation's research vessel, the IFAW-Odyssia, and its patrol boat.

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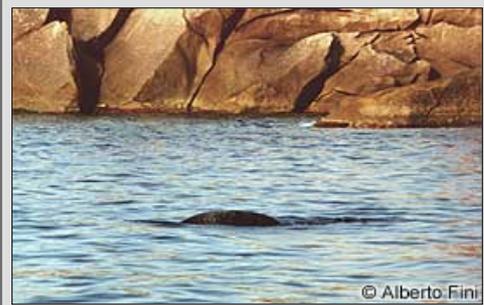
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### Italy

#### Sighting spurs government action

"It was 8.30 am and we were on our boat, 30-40 metres from Cavoli Island, when we heard something moving and a noise like a dolphin. We looked and we saw the face of the seal swimming from right to left. She dove down and reappeared 3 or 4 times, and I made the picture while she was going down! Unfortunately, it was exposure number 27 on my roll of film – in other words the very last one!!"

– Dr. Alberto Fini.



On 22 August 2000, a Mediterranean monk seal was observed in the Marine Reserve of *Capo Carbonara e l'Isola dei Cavoli*, on the southeastern coast of Sardinia. Following the sighting, the mayor of the Reserve's nearby town, Villasimius, and its management body, contacted the Italian Ministry of the Environment and ICRAM, requesting that the details of the sighting be verified and priority actions be identified.

The Marine Reserve (MR) of Capo Carbonara was established in 1999 and the monk seal sighting occurred in its Zone B, where tourist presence is permitted but fishing prohibited except for the use of artisanal set nets by local inhabitants (there are only 7 licenses for this type of fishing). The monk seal was sighted and photographed at approximately 8:30 am, 20 metres east of the Eastern Faraglione of Cavoli island (Figure 1) by a summer resident of the area (see Alberto Fini's account, above). The monk seal was seen swimming on the surface in a stretch of sea with an average depth of 25 metres, and was identified as a seal due to its round head and eyes and the presence of vibrissae. Dr. Fini was interviewed and the photograph and its negative analyzed to determine its authenticity. The photograph is the 26-27th exposure on a film of 24 exposures. According to Dr. Fini's account and the photograph, the animal appears to have been approximately 2 metres in length. The back of the animal was dark grey to black, with a noticeable quantity of lighter scars in the anterior section. Although the head is not visible, as the animal was in the process of diving at the moment of the photograph being taken, part of the tail and the top portion of the rear flippers is noticeable to the right of the body.



Fig. 1: Map of Sardinia and details of the Marine Reserve area of Capo Carbonara

The sighting of a monk seal is not altogether an extraordinary event in Sardinia considering that there are at least 25 locations known historically to have been inhabited by monk seals. In the past, monk seals were observed on the southeastern coast of Sardinia in locations such as Capo S. Elia in Cagliari, the islands of Cavoli and Serpentara

and in Cala Pira (Valdes e Ebau 1996). This presence is confirmed by the accounts of local fishermen in Villasimius, who were interviewed on site on August 30th 2000 (see Table 2). Monk seal sightings have been recorded over the last two decades along the Italian coasts of Sardinia and the lesser Sicilian islands (see Table 3). The origin of these animals has always been attributed to vagrant individuals originating from Tunisia and Algeria. However, the persistent occurrence of sightings, despite the high degree of human encroachment along Italian coasts, suggests that one or more individuals may still be present for brief or longer periods of time in certain areas, and it is possible that such individuals spend their time transiting between Italy and the nearby Tunisian coasts. Given the proximity of the Tunisian coasts to Sardinia and the smaller Sicilian islands, it may be possible that a small population of animals still exists in a distribution range encompassing these locations. Such a hypothesis is feasible considering the recent information on the species' capacity of wide-ranging movements (Adamantopolou *et al.* 1999, Gazo 1998).

### **Activities carried out following the sighting event**

Within 48 hours of the sighting, a rapid evaluation of the event prompted a series of actions to be undertaken:

#### **1. Official request by the Reserve's management body to reduce human activity around the island of Cavoli, including:**

- a. A temporary moratorium on all the commercial diving activities and tourist tours within a 200 metre belt surrounding Cavoli, from 25/08/2000.
- b. All anchoring and transit of recreational boats to take place outside the 200 metre belt of Cavoli island.
- c. A reduction in boat speed from 10 to 5 knots in zone B of the Reserve.

#### **2. Monitoring activity and evaluation of further sightings**

- a. Observation points. Observations from selected lookout points on Cavoli and Serpentara were conducted just after daybreak and before the onset of dawn on a daily basis from 25/08/2000-25/09/2000. Lookout points for the observation sessions were chosen in the Reserve based on knowledge of historical and recent presence of monk seals.
- b. Data collection on recent monk seal sightings. Local distribution of information (including the document *Behaviour guidelines in case of sighting a Mediterranean monk seal*), coupled with mass media attention, enlisted reports of additional sightings that occurred in Sardinia before and after August 22nd. Although some sightings appear of dubious value, the distribution of the sighting guidelines permitted each report to be analyzed using standard interview methods.

The moratorium on commercial diving activities and tours was respected immediately by the local agencies and maintained for 10 days, after which diving activity in the area was gradually resumed due to the absence of further recorded sightings. Despite the distribution of a flyer explaining the reasons for a temporary moratorium on navigation in the area, anchoring and transit of recreational boats still took place for several days following the sighting event. Several days of control and public reminders were required in order for the general public to respect the management body's request. Given the high tourist presence along the coast, the moratorium was purposefully proposed without the aid of a legally binding instrument in order to avoid unnecessary public protests and retaliation against the management body's requests. The diminishing tourist presence in Zone B from 28 August onwards coincided both with the end of the holiday season and combined public awareness efforts. The difficulties encountered in soliciting a favourable response from the general public to the management body's request are a clear reminder of the environmental awareness efforts that need to be exerted in high-tourism impact areas of the Mediterranean.

On the basis of available evidence, it must be concluded that the presence of one or more monk seal individuals along the southeastern coast of Sardinia during the month of August is very likely. It is also possible that the individual sighted on 20/08/00 in the area of the Gulf of Orosei is different from that sighted in the MR of Capo Carbonara. The repeated sightings of an animal in the MR's waters for a period of several weeks highlight the need to monitor the area on a longer term basis.

On October 13th the Steering Committee of the MR of Capo Carbonara decided to adopt the following priority actions for the following year. The activities will be conducted with the technical and scientific support of ICRAM.

1. Personnel involved in surveillance activities of the MR will include in its daily patrol duties, observation sessions from selected lookout points, and patrol routes at sea so as to enhance the probability of recording any possible monk seal presence.
2. Identification, mapping and photographing of areas of coastline suitable as monk seal haul-out sites both within the MR and adjacent coasts.
3. Development and application of a non-invasive method of monitoring monk seal use of inventoried haul-out sites.
4. Development of a marine environmental awareness campaign directed at the students of the middle school of Villasimius.
5. Development and implementation of a survey to collect monk seal sightings data directed at the local fishing communities of southern Sardinia.

Based on the results of these activities, attention will then focus on assessing the need to modify existing regulation of human activities within the MR. – Giulia Mo, Protected Species Framework Programme, ICRAM, Rome

**Table 1**  
Recent sightings of monk seals in southern Sardinia.

Date	Hour	Location	N. animals	Comment
01.08.2000	am	Area southwest of the MR	2	The sighting was verbally reported to the National Coast Guard personnel on duty in the area but details of the event and the observers were not recorded, precluding a later interview. However, as the event was reported prior to the photographed sighting of 22/08 it is likely that it was reported in good faith.
15.08.2000	7:00	South-eastern coast of the MR	1	The sighting was verbally reported to the National Forestry Division on duty in the area but details of the event and the observers were not recorded, precluding a later interview. However, as the event was reported prior to the photographed sighting of 22/08 it is likely that it was reported in good faith.
18.08.2000	7:00	Area southwest of the MR; approx. 1 mile off coast	1	The information and the details gathered during the interview of the observer seem very feasible and there is reason to believe that it entails an authentic sighting of a Mediterranean monk seal. However, there is no photographed documentation.
20.08.2000	15:30	Southern area of the Golfo di Orosei; 2 miles off shore	1	Information gathered during the interview with the observer appears reliable and there is reason to believe that this was an authentic sighting, although the distance of the Golfo di Orosei from the area of sightings in the MR suggests that the sightings may involve different individuals. There is no photographic evidence.
22.08.2000	8:30	Island of Cavoli, RM	1	The sighting is confirmed; there is photographic documentation.
22.08.2000	19:20	Golfo degli Angeli, southeastern Sardinia	1	The observer seems reliable and there is reason to believe that this entails an authentic sighting of a Mediterranean monk seal. However, there is no photographic evidence.
23.08.2000	8:00	Island of Cavoli, RM	1	The observer is very credible but the visibility is poor and the reported sighting does not have sufficient information.
23.08.2000	11:30	Island of Cavoli, MR	1	The observer's report appears to be in good faith, but there is little data and it is possible that he may have mistaken a diver for a seal.
26.08.2000	18:30	Northern area of the MR	1	There is insufficient information on the reported sighting and it is difficult to express a judgement of credibility with regard to the event.

**Table 2**  
Data on the historical presence of monk seals along the coasts of the MR of Capo Carbonara and adjacent areas resulting from interviews of local fishermen conducted on 30/08/2000.

Est. age of fishermen	Area with reported seal presence	When
65-70	a. Sartoru, Villaputzu (north of the MR) b. Scogli di Piscadeddus, MR c. Punta Porceddus, MR	1970s
<b>Recorded observations and conclusions</b>		

At Villaputzu, a coral fisherman, captured a seal in a lobster trap.

**Conclusion:** The Mediterranean monk seal was present well into the area north of Capo Carbonara and this stretch of coast must therefore have suitable habitat required by the species.

Animals were observed during almost all months of the year hauled out on the small islets of Piscadeddus, in the southwestern portion of the MR and these animals were thought to be responsible for net damage. The animals that were observed were dark and were often heard vocalizing. Their fur was uniformly dark and had no lighter patches. Every so often the animals were observed hauling out at night on the beaches close to the islets. The individuals were not very long and were quite slender (average length reported, 1.2-1.5 m).

Every so often individuals were observed hauled out on the rocks of Punta Proceddus, on the northern coastline of the MR.

**Conclusion:** Young individuals must have been present throughout the year in various areas of the MR.

Est. age of fishermen	Area with reported seal presence	When
60-65 60-65 55-60	a. Rocks of Ommini Morti and of the island of Serpentara, MR b. Small inlets of the Cavoli island c. Punta Molentis and the "Secca dei Berni", MR	1960-70s

#### Recorded observations and conclusions

Seals were observed sleeping on the rocks of Punta Ommini Morti and it was said that there was a cave on the island of Serpentara where the animals rested.

Some animals, according to the fishermen, were capable of recognising the sound of the motor engines of the fishing boats and they would follow the boats when the fishing nets were hauled up on deck, because the fishermen would throw unwanted fish at the seals for them to eat. Young animals were lighter in colour and were more frequently seen in the spring. Females were smaller than males (1.5-2 m in length) and had darker marks on their bodies. The males were bigger and had noticeably lighter fur on their snout, chin and neck area. Their length probably exceeded 3 metres.

**Conclusion:** Adult males and females were present in the MR and were probably reproductively active in this area, utilising coastal areas of the MR. It is possible that there are caves and other suitable habitat characteristics for the species.

Est. age of fishermen	Area with reported seal presence	When
65	a. Capo Teulada	1960s

#### Recorded observations and conclusions

3-4 individuals inhabited Capo Teulada and the fishermen sometimes used dynamite to scare away the seals when the nets were hauled out on deck; otherwise the seals would eat the fish from the nets. The use of dynamite was apparently practiced in the area of Capo Carbonara as well.

**Conclusion:** Monk seals were present in other areas of southern Sardinia and the use of illegal fishing practices with explosives was probably a disturbance and threat factor for the seals in the 1960s.

**Table 3**  
**Reports of animal sightings or individuals reported dead at various locations in Tunisia, Italy and proximate areas.**

	TUNISIA		ITALY & other areas
	La Galite	Zembra	Location
Year			
1965		2 ind. killed	Nucleus present in Golfo di Orosei (E Sardinia)
1966			"
1967			"
1968			"

1969			"
1970	Approx. 20 ind.	1 killed, 1 observed	"
1971			"
1972			"
1973		1 observed 3 ind. at Sousse	"
1974	2 Gal. Est		" + 1 ind. seen in Malta
1975			Last individual killed in Marettimo
1976		2 killed, 2 observed	Population diminishing in Golfo di Orosei
1977	1 observed	1 killed, 2 observed (estimate 3-4 ind.)	"
1978	6-8 individuals		"
1979			"
1980			1 sighting Lampedusa
1981			
1982			
1983			
1984	1 ind. 110 km NE		
1985			No seals in Orosei caves but sightings in NE, E, and SW Sardinia
1986	2-3 individuals		Last birth recorded in Sardinia (NW coast)
1987	Data missing	Data missing	Various sightings at NE, E and SW Sardinia
1988	"	"	2 sightings NE Sardinia and 1 on E Sardinia
1989	"	"	3 sightings E Sardinia
1990	"	"	1 sighting Corsica
1991	"	"	
1992	"	"	1 sighting NE Sardinia, 1 E Sardinia
1993	"	"	
1994	"	"	
1995	"	"	1 SW Sardinia; 1 NE Sardinia
1996	"	"	1 NE Sardinia
1997	"	"	1 SW Sardinia
1998	"	"	1 SW Sicily, 1 Pantelleria, 1 12nm NW Malta
2000	"	"	1 documented sighting and various undocumented in the MR of Capo Carbonara and nearby areas (SE Sardinia)  1 sighting E Sardinia  1 sighting E Puglia (SE tip of Italy)

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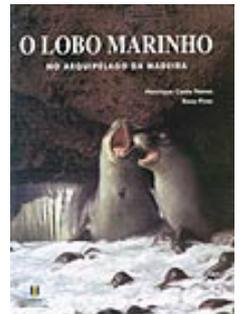
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## Madeira

### The Sea Wolf

The Parque Natural da Madeira has published an extensive and lavishly-illustrated account of its ten-year crusade to ensure the survival of the archipelago's Mediterranean monk seal population. Authored by Henrique Costa Neves and Rosa Pires, the 76-page book (*O Lobo Marinho no Arquipélago da Madeira* – the Sea Wolf of the Madeiran archipelago) recounts the cultural and historical significance of the monk seal to Madeira, and the threats that brought the colony to the brink of extinction in the 1980s. Since then, the establishment of the Desertas Islands Nature Reserve, coupled with other non-invasive conservation techniques, has seen numbers increase from 6-8 survivors to over 20 individuals today.



The book can be ordered directly from the Parque Natural da Madeira at a cost of 4.000 pesetas (20 Euros) plus postage: Parque Natural da Madeira, Quinta do Bom Sucesso, Caminho do Meio, 9050 Funchal, Madeira.

**Neves, H.C. & Pires, R.** 2000. *O Lobo Marinho no Arquipélago da Madeira*. Parque Natural da Madeira: 1-76.

### Sightings increase on Madeira

Researchers on Madeira are still awaiting results of the season's monk seal births in the Desertas Islands Nature Reserve. Three pups were born last year, and one joined the colony in July, outside the normal birthing period.

Meanwhile, data suggests that monk seal sightings are increasing on the main island of Madeira, with 13 reports received during 1999, and 12 so far during 2000. Researchers believe that the Madeiran population might be increasing in reaction to the monk seal's recovery in the neighbouring Desertas Islands. It is thought that rising public awareness on Madeira is also resulting in more frequent sighting reports. – Rosa Pires

## Mauritania & Western Sahara

### Colony faces red tide threat

Alarm bells sounded in July when several extensive red plankton blooms appeared in the ocean in the vicinity of the Côte des Phoques, home to the world's largest colony of Mediterranean monk seals.

Researchers of the Spanish CBD-Hábitat Foundation, responsible for monitoring and surveying the Cap Blanc seals, experienced the same anxiety they felt in 1997, when two thirds of the colony were wiped out under mysterious circumstances. Although some scientists attributed the catastrophic die-off to a morbillivirus, there was credible evidence to implicate a "bloom" of toxic phytoplankton species.

Following protocols already established in drafts of the Regional Recovery Plan for the Atlantic, water, fish and mussel samples were immediately collected for analysis. Water and mollusk samples were dispatched to the Vigo Oceanographic Center, which specialises in the study of red tides.

The fears of CBD-Hábitat Foundation researchers increased significantly when, coinciding with the appearance of the suspected algae blooms, two porpoise carcasses were found near monk seal breeding caves. Although minor, fish mortality was also recorded in the same area.

Results of laboratory analysis identified three dinoflagellate species as the most abundant in the water samples. These were *Scrippsiella* sp., *Noctiluca scintillans* and *Prorocentrum micans*. While these species have been described as producing red patches of the type observed, they have never been associated with toxicity problems.

At the same time, a necropsy performed by the Mauritanian National Center for Oceanographic and Fisheries Research (CNROP) on one of the dead porpoises showed that the most likely cause of death was entanglement in fishing gear. The animal's congested lungs and damaged flippers indicated that after drowning, fishermen cut away the animal to release the carcass from their fishing gear. The other porpoise, a calf, was in an advanced state of decomposition, precluding a necropsy.



On the basis of water analysis results, researchers have concluded that the most likely cause of fish mortality was a lack of oxygen, decrease in the pH value, or other effects produced by the phytoplankton production and decomposition cycle.

While laboratory results proved generally reassuring, Foundation CBD-Hábitat researchers remained on a heightened state of alert for several days. – Pablo Fernández de Larrinoa & Miguel Angel Cedenilla

## Season's recruits

Since July, 18 pups have been born in the Cap Blanc monk seal colony. True to new operating guidelines that seek to minimise disturbance, the pups were detected through monitoring with remote controlled cameras rather than by researchers intruding into the breeding caves. Four of the 18 pups were found dead on beaches to the south of the caves. Weather conditions at this time of the year (from the end of October until March), are marked by storms and high swells, requiring intensive monitoring in order to determine accurately colony productivity and pup survival rate.

Spanish NGO CBD-Hábitat Foundation is responsible for surveillance and monitoring activities at the Cap Blanc colony under a project financed by the Spanish Ministry of Environment and the international conservation organization EURONATUR, based in Germany.

Recognising the importance of local participation in the conservation effort, the project also features social assistance to artisanal fishermen who fish from pirogues in the vicinity of the Cap Blanc colony. The initiative is run in collaboration with the local authorities. – Pablo Fernández de Larrinoa & Miguel Angel Cedenilla

## Disturbance levels cut

CBD-Hábitat Foundation researchers at the Côtes des Phoques are seeking to cut disturbance levels in an effort to encourage greater use of open beaches by monk seals and to improve breeding success.

During a meeting held in April in Las Palmas to advance planning of the Regional Recovery Plan in the Atlantic, Madeiran representative Henrique Costa Neves announced that two young monk seal females with nursing pups had been observed making use of open beaches on the Desertas Islands [editor's note: see [R. Pires & H. C. Neves, Monachus Science](#)]. It is believed that this behavioural change, in which monk seals are hauling out on open beaches rather than exclusively using caves to rest, breed and nurse their pups, marks a significant step in the conservation process, in which the animals are reacting to strict protection measures, in force since the Nature Reserve's establishment in 1990. Regulations on eliminating disturbance cover any circumstances, including potentially invasive scientific research.

The Regional Recovery Plan promoted by Spain, Portugal, Morocco and Mauritania is seeking to achieve a similar level of protection at the Cap Blanc colony, in which human intrusion into breeding caves should be avoided, except under extraordinary circumstances or emergency situations.

Since April, under the framework of the project funded by the Spanish Ministry of Environment and EURONATUR, the CBD-Hábitat Foundation and the Mauritanian military authorities (which control the area) have promoted "no disturbance" measures in the vicinity of the Cap Blanc colony.

The reduction in disturbance may already be showing its first results. Since August, an adult male has been observed hauling-out on a small beach near the main breeding caves on the Côtes des Phoques. It is a beach partially sheltered by a canopy of rock formed by the cliffs above. The event marks the first time that a seal has been observed occupying a beach of this type in the vicinity of the breeding caves.

Researchers hope that if the Côte des Phoques monk seals can recover sufficient confidence to return to open beaches to rest, breed and nurse – areas where they were last observed in the 1950s – population numbers will increase. The colony currently suffers from a high pup mortality as a direct consequence of breeding in caves – most notably because of storm surges. – Pablo Fernández de Larrinoa & Miguel Angel Cedenilla

## International workshop planned

Although dogged by controversy in its early stages (see TMG, *passim*) the Regional Recovery Plan for the Atlantic continues to move towards implementation. Parties to the Plan – Spain, Portugal, Mauritania and Morocco – are reported to have reached broad consensus on a technical draft during a meeting held in Las Palmas in April.

Since then, there have been efforts to allay the fears of critics who believed that the Plan contained unsound scientific methods, and was being pushed towards implementation without sufficient consultation and review.

Spain's Ministry of Environment (MIMAM), charged with coordinating the Recovery Plan on behalf of the Secretariat of the Bonn Convention (CMS), has requested assistance from the IUCN Breeding for Conservation Specialist Group (Susie Ellis) and the IUCN Seal Specialist Group (Peter Reijnders) to convene an international Workshop to review the Plan.

According to the Coordinator of the Regional Recovery Plan, Luis Mariano González: "Such an event will be held in the first half of next year, and all aspects of the Plan not concretized at the Las Palmas meeting will be discussed, but mainly the aspects relating to the rescue and rehabilitation of pups. The event will be also used to discuss and present the Plan to the relevant experts."

González goes on to note that, while the Plan has yet to be definitively approved, its prospective parties are already implementing certain measures and guidelines on a general consensus basis:

- Mauritania, through the Mauritanian National Centre for Oceanographic and Fisheries Research (CNROP) has implemented early warning measures to confront possible emergencies, such as the August red tide outbreak (see [Colony faces red tide threat](#), above) that ultimately proved non-toxic. Similarly, CNROP is preparing its laboratories and rehabilitation facilities to cater for any sick, wounded or orphaned seals that require treatment.
- CBD-Hábitat Foundation researchers (financed by MIMAM) perform monitoring and surveying activities of the Côte des Phoques colony and, with the Nouadhibou mayoral authorities, participate in public awareness and social assistance schemes among local fishermen.
- Madeira continues to apply its conservation guidelines – many of which are reflected in the Regional Recovery Plan – in the Desertas Islands, where the monk seal population has staged a dramatic recovery during the last decade.
- Morocco is mounting a sighting and monitoring effort along the western Saharan coasts. Its Royal Navy is also patrolling the no-fishing area established along the Côte des Phoques on the Cap Blanc peninsula. To provide early warning of natural threats to the seal colony, the Moroccan National Institute of Fisheries Research (INRH) has offered its technical resources in an effort to detect red tides along the Atlantic coast.

Range states associated with the Plan are now focusing their attentions on organising the International Workshop called for by critics and supporters alike. González believes that while that discussion forum is important to attain consensus, the Recovery Plan must be flexible enough to adapt both to developing human knowledge and to the changing conservation needs of the species.

## Critics waiting in the wings

Discussion of the draft Regional Recovery Plan in its current (Las Palmas) form is likely to draw fire on a number of potentially sensitive fronts. Though they may be able to rely on support from other scientific quarters during the discussion forum, the Plan's most ardent critics to date originate in the department of Animal Biology in the University of Barcelona, whose biologists – led by Dr. Alex Aguilar – became part of research efforts along the Côte des Phoques in 1993, joining Las Palmas University, MIMAM and researchers who later went on to establish the CBD-Hábitat Foundation.

Barcelona's main objections:

- The Plan is rooted in the belief that human impact is to blame for the monk seal's precarious status on the Côte des Phoques. Barcelona argues that commercial exploitation of the species finished four centuries ago and that, since then, it has remained essentially unaffected by human pressures.
- Barcelona researchers have been unable to identify any significant human-related threat to the species. Despite a few incidental captures in fishing nets, no evidence in recent years has come to light establishing this as a verified and significant cause of mortality.
- The seal-fisheries interactions in the region that do occur involve the international, commercial fishing fleet rather than local, traditional fishers, making public awareness and compensation activities among the latter irrelevant. Moreover, any interactions with seals are likely to take place in international waters, beyond the

jurisdiction of those countries that would become signatories to the Plan.

- The adult mortality rate appears to be extremely low according to population models and the corpses found on beaches. Reproductive rates are about 30% of what should be expected (Gazo et al., Journal of Zoology, London, 249: 393-401). Indeed, the gross reproductive rate of the Cap Blanc colony is said to be virtually half the lowest rates detected in a pinniped population. Despite research conducted by Barcelona in recent years, the causes remain unknown.
- The Plan prevents researchers from entering breeding caves, allowing study only of rehabilitated or dead seals. This, Barcelona contends, will hinder efforts to learn what forces are responsible for constraining population growth and recovery. For much the same reason, rehabilitated animals should be tracked with VHF or satellite tags.
- The pre-emptive collection of pups from breeding caves in an effort to reduce high pup mortality during predicted stormy weather is scientifically untenable and misguided.

## New publication claims saxitoxin link

Uncertainty over the cause of the 1997 mass die-off in the western Sahara, which claimed two thirds of the Côtes des Phoques population, caused bitter controversy among scientists at the time, with one faction favouring the morbillivirus theory and the other, a toxic red tide hypothesis.

Following further laboratory analysis of tissue samples, several Spanish researchers believe that there is now additional and unambiguous evidence to implicate saxitoxins in the mass mortality.

Their results are published in:

**Reyero, M., E. Cacho, A. Martinez, J. Vázquez, A. Marina, S. Fraga, J. M. Franco.** 2000. Evidence of Saxitoxin derivatives as causative agents in the 1997 mass-mortality of Mediterranean monk seals in the Cape Blanc Peninsula. *Natural Toxins* 8: 1-5.

Click here to view an [abstract](#) of the paper.

## Turkey

### Küdür under renewed threat

The Küdür Peninsula is one of the last surviving habitats of the Mediterranean monk seal around Turkey's heavily touristic Bodrum Peninsula (see TMG 2:2, [Cover Story](#)). It was declared a 1st degree natural SIT area by the Cultural and Natural assets Protection Council (Izmir division) of the Ministry of Culture in November 1998, following submission of a detailed AFAG proposal.

Now it appears that certain interests may be intent upon challenging that decision and having Küdür's protection reduced to 2nd degree status, thereby permitting coastal development in the area.

On 16 September 2000, AFAG received a message from Professor Tuncay Neyisci, Director of the Environmental Issues Research and Application Center of Akdeniz University in Antalya, relating to an environmental reassessment commissioned by [Öger Tours](#), a well-known tour operator based in Germany. Öger's plans for a holiday village on the Küdür Peninsula had previously been scuttled by the Ministry of Culture decision to accord the area 1st degree protection status. According to information received from Prof. Neyisci, the environmental reassessment would raise the possibility of "co-existence of monk seals and tourism". Despite its well-known stand on the issue, SAD-AFAG was asked to contribute to the concept of converting the Peninsula into a "monk seal-oriented ecotourism region..."

SAD-AFAG replied to Prof. Neyisci, reiterating its firm belief that monk seals in the area cannot survive under increasing tourism disturbance and development pressures. Several scientific reports have reached the same conclusion, including a 1997 study by Istanbul University's Aqua Products Faculty, funded and coordinated by the Turkish Ministry of Environment.

SAD-AFAG has also pointed out that, among 145 reliable, firsthand monk seal observations in the Bodrum region – including 20 made by AFAG researchers – the highest sightings concentration was on the Küdür Peninsula and around neighbouring islands and islets.

Prof. Neyisci has recently submitted his 11-page report to Öger Tours. Despite AFAG's efforts in providing scientific data from various sources, the report's conclusions appear to take no account of the ecological importance of the area. – Cem O. Kiraç & Harun Güçlüsoy, SAD-AFAG

**Further reading:**

[Savas, Y.](#) 1999. How tourism has ruined the coastal habitats of the monk seal on the Bodrum Peninsula, Turkey. *The Monachus Guardian* 2(2): November 1999.

[Kıraç, C.O.](#) 1988. Oil spill at Çavuş Island. *The Monachus Guardian* 1(1): May 1998. IMMA Inc. Guelph, Canada.

[Kıraç, C.O.](#) 1999. New monk seal protection areas face uncertain future. *The Monachus Guardian* 2 (1) May 1999. IMMA Inc. Guelph, Canada.

[Kıraç, C.O., & D.S. Polatkan.](#) 1999. Küdür Peninsula declared protected area. *The Monachus Guardian* 2 (1) May 1999. IMMA Inc. Guelph, Canada.

[Johnson, W.M. & D.M. Lavigne.](#) 1999. Mass tourism and the Mediterranean monk seal. The role of mass tourism in the decline and possible future extinction of Europe's most endangered marine mammal, *Monachus monachus*. *Monachus Science*. *The Monachus Guardian* 2(2) November 1999.

## Patrols resume in Foça

The patrol boat CEVRE is finally back in action in the Foça Specially Protected Area (SPA). Following a long-running bureaucratic tangle, the vessel is now being operated by a newly established team following the recent intervention of the Local Governor of Foça.

The CEVRE was provided by the Turkish Ministry of Environment in 1993, when the monk seal protection area in Foça was established at the request of the local community and SAD-AFAG. After an active patrolling period between 1993-1995, the boat suffered a serious mechanical problem which could not be fixed due to lack of funding. In 1997, as a result of SAD-AFAG's efforts, a new diesel engine was bought and installed with funds raised jointly by the Ministry of Environment, the Municipality of Foça and the Governorship of Foça. A protocol detailing CEVRE's operating procedure was laid down by the Governor of Foça. In accordance with this protocol, the board members of the Foça Fishermen's Cooperative and SAD-AFAG Foça staff were authorized to take part in patrols as "observers," and port police were authorized to perform their assigned duties onboard CEVRE within the borders of the district of Foça. The Municipality of Foça refused to contribute to the running expenses of the boat, and committed itself only to providing personnel – such as the captain – "in case of necessity."



Meanwhile, SAD-AFAG's efforts since 1993 to encourage artisanal fisherman in Foça to become involved in fisheries and conservation issues continues to make progress. These subsistence fishermen, recognizing the importance of having their interests represented, were eventually persuaded to join the Foça Fishery Cooperative, a group originally founded by trawler owners. In the last two elections to the board of the Cooperative, the members nominated by the artisanal fishermen were elected as a result of this newly developing interest.

In recognition of its solidarity with SAD-AFAG, the new board of the Cooperative has made serious efforts to help solve guarding problems in the SPA, including illegal fishing. The head of the Environment section of the Governorship, Dr. Mithat Bey, has also provided his full support to these efforts.

The potential financial crisis that loomed following Foça Municipality's refusal to meet the running costs of the CEVRE was ultimately averted by a decision of the Governor to pay the required amount out his own department's budget. The Municipality's offer to provide personnel only in case of necessity, however, continued to block effective operation of the boat. The impasse was again broken by the Foça Governor, who nominated the head of the Fishery Cooperative as captain.

The patrolling system in Foça is now jointly maintained by the Environment section of the Governorship, the Foça Police Department, the Fishery Cooperative and SAD-AFAG. The artisanal fishermen of Foça are encouraged by having a patrolling system in which their interests – through the participation of the Cooperative – are represented, and there has been a noticeable decrease in illegal fishing since August. Despite progress on that front, however, some observers continue to report regular infringements by the tourism industry during the summer months.

Joining the guarding effort in the wider area is a new hi-tech Coast Guard vessel, commissioned for patrolling the outer regions of the Gulf of Izmir (Foça–Karaburun area). Joint operations have been successfully carried out by this vessel and the CEVRE on a number of occasions.

SAD-AFAG is of the opinion that fish stocks and coastal ecosystems can be more effectively conserved on the Turkish Aegean and Mediterranean coasts provided that artisanal fishermen appreciate the importance of being organized into cooperatives. In certain cases, these groups can become powerful enough to finance quasi-independent guarding systems, and to apply pressure on the relevant authorities for better regulations and more effective official patrolling systems. – Yalçın Savas, SAD-AFAG

## AFAG greets new sponsor

Negotiations between AFAG and Turkey's leading bank, IS BANK, have resulted in a one and a half year sponsorship deal, commencing in July 2000. The deal marks a major step forward for AFAG, which has been searching for alternative funding sources for its monk seal and coastal habitat conservation efforts in Turkey.

The signing of the agreement means that IS BANK will now become AFAG's main sponsor, providing much-needed financial support for research, conservation, lobbying and public awareness activities in Turkey. IS BANK also becomes AFAG's first Turkish sponsor. Previously, funding and equipment needs have been obtained from international sources, including WWF International, WWF MedPO, WWF Belgium, Germany and Switzerland, the Henry Ford Foundation, the UNDP-GEF Program, and the Prince Bernhard Foundation. Smaller grants or donations have been received from the Seal Rehabilitation and Research Centre, the Van Tienhoven Foundation, the Lucie Burger Foundation, Gruppo Foca Monaca and GSM-Germany.

Despite WWF's long term support for AFAG, the need for additional finance became increasingly urgent following the collapse of funding initiatives pursued by WWF (see TMG 2:1, [WWF Halts Funding of Monk Seal Conservation Projects in Turkey](#)).

Under IS BANK's sponsorship, AFAG will continue its conservation activities through its established offices in Ankara, Foca (Central Aegean) and Bozyazi (Cilician Basin), and also through a newly established centre on the Karaburun Peninsula. A total of 12 personnel will staff the various AFAG offices. – Cem O. Kiraç, SAD-AFAG

## Turk Telekom phone cards

Earlier this year, the Turkish state PTT corporation, Turk Telekom, manufactured 4.5 million public telephone cards depicting a Mediterranean monk seal. These were sold throughout Turkey during the summer of 2000. The cards were produced as part of the "Endangered Animals of Turkey" series, with the aim of increasing public awareness for Turkey's rich biological diversity. By October, the entire monk seal phone card edition appears to have been sold out.



The photograph used for the card was provided to Turk Telekom by SAD-AFAG as part of its collaborative efforts with government agencies and the private sector to increase public awareness. – Cem O. Kiraç, SAD-AFAG

## New office opens on Karaburun

SAD-AFAG opened a new centre of operations on the Karaburun Peninsula in August, a relatively undeveloped region that forms part of the Bay of Izmir. Seal observations, seal attacks on fish farms, and reports of local fishermen have established the existence of the species along Karaburun's coastline and in neighbouring regions such as Ildir and Çesme. Even more importantly, SAD-AFAG researchers believe that Karaburun shares its monk seal population with the adjacent Foca Specially Protected Area. The office, located in Karaburun town, will be used as a base to further SAD-AFAG's research and conservation objectives, including the planning and implementation of a protected area and alternative development opportunities. Specific duties will involve:

- Determining monk seal habitat and breeding areas, threats to the species, and the level of interaction with local people.
- Public awareness and education activities in government agencies, schools and among local people.
- Leading and supporting the activities of the Karaburun Local Monk Seal Committee.
- Conducting social and cultural anthropological research (with an emphasis on human interactions with nature) to provide a framework for the sustainable use of the area in agriculture, aquaculture, forestry, and tourism.

Karaburun's land mass is around 450 km<sup>2</sup>, with a coastline of about 150 km. The coast is characterised by high cliffs and beaches and, particularly at its northwest reaches, bays where there is still little or no human disturbance. The area is rich in both pelagic and benthic marine fauna. Off-lying islands are generally free of construction and human activity. SAD-AFAG has yet to complete a full survey of the coast but up to now, four monk seal caves have been located, one of which has been judged suitable for breeding.

According to May-October 2000 data, there were 36 seal sightings in the east and northeast parts of the Peninsula. The sightings were mostly of single individuals but there are also reports of two seals swimming together. So far, no mortalities or deliberate killings have been reported.

By the second week of November, a closed circuit video system will be deployed in a cave in Mordogan region where a pup was born in November 1999. The main aim of the study – assuming that there will be another birth this winter – is to monitor the relationship between mother and pup.

As indicated in previous issues of The Monachus Guardian, Karaburun's monk seal protection area is already on the drawing board. It is expected to cover most of the Peninsula, its borders at Balikliova at the southeast and Gerence at the southwest.

The main threats to the area include construction of secondary housing, illegal fishing activities by industrial-scale fishing boats and divers, pollution by domestic waste, aquaculture and mining industries, and a general degradation in the traditional socio-economic climate that has spurred a migration of local people and a move away from formerly sustainable livelihoods.

SAD-AFAG, working with the Local Monk Seal Committee, is currently basing its research efforts on designing an integrated conservation and management plan which will address these threats. In so doing, it is hoped that sustainable development opportunities for local people will help secure the long-term integrity of Karaburun's threatened coastal habitats, and its monk seals. – Ozan Veryeri, SAD-AFAG

**Stop Press:** Just as we were going to press, the SAD-AFAG team in Karaburun announced that a pup, approximately ten days old, and a juvenile monk seal, about one year old, had been observed in a cave on the Peninsula. Both seals appeared healthy. A mature seal has also been seen swimming in the vicinity, and is thought likely to be the pup's mother. The progress of the pup will be monitored by two closed circuit TV cameras.

## Cilician Basin responding to treatment

The population size and even the survival of a species can be determined by four major factors: **i)** predation **ii)** suitability of an ecological niche or habitat which fulfils the biological requirements of the species **iii)** competitors and **iv)** food availability.

In evaluating these factors for the monk seal colony on the Turkish Cilician coast, we see that there is no predator problem because monk seals are already apex predators in the Mediterranean ecosystem. The degradation of habitat is no longer a threat for the species, because the most important sites along the coast were established as 1st Degree Natural Assets in 1998 (see TMG 1:2, [Reserve Areas Established in the Cilician Basin](#)). The major competitors of the Mediterranean monk seal are fishermen with whom they share fish stocks. The intensity of competition between them is therefore closely linked with the fourth factor – food availability.

The Cilician region is characterised by a very steep and narrow continental shelf. Since the fishing ground is confined to the shelf, the total surface area that can be fished is very limited. On the other hand, the coast provides no natural shelter for boats during stormy conditions. Until the early 1990s, when three large fishing harbours were constructed along the coast, the fish stocks in this region remained intact. There were only a very limited number of small scale fishing boats harvesting commercially valuable species. The large scale fishing fleet had yet to develop because of lack of shelter and absence of fish landing facilities.

Following construction of the harbours, however, the trawl and purse seine fishery developed rapidly, bringing about a corresponding depletion of fish stocks. The status of fish stocks in the Cilician Basin have been monitored by the Middle East Technical University Institute of Marine Sciences (METU-IMS ) since the early 1980s. The results of numerous fisheries surveys show that catch per unit of trawling effort (CPUE) for commercial fish species has been drastically reduced by at least ten fold. Due to overfishing, the species composition has also changed, so that valuable commercial fish species have been replaced by small, little-value "trash" fish. The mean age of the commercial species was also remarkably reduced, so that the renewal of the stocks was hindered. Apart from depleting fish stocks, the bottom trawlers' nets uproot Posidonia, an endemic sea grass which provides excellent habitat for various marine organisms and upon which sea turtles feed, thereby endangering the turtles, the grass and its associates. Biological diversity is thus remarkably reduced.

By 1999 the ecosystem of the region had become so fragile that monk seals, sea turtles, and local artisanal fishermen were all facing starvation due to lack of fish. The entire coastal ecosystem looked all set to collapse unless urgent measures were taken to improve the state of the fish stocks. Then, during the same year, the Turkish Ministry of Agriculture and Rural Affairs finally banned the large scale fishery in the region. At the same time, SAD-AFAG and METU-IMS initiated a project to monitor the recovery of the fish stocks and the ecosystem.

Today, although a very strict implementation regime has yet to be achieved in the region, it is estimated that the number of trawlers fishing in the area has decreased by 85-90%. Fish stocks have responded positively to the alleviation of intensive fishing pressure. The most recent surveys show that, by the end of the first year of protection, nearly all the fish stocks had experienced a very productive recruitment season. The percentage of sexually mature individuals which are ready to reproduce, are increasing. The demographic structure of the fish populations are now recovering. The catch per unit of effort has also increased significantly. Posidonia sea grass meadows, which had suffered uprooting, fragmentation and regression because of trawl nets being hauled across the seabed, are now expanding.

In what could be another positive response to the protection of the area and the recovery of the ecosystem, a newborn monk seal pup was found on 6 November 2000 by the SAD-AFAG Bozyazi team. – Ali Cemal Gücü

## Phokaia to Knidos

SAD-AFAG, which has been carrying out the long-term "Foça Pilot Project" since 1993, received a new grant from the WWF Across the Waters Programme in summer 2000 to bolster conservation efforts of local NGOs on the Karaburun and Datça peninsulas in the Aegean. The two peninsulas are key habitat areas for the monk seal, comprising long stretches of still-unspoiled coastline with significant recent sightings of *Monachus*.

Karaburun's local NGO, Karaburun Civil Initiative (KCI) was established in 1996 with the aim of conserving the cultural, social and natural values of the Peninsula. SAD-AFAG's recently-opened office in Karaburun will liaise with KCI on a continuous basis.

The other local NGO, Datça Volunteers for Nature Conservation (DVNC), is based in the village of Palamutbuku, close to the ancient Hellenistic city of Knidos on the southern tip of the Peninsula. Datça Peninsula forms part of 12 Specially Protected Areas in Turkey. DVNC aims to monitor the status of endangered species and the threats confronting them, investigate and expose illegal activities such as hunting, fishing, logging, road and house construction, and also mount public awareness campaigns.

In its wider perspective, the project (Phokaia to Knidos – Capacity Building of Local NGOs) also aims to accelerate efforts to establish a "Turkish Coastal Network" based on the knowledge and experience gained by SAD-AFAG since 1987, and to prepare a "Strategic Action Plan" for both Karaburun and Datça peninsulas. As part of that effort, SAD-AFAG will be attempting to gain further detailed knowledge on the status of the monk seal around the two peninsulas. – Harun Güçlüsoy & Cem O. Kiraç, SAD-AFAG

## "Merhaba"

With financial support from WWF Belgium, SAD-AFAG has restored its research boat "Merhaba", a traditional 7.60 m. wooden *Trehandiri*. Aside from standard maintenance and repair to the hull and engine, modifications were also made to the cabin and mast. Navigational equipment and a marine VHF radio were fitted. Merhaba's sails and ropes were donated by "Cekim Halat" and the paints by "International", both of Istanbul.

Although owned by an AFAG staff member, Merhaba has been used for monk seal research and conservation purposes since 1996, when it was stationed in the Bodrum area.

Currently based in Foca, the boat will be used for research and monitoring activities along the Aegean coast. One of Merhaba's first priorities will be a detailed survey of the west coast of the Karaburun Peninsula and the coast between Cesme and Kusadasi, a large portion of which is designated as a 1st degree Ministry of Culture SIT area, forming a preservation zone for marine and coastal wildlife. – Cem O. Kiraç & Harun Güçlüsoy, SAD-AFAG

## Research inflatable stolen

SAD-AFAG's research inflatable, equipped with a 10 HP outboard engine, was stolen in Bozyazi, the base of the Cilician Basin project, on 7 August 2000.

The robbery was reported to the police and gendarmerie but no progress has been made in recovering the boat.

The inflatable was a vital piece of equipment for monitoring, cave-checking and for counting the season's newborn pups. The loss caused particular hardship for SAD-AFAG researchers during the September–November period, which falls into the pupping "high season" in Turkey.

Finding a temporary solution to the problem, SAD-AFAG transferred its Karaburun Project inflatable to Bozyazi, allowing Dr. Ali Gücü's team to fulfil its research and monitoring duties. Within hours of the boat's arrival, the team found a newborn pup, its mother and two juveniles in a sea cave in the Melleç area of the Cilician region (see [Cilician Basin responding to treatment](#), above).

SAD-AFAG is now urgently seeking a sponsor or donation of a new inflatable boat for the Cilician Basin (3.5-4 m. in length, with an outboard engine of 15-25 HP). – Harun Güçlüsoy & Cem O. Kirac, SAD-AFAG

**Editor's note:** If anyone can assist the Cilician project in replacing this stolen equipment, please contact [SAD-AFAG](#) in Ankara. Alternatively, write to: [editor@monachus.org](mailto:editor@monachus.org).

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# Cover Story

For more than 20 years, conservationists have portrayed the critically endangered Mediterranean monk seal as a symbol of an ailing sea. Today more than ever, *Monachus monachus* remains an ecological microcosm of almost every human threat and injury that the Mediterranean has to bear, from the spreading cancer of urban growth and pollution, to mass tourism, industrial overfishing, drought and forest loss. Claudia Giammatteo of the WWF Mediterranean Programme reveals some of the broader ecological links that are at stake in the fight to save the Mediterranean habitat of Europe's most endangered marine mammal...

## THE MEDITERRANEAN: FOUR THORNY ISSUES

**Claudia Giammatteo**

WWF Mediterranean Programme Office

### 1. Water Shortage

**The common benchmark for water scarcity is 1,000 m<sup>3</sup> per person per year. In 2/3 of the Mediterranean countries it falls below 500 m<sup>3</sup>.**

Freshwater is a vital source of life. In the Mediterranean its scarcity, together with the contamination of the existing resources, has reached alarming levels.

Water shortage has become a priority issue not only for nations who experience severe shortage in terms of quantity and quality, but also for those nations who still have plenty. Demand for water consumption is rising and yet in the south of Europe and the Middle East precious groundwater resources are being wasted through inefficient irrigation. Drainage schemes, river engineering and dam construction continue to alter river and floodplain systems, resulting in loss of species and habitats.

Of course the threats to freshwater ecosystems are not limited to coastal zones. Overgrazing, deforestation, construction of dams, mining and other factors influence the quality and quantity of water in mountain rivers, streams and lakes causing widespread degradation of these freshwater ecosystems.

#### Wars of water

Beyond any consideration of the effect on water shortage on human health and on deeply degraded wetland habitats, the scarcity of water is already creating tension between some states within the region.

The main reason is that the freshwater resources of some countries originate in neighbouring countries, leading to conflicts of rights regarding control and management of these resources. International disputes over water control have been raised in Turkey, Syria and Iraq to some extent, and in the Middle East.

#### If water runs dry

- **72%, 23%, 5%:** availability of renewable water resources respectively in Northern, Eastern and Southern Mediterranean Countries.
- **60%:** average increase in the percentage of water demand over the last 25 years.
- **84%:** total water used for irrigation in Southern Mediterranean Countries.
- **20 billion cubic metres:** yearly disposal of urban and industrial waste water in the Mediterranean Basin.
- **100%:** Egyptian dependence on water resources originating in other countries.
- **87%:** amount of water used in Libya through the exploitation of non-renewable resources of Saharan aquifers.
- By **2025** half of the Med countries will be using freshwater resources in excess of their regeneration rates (WWF).



Saluga & Gazal Nature Reserve near Aswan, upper Nile. This natural reserve protects the last indigenous riverine ecosystem in the Nile Valley.

- **97%** of the Middle East wetlands have been drained to support human activity.
- More than **50%**: wetlands already lost.

(Data source: Blue Plan)

### Where does the blame lie?

Some of the reasons for the depletion of water resources are simple to understand: population growth – particularly in the southern and eastern basin – and the spread of economic activity on an industrial scale have led to a dramatic increase in the demand for freshwater. Meanwhile, the rapid spread of urbanisation has changed the patterns of consumption, while the need to increase the area of productive land has caused greater demand for irrigation.

Another "key" factor is deforestation. Forests act like vast sponges, retaining water and gradually releasing it into freshwater ecosystems. Take the forest away, and that water is going to be wasted. Then, there are the effects of climate change. Weather patterns are becoming more erratic, with drought in some places matched by severe flooding in others. As a result, there is no water where it is needed and too much where it is not.

*Without any reduction of CO2 emissions, annual rainfall is projected to decline by 10 to 40% over much of Africa and south-eastern Spain by 2100. (Data source: Greenpeace)*

### The agriculture factor

*82%: the percentage of freshwater taken by agriculture in southern Europe. (Data source: WWF)*

According to a WWF survey, farming practises encouraged by the EU Common Agricultural Policy have led to the over-exploitation of natural resources, the destruction of wildlife, and the contamination of freshwater and marine ecosystems by pesticides, phosphates, and nitrates. For example, nitrate concentrations now exceed EU guidelines in more than 85% of agricultural land in Europe.

Farming in the Mediterranean varies greatly. At one extreme, there are highly industrial systems which rely on external inputs and capital equipment and which function in a largely artificial environment. As demand for irrigation water increases, the over-extraction of groundwater, already a problem in the most arid areas, will likely worsen. This in turn can lead to salinisation which ultimately renders the land unusable, thus jeopardising the sustainable use of this natural resource.

### Desert breaks through

Recent studies have revealed that desertification is affecting the Mediterranean region. The phenomenon affects the European Mediterranean Area, reported to be – after the tropical forests – one of the most fragile eco-systems of the globe. Desertification is caused by a combination of human exploitation (population pressure and land use) and the fragility of the resource system, that oversteps the natural ecological potential of the land. Its characteristics range from aridity, irregular but intense precipitation, frequent extreme events such as droughts, all of which combine to generate sensitivity to physical land degradation, erosion, salinization, and deterioration of soil structure and vegetation cover. The most serious impact of desertification on the environment and on the national economy is recorded in North African and eastern Mediterranean countries. In Tunisia and Spain alone the costs of desertification have been evaluated respectively as \$100 million and \$200 million a year.

## 2. Population pressure

**In 1990, 82 million people lived on the Mediterranean coast. In 2025 there will be 150 million.**

Demographic growth and urbanisation, with all their pollutive side-effects, are major causes of concern for the whole Mediterranean region. This pressure will come in an area with very few resources with which to tackle environmental problems, with a low average income, a steadily increasing population, and an unstable political environment.

Trends in urbanisation, energy consumption, agriculture, waste disposal and industry show disturbing intensification of environmental degradation and pollution of the coastal areas, despite significant advances in legislation at the level of the European Union, the Barcelona Convention and legislation throughout the region.

Excessive concentration of development and unplanned urbanisation along the coast have overwhelmed the capacity to control municipal sewage or solid waste generation and disposal. Convenient industrial siting near coastal areas occurs with inadequate controls on industrial wastewater and hazardous discharges; tourist establishments on sandy beaches and other coastal areas do not consider the ecological functions of marine and coastal resources, such as sand dunes, posidonia beds, river estuaries or coastal lagoons.

In the southern Mediterranean, demographic pressure is causing the degradation and disappearance of natural forest areas due to clearing for cropland, overgrazing and demand for fuelwood. The production of energy and the transportation of goods and services have a serious impact on the Mediterranean region. The burning of fossil fuels also contributes to the rise of greenhouse gases and the associated risks of climate change.

The transportation sector has an impact on the environment of sea and land. In the sea, the main environmental hazards are routine oil releases and the illegal disposal of waste. On land, road building is associated with considerable destruction of rural areas and disturbance of flora and fauna: roads lead to growth of urbanisation and cause erosion and landslides in mountainous areas.

### The tourism factor

According to experts, the main conservation issue facing the Mediterranean coast over the next 20 years is tourism. Over 100 million tourists flock to Mediterranean beaches every year and this number is expected to double by 2025. In order to cater for this booming business, natural habitats have been replaced by modern resorts; breeding and nesting sites (notably of the endangered loggerhead sea turtles) have been destroyed to accommodate tourist facilities and the extra pollution generated is often dumped untreated into the sea, threatening the entire eco-equilibrium of the region.

The main consequences of tourism on the environment can be summarised as two main effects: excessive use of resources (land, water, energy, etc) and pollution (solid waste, noise, air emissions). Companies involved in the tourist industry have responded to concern about the environmental and the social impact of tourism by introducing self-regulatory measures. Most of them have started to recognise that environmental policies are not only beneficial to business but essential to its long term economic survival.

But another threat is putting the world's tourist industry at risk: global warming, which threatens to raise the temperature in Mediterranean resorts to unbearable levels and turn Alpine ski slopes to mush.

### Dying of heat

According to a report released by WWF's Climate Change Campaign, droughts, rising seas, flash floods, forest fires and diseases could turn profitable tourist destinations into holiday horror stories. More frequent periods of extreme heat will cause discomfort in many eastern Mediterranean resorts, where the number of days above 40° C is expected to increase. While beach resorts may still be bearable, cities such as Athens could become decidedly uncomfortable. Smog will continue to be a big problem, not only in Greece but elsewhere in the eastern Mediterranean.

Other detrimental consequences could include further water supply restrictions and forest fires. In addition, climate change is expected to increase the risk of illness, leading to a falling-off of tourism. A rising tide of malaria and cholera could spread



© WWF/Paolo Guglielmi  
Illegal buildings on Salaman coast, Turkey. Ever-growing urbanisation continues to jeopardize the environmental and cultural heritage of the Mediterranean region.

- 7 Mediterranean countries, Italy, France, Spain, Turkey, Egypt, Algeria and Greece are among the fifty countries with the highest industrial emission of carbon dioxide in the world.  
(Data source: Living Planet Report, 1999)
- According to UNEP, by the year 2025 land use by roads will increase by 25%.

### A booming business

- 100 million: number of tourists who visited the Mediterranean coast in 1999.
- 200 million: expected number of visitors by 2025.
- 70 litres: daily consumption of water per resident.
- 800 litres: daily consumption of water per tourist.
- 40°: peak temperatures expected to rise by the middle of 21st century.
- +40°: the temperature associated with heat stress and associated mortality.

through the Mediterranean basin in the near future, putting at risk previously unaffected areas.

(Data source: WWF News n° 95/95, University of East Anglia)

Ironically, the tourism industry is not just a potential victim of global warming, it also contributes to the causes of climate change. Air travel is reported as the fastest growing source of greenhouse emissions and therefore increases the risk of continued global warming.

### 3. Forest loss & degradation

**Almost 85% of Mediterranean forests have already disappeared.**

From the remaining, still extensive, oldgrowth temperate forests of Turkey and the Balkans in the North, down to the very fragmented and small relic forest patches in the Middle East and Northern Africa, many habitats and species are in danger. It is estimated that only 17 per cent of the region's original forest cover still exists. Many of the remaining forests are relics, and very few valuable Mediterranean forests have been protected. No single Mediterranean country has a representative system of protected areas.

The major threats to forests are fragmentation, road construction, tourism, atmospheric pollution, climate change, unnatural forest fires, overgrazing, hunting, extraction and mining of mineral resources, drainage, water regulation and even war.

War has both a direct and an indirect impact on nature as well as on human populations. Bombs and arson set off forest fires, and political instability encourages logging of protected areas. In general, a substantial amount of deforestation in the Mediterranean region is due to fire. An estimated total of 1 % of the regional forest cover is reported to be engulfed by flames every year, resulting in widescale atmospheric pollution. Fires are often set off intentionally in response to conflicts over land, which are mostly related to construction and tourism. Sometimes, fire is used as a means of protest against political decisions or conservation plans.

Whatever physical form the threats to the forests' existence take, the long history of widespread forest devastation and exploitation is leading to critical levels of deforestation, erosion and risks of desertification. Timber collection for building and fuel, clear cutting for grazing and agriculture, fires, and the abandonment of mountain land have all taken their toll on the region's forests. Most of today's human activities continue to reduce forest resources, especially at lower altitudes. Tourism in coastal areas puts pressure on forests which are either cleared for development or deliberately burnt: fires are also caused by unregulated waste disposal in or near forests, and the general depopulation of rural areas allows fires to develop unchecked.

Portugal, Spain and Turkey have all suffered from widespread afforestation projects with exotic species such as eucalyptus, which have replaced indigenous trees, causing problems of erosion. Agricultural expansion in lowland areas replaces both coniferous and mixed forests in the Maghreb, Turkey, Syria and Cyprus. Forests also suffer from natural diseases and pests, made specially vulnerable during long periods of drought. Evidence of long range atmospheric transport of pollutants affecting forests and their soil has been noted in Italy and Greece.

#### Forests in trouble

WWF has identified the 300 most important and representative forest areas that lack adequate protection in the Mediterranean region. These are the top 10 "hot spots":



© WWF-Canon/Penelope Matsouka  
Mount Taygetos, Greece. Forest totally destroyed by fire. An estimated total of one per cent of the regional forest cover is engulfed by forest fires each year.

#### Unnatural hazards

- **60,000** the average number of forest fires in the Mediterranean region every year.
- **450,000** hectares of woodland burnt. More than 1/3 of this total takes place in France, Greece, Italy, Portugal and Spain.
- **2/3** of the fires occur in the summer. They are responsible for 2/3 of the total area burnt. Natural fires make up **8%** in Spain, and less than **0,1%** in Italy.
- **95%** of the forest fires are started by people.
- **23%** of fires are due to negligence. E.g. the lack of understanding about the risks of dropping cigarette ends, or starting campfires.
- **32%** of fires are due to arson.
- **40%** of fires have an unknown cause. In 1990, there were only **2** days without fires in the whole of the EU. On a global level, forest burning contributes to at least **20%** of the carbon dioxide released into the atmosphere.

(Data source: WWF Forest for life campaign, 1999)

#### The sting in the tail

While it is self-evident that infrastructure construction such as road building and tourist developments are depleting the few remaining large forest areas of Europe, few people know that these constructions are often funded by EU Structural Funds.

Croatia: Velebit  
 France: Taravu, Corsica  
 Greece: Taygetos  
 Italy: Gennargentu  
 Lebanon: Harisa  
 Morocco: Bou Iblane  
 Portugal: Monchique  
 Spain: Gudar  
 Tunisia: Kroumerie  
 Turkey: Western Kure

WWF has two targets: the establishment of an ecologically representative network of protected areas incorporating at least 10% of each of the world forest types by the end of the year 2005; the independent certification of at least 25 million hectares of managed forest by June 2001 with special emphasis on the major timber producing countries.

#### Forest losses in figures

- Only **5%** of the Mediterranean coastal vegetation is protected.
- **19%** of the protected areas in North Africa conform to IUCN criteria.
- **20%** of the Mediterranean Flora are threatened by extinction (IUCN).
- During the **15** years of civil war which ravaged Lebanon, the famous cedar forests were almost totally destroyed.
- In the European Mediterranean countries alone, the area of land with high erosion risk totals **229,000** km<sup>2</sup> (about the surface of Greece and Portugal together). The largest area under erosion risk is found in Spain. The cost of direct impact of erosion on the environment is estimated at **280** million EURO per year. The cost of forest restoration, improvement of water retention and soil protection is estimated at about **3,000** million EURO.

## 4. Sea pollution

**635,000 tonnes: the quantity of crude oil spilled by vessels in the Mediterranean sea every year. This is 17 times the amount that the Exxon Valdez spewed out in Alaska.**

The Mediterranean marine and coastal environment is under pressure from a wide range of sources. One quarter of the pollution is created at sea by activities such as dredging, drilling for oil and minerals, and shipping (see box).

Three-quarters of the pollution is estimated to originate from land-based sources, such as industry and urban waste, causing contamination of seafood and eutrophication of enclosed bays.

Raw sewage and fertilisers both contain nutrients such as nitrogen and phosphorus, which create a massive explosion of toxic algae.

Algae-poisoned seafood is responsible for many human illnesses, including neurological disorders, cardiovascular diseases, and gastrointestinal problems. Industrial processes release harmful chemicals (chlorine compounds are particularly dangerous) which end up in the sea, poisoning marine animals and plants. These toxic chemicals accumulate in food chains, through bioaccumulation. Big fish eat thousands of small ones resulting in a concentration of poisons in larger fish. These fish may in turn be eaten by other fish or by mammals, and the poison gets passed on.

Agricultural pesticides seep through the soil and into rivers which then wash them out to sea. Pesticides like Tributyltin (TBT) used to prevent boats from becoming encrusted with shellfish, are highly toxic.

In 1970, TBT caused French oysters to develop deformed shells and become sterile.

Contaminants also enter the sea from atmospheric deposition and through water exchange, primarily with the Atlantic Ocean and Black Sea. As the Mediterranean is almost entirely landlocked, its waters have a very low renewal rate which explains why they are so sensitive to pollution.



The Haven disaster.  
 An oil tanker caught fire and sank off the Italian Ligurian coast in April 1991, spilling 40,000-50,000 tonnes of oil into the sea. The wreck still releases contaminants.

#### Oil spills

- **200,000** ships cross the Mediterranean annually. The majority of these are simply in transit.
- Greece, Cyprus and Malta account for over **70%** of the gross registered tonnage (UNEP, 1996).
- At least **20%** of the world's oil tankers cross the Mediterranean every year.
- **6%** of the oil pollution comes from atmospheric deposition.
- **17%** comes from land-based industries.
- **25%** comes from land-based urban sources.
- **52%** comes from shipping.
- **35%** of global oil transfers occur in the

Because of the high evaporation rates, they are not even fully replenished by rainfall and river flows.

### When plastic kills

Plastic pollution is a growing problem. On a global level, fishermen discard about 150,000 tonnes of plastic net each year and countless plastic containers are tossed overboard from ships of all kinds. Plastic is thought to kill around a million seabirds and 100,000 marine mammals such as whales, seals, and dolphins every year.

### The top 10 polluted areas

Elevated concentrations of mercury, cadmium, zinc and lead in sediments are found in various "hot spots", areas within the Mediterranean basin where a high release of pollutants has been verified. In 1997, during the 10th Barcelona Convention in Tunis, 119 "hot spots" were identified. The 10 top renowned areas are: Iskenderun Bay (Turkey); Izmir Bay (Turkey); Thermaikos Gulf (Greece); Patraikos Gulf (Greece); the Po Delta (Italy); Rhone Delta (France); the Ebro Delta (Spain); the Bay of Tunis (Tunis); the Nile Delta (Egypt); Haifa Bay (Israel).



© WWF/Dimitri Karavellas

The Sea turtle (*Caretta caretta*) is one of the most endangered species in the Mediterranean. Destruction of nesting sites, unintentional killing and human consumption are the main threats.

Mediterranean sea.

- Less than **1/3** of the oil discharged at sea is spilt accidentally.
  - **2/3** of the oil is deliberately pumped out by oil tankers cleaning their tanks before taking on new cargoes.
- (Data source: European Environment Agency)

### Unsustainable fisheries and pollution

- **500**: the number of fish species found in the Mediterranean.
  - **100**: the number of species commercially exploited. The annual catch is between **1** and **2** million tonnes.
  - **83%** of all the Blue Fin Tuna & Swordfish caught in the Med are undersized.
  - **80%** of the sewage pumped into the Mediterranean is discharged raw. Untreated sewage is a particular health hazard for young children, causing stomach problems, respiratory diseases, ear, eye and skin infections.
  - **40**: the number of contaminants from atmosphere and rivers, including heavy metals, radionuclides and nutrients. They include the "Dirty Dozen", the notorious **12** Persistent Organic Pollutants, reported to induce cancerogenous, teratogenous, immunodepressant and endocrine disruption processes in both animal and human beings.
  - **65%** of the world's mercury resources are located in the Mediterranean basin.
  - **120** days: the time necessary for a sanitary towel to decompose.
  - from **80** up to **150** years: the water renewal rate in the Mediterranean.
- (Data source: European Environment Agency)

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## MONK SEAL PHILATELY

**William M. Johnson, Alexandros A. Karamanlidis,  
David M. Lavigne & Antonio A. Mignucci-Giannoni**

Like numerous other species the world over, the monk seal is no stranger to the philatelic world. Portraits of the Mediterranean, Caribbean and Hawaiian monk seals adorn stamps issued by nations as far afield as Russia and Tanzania, Cuba and Albania.

The postage stamp first saw the light of day in 1840 and since then, according to the Society of Topical Philately in Belgium, hundreds of millions of these tiny, perforated pieces of paper have been dabbed against the human tongue and affixed to letters and parcels.

While stamp collecting has never enjoyed a particularly glamorous or stirring reputation, aficionados are said to number in the millions, generating attractive profits even for the postal services of developing nations that design, print and issue their own special series and first day covers.

Part of the fascination of stamp collecting is undoubtedly the ability of these vivid miniature designs to acquaint the armchair traveller with some of the world's most romantic, exotic, and faraway places, and with the people, animals and plants that populate them. Stamps are used to commemorate, to further humanitarian campaigns, to boast of scientific or technological achievement, and to educate.

Therein lies philately's Achilles heel. Because stamps are issued by official government agencies they, their designs and the descriptions that normally accompany first day covers, assume a kind of erudite prestige. If philatelic depictions of the Mediterranean, Hawaiian and Caribbean monk seals are anything to go by, however, such confidence proves unwarranted. In many cases, representations of these endangered and – in the case of *Monachus tropicalis* – extinct species, are imbued with a liberal dose of artistic license, effortlessly transforming monk seals into sea lions or other pinnipeds, placing them in alien or unfamiliar habitat, or rechristening them with obsolete scientific names.

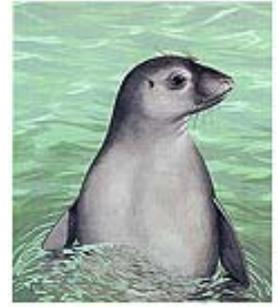
Yet paradoxically, it is precisely these errors and imperfections that shed further light on the human-seal relationship – in much the same way that a Renaissance woodcut may say more about contemporary natural history than about the monk seal as a living, breathing species. The stamp images of the monk seal and the descriptions accompanying them become a miniature mirror of society's attitudes, superstitions and misconceptions surrounding these animals.

In fact, almost every stamp in the monk seal collection has a story to tell. First, misnaming. A 1961 stamp from Bulgaria describes the Mediterranean monk seal as *Monachus pelagius*, an obsolete taxonomic synonym for the species first coined by François Cuvier in 1824 (Johnson & Lavigne, in prep.). Similarly, a stamp issued by Albania in 1999 depicts a *Monachus albiventris*, a corruption of *Monachus albiventer*, a synonym most often associated with the 18th century Dutch physician and taxonomist P. Boddaert (see [Monk seals commemorated \(sort of\)](#), TMG 2(2): November 1999). Where *Monachus tropicalis* is concerned, Cuba provides a correct scientific name, but also cites the Caribbean monk seal's colloquial alter ego as *Foca Antillana* or the "Seal of the Antilles."

While some artists have done their homework in faithfully reproducing the monk seal's distinctive features – its broad head and white belly patch, for example – others appear to have looked no further than the pinniped model most conveniently at hand. Mauritania's 1973 stamp appears to feature a sea lion head (a blunder more than made up for in its exemplary monk seal series in 1986), while Yugoslavia's 1983 issue, recording the species' presence in the Kornati archipelago, depicts a phocine seal rather than monachine seal.

When the monk seal was adopted as the official mascot of the 1979 Mediterranean Games in Split, host nation Yugoslavia issued a stamp depicting a stylish sea lion apparently howling at the sky. Whether the artist was trying to convey a statement about the seal's likely fate will probably forever remain in doubt. Although it was regarded as the most endangered species in the country at the time (Gamulin-Brida 1979), official apathy and negligence ensured its effective extinction in the Adriatic within a decade (Johnson & Lavigne 1999b).

Occasionally, it is the first day cover that betrays the stamp artist. A Fleetwood cover accompanying a reasonably accurate 1994 United Nations stamp of *Monachus monachus* depicts a species that appears to be stuck in a transgenic shift between sea lion, bird and extraterrestrial. Turkey's recent offering commemorating the year 2000 depicts the nation's critically endangered species with a modest smile, presumably in greeting the new millennium (sic) rather than with any particular confidence in government efforts to protect it.



Fleetwood first day cover, UN Vienna 1994

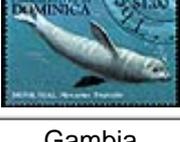
But if artists are getting the wrong picture, imagine the confusion of the general public and the stamp collecting fraternity. The Mediterranean monk seal is generally depicted in idyllic, pristine surroundings without a fisher, a hunter or tourist development in sight. Albania (1999), Greece (1990), Madeira (1993) Portugal (1983), Tunisia (1986) and Gulf Emirate Umm Al Qiwain (1972) show seals basking happily on sandy shores or wave-splashed rocks, despite the fundamental deterioration in habitat that has historically driven the species away from open beaches (Johnson & Lavigne 1999a, 1999b; for the monk seal's recent return to beaches on Madeira's strictly protected Desertas Islands, see [Monachus Science](#), this issue).

The same kind of picture emerges from the Caribbean, where Antigua and Barbuda depict a plump, delighted seal on a deserted coral beach, apparently oblivious to its species' looming demise. In contrast, Grenada's *Monachus tropicalis* at least stares back at you with a kind of forlorn reproach.

Tunisia must win the prize for the most inadvertently ironic of all monk seal stamps. Its 1986 issue commemorates the creation of the Zembretta National Park and its protection of *Monachus*. Alas, the Park's population of seals was already extinct by the time the stamp was rolling off the presses (Aguilar 1998).

There are several other curious anomalies in our monk seal collection. Tanzania and Umm Al Qiwain have both issued commemorative monk seal stamps even though the species have never graced their respective territories. In contrast, the Croatians, Cypriots, French, Israelis, Libyans and Moroccans have apparently deemed their struggling or extinct specimens unworthy of such philatelic honour. In the post Cold War thaw, Russians apparently saw fit to take the middle ground. Instead of commemorating their own extinct monk seal in the Crimean Black Sea, they issued a 1993 stamp honouring the seal of their erstwhile enemy, the Hawaiian monk seal, *Monachus schauinslandi*...

Country	Theme	Year of Issue	Series Subject	Value	Scott Number
Albania 	<i>Monachus albiventris</i>	1999	Foka e Mesdheut, Monk seals	110/150 l.	N/A
Algeria 	<i>Monachus monachus</i>	1981	Monk seal and Macaque	60 c.	672
Antigua & Barbuda 	<i>Monachus tropicalis</i>	1982	Centenary of Death of Charles Darwin	\$5	662
Antigua & Barbuda 	<i>Monachus tropicalis</i>	1989	Wildlife	45 c.	1234
Bulgaria 	<i>Pelagius monachus</i>	1961	Black Sea Fauna	2 s.	1164

Bulgaria 	<i>Monachus monachus</i>	1991	Marine Mammals	1 l.	3669
Bulgaria 	<i>Monachus-monachus</i>	1998	International year of the Ocean	120 l.	4049
Colombia 	<i>Foca del Caribe (Monachus tropicalis)</i>	1988	Fauna	35 p.	964
Cuba 	<i>Monachus tropicalis, Foca Antillana</i>	1980	Marine Mammals	30 c.	2337
Dominica 	Monk seal, <i>Monachus tropicalis</i>	1998	UNESCO International Year of the Ocean	\$1	2085
Gambia 	Monk seal, <i>Monachus monachus</i>	1997	Endangered species	1.50 d.	1870
Greece 	<i>Monachus monachus</i>	1990	Rare and endangered species	90 dr.	1676
Grenada 	Caribbean monk seal, <i>Monachus tropicalis</i>	1990	Wildlife	10 c.	1820
Grenada Grenadines 	<i>Monachus tropicalis</i>	1990	Wildlife	\$6	1162
Grenada Grenadines 	"Seal" <i>Monachus tropicalis (?)</i>	1998	UNESCO International Year of the Ocean	75 c.	2042
Italy 	<i>Monachus monachus</i>	1978	Il Mare deve Vivere	170 l.	1319
Karjala [A 'Cinderella' issue] 	<i>Monachus monachus</i>	1996	"RFHTKBZ"	2000	N/A

Mauritania 	Phoque moine, <i>Monachus monachus</i>	1973	Monk seal and pup	40 fr.	300
Mauritania 	Phoque moine, <i>Monachus monachus</i>	1973	Seal's head	135 fr.	C130
Mauritania 	<i>Monachus monachus</i>	1986	WWF Monk Seal Series	2, 5, 10, 18 & 50 um.	597-600
Portugal 	Lobo Marinho, <i>Monachus monachus</i>	1983	Endangered Marine Mammals	12.50 e.	1575
Portugal – Madeira 	Lobo Marinho, <i>Monachus monachus</i>	1993	Nature Preservation	42 e.	168-171
Russia 	<i>Monachus schauinslandi</i>	1993	Wildlife	250 r.	6185
Spain 	Audouin's Gull and monk seal (phoca monge).	1978	Protection of endangered fauna	20 p.	2100

<p>St. Thomas and Prince Islands</p> 	<i>Monachus monachus</i>	1995	Protection of world's endangered species	2000 d.	N/A
<p>St. Vincent</p> 	Caribbean monk seal	1989	Christopher Columbus. Discoveries in the Caribbean 1492-1504	50 c	SS12331
<p>St. Vincent</p> 	[Caribbean] monk seal	1995	Marine fauna	90 c	2177
<p>Tanzania</p> 	<i>Monachus tropicalis</i>	1994	Endangered species	250 sh.	1291
<p>Tanzania</p> 	<i>Monachus</i> (?)	N/A	N/A	300 sh	N/A
<p>Tunisia</p> 	<i>Phoque moine</i> , Parc National de Zembra et Zembretta	1986	Wildlife, Natl. Parks	350 d.	908
<p>Turkey</p> 	Akdeniz Foku, <i>Monachus monachus</i>	2000	Millennium	300,000 l.	N/A
<p>Umm Al Qiwain</p> 	Monk seal	1972	Endangered Species	1 r.	1370-1385
<p>United Nations (Vienna, Austria)</p> 	<i>Monachus monachus</i> (Mönchsrobbe)	1994	CITES 1994	7 s.	164
<p>USA</p> 	<i>Monachus schauinslandi</i>	1996	Endangered species	32 c.	3105

 <p>Yugoslavia 100 jugoslavija</p>	<p>Monk seal, symbol of the Split 1979 Games</p>	<p>1979</p>	<p>8<sup>th</sup> Mediterranean Games</p>	<p>1 d.</p>	<p>RA 58-59</p>
 <p>Yugoslavia 15 JUGOSLAVIJA</p>	<p>Monk seal</p>	<p>1982</p>	<p>Kornati Islands National Park</p>	<p>15 d.</p>	<p>1585</p>

**In the interests of completeness, the authors would like to hear from anyone who may have come across a monk seal stamp that does not appear in the above listing.**

### Acknowledgements

We express our sincere thanks to P.J.H. van Bree of the Zoological Museum of Amsterdam for making his own monk seal stamp collection available for study.

We also thank the following individuals for their time-consuming efforts in tracking down some of the more obscure monk seal stamps: Ursula Gubler (Zumstein & Cie, Bern), Matthias Schnellmann and Sheryl Fink.

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# Perspectives

## Sayings of 3000 Years...

Wherein we furnish the most humorous, insightful and slack-witted comments on the Seale of the Mediterranean Sea and those Seales that may rightly be regarded as its cousins in kind in the vaste Outer Oceans...

Describing their True and Lively Natures, their Conditions, Kinds and Virtues (both Natural and Medicinal), their Love and Hatred to Mankind, and the wonderful work of God in their Creation, Preservation and Destruction...

Compiled by William M. Johnson

with Contributions from Numerous Correspondents Around the Globe\*

### Book 1

900 B.C. to 1563 A.D.

	TIMELINE
<p style="text-align: center;"><b>9th-8th Century B.C.</b></p> <p>The goddess answered: "So be it, stranger; I will tell you all without deceit. When the sun in its course has reached mid-sky, the sage old sea-god leaves his ocean – the west wind blows then, and the ruffled water is dark enough to hide him. Once ashore, he lies down to sleep under the arching caves, and around him is a throng of seals, the brood of the lovely child of Ocean; they too have come up through the grey waters, and they too lie down to sleep, smelling rankly of the deep brine below... First he will pass along all the seals and count them; then, having viewed them and made his reckoning, he will lie down among them all like a shepherd among his flock of sheep."</p> <p>~ Homer, the Odyssey.</p>	<p style="text-align: center;">c. 1000 B.C. The Trojan War</p> <p style="text-align: center;">545 B.C. The 'Seal City' of Phocaea (modern day Foca in Turkey) falls to the Persians.</p>
	

<p style="text-align: center;"><b>5th Century B.C.</b></p> <p>"It is best to use a fumigation of seal oil: put the coals in a pot and wrap the woman up – except for her head. So that as much vapour as possible is emitted, drip a little fat on it, and have her inhale the vapour."</p> <p style="text-align: center;">~ Hippocrates (c. 460-380 B.C.), De mulierum affectibus.</p>	<p>399 B.C. Socrates sentenced to death for challenging traditional ideas.</p>
<p style="text-align: center;"><b>4th Century B.C.</b></p> <p>Like human beings, it [the seal] bears at every season of the year, but especially at the time when the first goats are kidding. When the young are about twelve days old, it takes them down to the sea many times a day to accustom them to it gradually. To get down steep places it just lets itself go without attempting to walk, because it is unable to get a grip with its feet. It can contract and compress its own bulk, because it is soft and fleshy and its bones are cartilaginous. It is difficult to kill a seal by using force, unless you strike it on the temple, because its body is fleshy. It lows like a cow. In respect of its genital organ also the female resembles a cow; in all other respects it resembles the human female."</p> <p style="text-align: center;">~ Aristotle (384-322 B.C.), Historia Animalium.</p>	<p>385 B.C. Plato establishes his philosophical school, the Academy, in an ancient olive grove on the outskirts of Athens.</p> <p>336 B.C. The 19-year old Alexander the Great assumes the throne of Macedonia, succeeding his father, Phillip II.</p>
<p style="text-align: center;"><b>4th – 3rd Century B.C.</b></p> <p>The spotted lizard, they say, begrudging humans its helpful service, swallows down its skin after shedding it, because it is a remedy for the epileptic. And the stag buries its right horn, as it is effective against the poison of the toad... And that the seal, whenever it is about to be captured, vomits its rennet, which is also useful to epileptics... But animals don't do these things because of a grudge; rather, humans, from their own characteristic way of seeing things, have ascribed to them this motivation – that is altogether clear. For from whence could irrational creatures have such great knowledge, which even rational beings acquire [only] with much practice? Rather, the seal is troubled and vomits its first milk probably through fear, and the spotted lizard swallows down its skin by virtue of an inclination that is natural to it...</p> <p style="text-align: center;">~ Theophrastus (c. 371-287 B.C.), Fragmenta.</p>	<p>331 B.C. Alexandria, founded by Alexander the Great, becomes the centre of learning of the Hellenistic Age. Its lighthouse, Pharos, standing 134 meters tall, is one of the Seven Wonders of the World. Its Library contains 500,000 scrolls.</p>
<p style="text-align: center;"><b>1st Century A.D.</b></p> <p>Seals are with difficulty killed unless the head is shattered. Of themselves they make a noise like lowing, whence their names 'sea-calves'; yet they are capable of training, and can be taught to salute the public with their voice and at the same time with bowing, and when called by name to reply with a harsh roar. No animal sleeps more heavily. The fins that they use in the sea also serve them on land as feet to crawl with... it is also said that the right fin possesses soporific influence, and when placed under the head attracts sleep.</p> <p style="text-align: center;">~ Pliny the Elder (A.D. 23-79), Natural History.</p> <p>And the rennet of the seal is like castor with respect to its power, and it seems to be especially suitable for epileptics and hysterical choking when it has been drunk. It can be tested, whether it is of the seal, in this way: take the rennet of some other animal, especially of the sheep, and, having poured water over it, allow it to stand for a short time, and then afterwards, pour the infusion down upon the seal rennet; for if it is true it will become watery quickly, but that which is not of such a kind remains the same. And the rennet is taken from the seal when the cubs are not yet able to swim.</p> <p style="text-align: center;">~ Dioscorides Pedanius (c. A.D. 40-90), De materia medica.</p>	<p>An upstart Roman Empire subdues Macedonia in 148 B.C., paving the way for Roman domination throughout the Mediterranean.</p> <p>Christ crucified around A.D. 29.</p> <p>A.D. 77. Fish prices soar in Rome, possibly because of coastal overfishing. Pliny complains that one mullet equals the price of nine bulls.</p>

### 1st – 2nd Century A.D.

As for Augustus's superstitions: he is recorded to have been scared of thunder and lightning, against which he always carried a piece of seal-skin as an amulet, and to have taken refuge in an underground vault whenever a heavy storm threatened – because, as I have already mentioned, he had once narrowly escaped being struck on a night march.

~ Suetonius (c. A.D. 69-c.122) The Twelve Caesars.

A.D. 79: Pliny the Elder perishes at the eruption of Vesuvius

### 2nd Century A.D.

For the Seal no hooks are fashioned nor any three-pronged spear which could capture it: for exceeding hard is the hide which it has upon its limbs as a mighty hedge. But when the fishermen have unwittingly enclosed a seal among the fishes in their well-woven nets, then there is swift labour and haste to pull the nets ashore. For no nets, even if there are very many at hand, would stay the raging seal, but with its violence and sharp claws it will easily break them and rush away and prove a succour to the pent-up fishes but a great grief to the hearts of the fishermen. But if betimes they bring it near the land, there with trident and mighty clubs and stout spears they smite it on the temples and kill it: since destruction comes most swiftly upon seals when they are smitten on the head.

~ Oppian of Cilicia, Halieutica.

They [seals, whales, dolphins and other "cetaceous species"] have tough and excretive flesh, and on account of this are cut up and salted, being the food of common men; for these are distasteful and slimy, wherefore they eat them with mustard and also with vinegar-oil sauce and likewise pungent sharp and sour compound dishes.

~ Galen (c. A.D. 129-204) De alimentorum facultatibus.

A.D. 107. Circus fever continues to grip Rome. In one great circus festival held by Trajan, 11,000 wild animals are slaughtered.

A.D. 166: Embassy from Emperor Marcus Aurelius reaches China

### 2nd – 3rd Century A.D.

The Seal, I am told, vomits up the curdled milk from its stomach so that epileptics may not be cured thereby. Upon my word the Seal is indeed a malignant creature.

~ Aelian (c. 170-235 A.D.) On the Characteristics of Animals.

A.D. 211: Emperor Severus, occupied by the war in Britain, dies at York

### 3rd Century A.D.

And if we look at creatures in the sea, we need not wonder at the dolphins loving their offspring, for they are superior creatures; but shall we not admire the whales and seals and the viviparous species? For I once saw a seal that was kept shut up at Aegae in the circus, and she mourned so deeply for her whelp, which had died after being born in confinement, that she refused food for three days together, although she is the most voracious of animals.

~ Philostratus the Athenian, The Life of Apollonius of Tyana.

A.D. 250: Emperor Decius institutes persecution of Christians.

### 4th Century A.D.

Thus the power to rule everywhere, implanted by the Creator, is granted to man. Hence the swordfish and the hammer-headed sharks and the whales and the priones and the seals and all those fearful names of sea monsters have come under the command of man.

~ Gregorius Nyssenus (c. A.D. 335–394) De creatione hominis sermo primus.

It is believed that one can prevent hail by carrying the skin of a crocodile, hyena or seal around one's property and hanging it up at the entrance of the farm house or yard, when one sees that the calamity is imminent... it is said that when this has been done, the hostile clouds [do nothing but] pass over the terrain which has been protected in this way.

~ Palladius, De re rustica.

301 A.D. Facing rampant inflation and profiteering by merchants, Emperor Diocletian issues an Empire-wide Edict of Maximum Prices covering goods, transport and wages.

313 A.D. Emperor Constantine the Great decrees that all citizens must be allowed to worship freely. In succeeding decades, Christianity was established as Rome's official religion.

### 4th – 5th Century A.D.

For how, tell me, shall he be able to cut down his passions, when the point is blunted, and bent back like a lead ruler? How shall he wound the Devil? And to whom is a man cultivating fleshiness not disgusting, crawling as he does after the manner of a seal? I am not speaking of those who are so by nature, but rather of those who make their bodies like this through luxuriousness, about those who are slim by nature.

~ Saint John Chrysostom (c. 347–407 A.D.) In Acta Apostolorum.

330 A.D. Emperor Constantine the Great founds Constantinople on the ancient site of Byzantium.

360 A.D. Emperor Julian encourages revival of pagan religious beliefs to counter Christianity.

### 5th Century A.D.

Serapion also gives the [epileptic] patient camel's brain and bile and seal's rennet... Like the epileptics themselves, his treatment falls to the ground.

~ Caelius Aurelianus, On Acute Diseases & On Chronic Diseases.

What worthy gifts will Earthshaker [Poseidon] bring? Will he choose his salt water for a bridegift, and lay sealskins breathing the filthy stink of the deep, as Poseidon's coverlets from the sea? Do not accept his sealskins.

~ Nonnus, Dionysiaca.

476 A.D. With the fall of Rome, Constantinople lays claim to the Empire's former territories.

465-1000 A.D. Europe falls into the Dark Ages



### 15th Century A.D.

The number of sea wolves that come here [to Isla del Lobos in the Canary Islands] is astonishing, and every year might be got a sufficient quantity of skins and fat to fetch five hundred gold doubloons and more.

~ Bontier & Le Verrier, 1402

The seals sleep outstretched on the beach... disinterested, not dreaming of the new enemy which was coming to take them by surprise in a barbaric fashion on the island, offered to the navigators of the Infante for their good fortune, who, not having any Moors with which to do battle, killed many of them and had a great feast of the killing.

~ Gaspar Frutuoso, 1550 (On the Portuguese conquest of Madeira in 1419).

Upon seeing on a reef at the mouth of the river a large number of sea-wolves, which, according to the estimates of some, amounted to five thousand, he ordered killed those that could be killed and had their furs loaded onto the ship. Either because they were easy to kill or due to the skill of those who carried out the task, many of those wolves were killed.

~ Eanes da Zurara, 1437 (On the Portuguese discovery of the Rio d'Oro, Western Sahara).

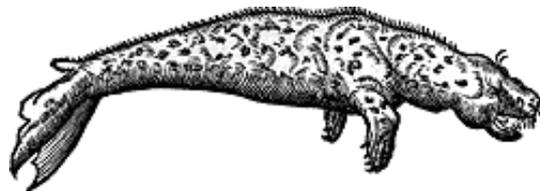
At the end of August the Admiral (Christopher Columbus) anchored at an island which he called Alto Velo and, since he had lost sight of the other two ships which he had in convoy, he had some men landed on the island... [There] they killed eight seals that were sleeping on the beach. They also took many pigeons and other birds. For, since the island was uninhabited and these creatures were not used to the sight of men, it was possible to kill them with sticks.

~ Hernando Colon, 1493.

14-16th century. Growing from Italy, the Renaissance spreads through Western Europe, marked by a rediscovery of classical science and literature.

The Renaissance age, however, is also characterised by the tyranny of the Church, with millions being persecuted and put to death for alleged witchcraft and heresy.

Despite religious persecution, the Renaissance is also a period of exploration, in which the Spanish and Portuguese vie with each other over conquests in Africa, and Christopher Columbus (1451-1506) accidentally stumbles across the New World.



### 16th Century A.D.

Its hair is reputed to be of such a wondrous nature that the skins or belts are worn by mariners. When thunderstorms, tempests and other inclement weather is nigh, the hair shall rise and bristle, but when it turns still and mild, it shall lay down smoothly.

~ Konrad Gesner, 1563. Fischbuch.

The Swiss encyclopaedist Conrad Gesner follows in the footsteps of Pliny the Elder, avidly collecting every scrap of information he can find on the natural world. He was later to become known as the 'Father of Zoology' as a modern science.

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**Note:** All ancient source material is drawn from Johnson & Lavigne 1999 (see Sources).

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## **MONK SEAL SIGHTINGS ON OPEN BEACHES IN THE DESERTAS ISLANDS – MADEIRA ARCHIPELAGO**

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The Mediterranean monk seal has been persecuted by humans for centuries, forcing the species to change some of its habits and behaviour in order to survive. This is particularly evident in its choice of habitat. Looking for security, the seals started to use only the beaches inside of caves to rest and to breed, instead of open beaches (Bareham & Furreddu 1975, Sergeant *et al.* 1978, Machado 1979, Trotignon 1982, Marchessaux 1989, Brasseur *et al.* 1997, Johnson & Lavigne 1999).

Nevertheless, observations of monk seals on open beaches have recently been made on the Desertas Islands, nine years after the start of monk seal protection efforts.

The Desertas Islands belong to the Madeiran archipelago and are located 11 miles SE of the main island (Madeira). Ilhéu Chão, Deserta Grande and Bugio comprise this sub-archipelago.

Most of the 37 km of its coastline is composed of steep inaccessible cliffs. In addition, there are numerous beaches and caves that provide ideal habitat for monk seal resting and breeding.

On the island of Madeira, the monk seal originally used open beaches and easily-accessible caves to rest and to breed (Machado 1979). However, this natural behaviour made the species vulnerable to human pressure. As a result, the population began to decline and eventually it disappeared from the island. Nowadays it is likely that only a few animals survive on the Ponta de São Lourenço, located on the extreme east of Madeira.

In practice, the Desertas Islands became the last part of the Madeiran archipelago with suitable conditions for monk seal survival. In addition to the excellent food resources, the seals found security in these uninhabited and isolated islands. Indeed, old fishermen would talk about the use of Desertas Islands beaches and caves by seals, a behavioural trait that was once also seen on the island of Madeira itself.

Sadly, this behaviour disappeared with the increase in fishing activity around the Desertas Islands during the 1970s. In particular, the fishermen became increasingly hostile towards the seals. It is unlikely to be coincidence that the seals were rarely seen again on open shores where they would have been at the mercy of fishermen.

As a result of both direct and indirect harassment, the population went into steep decline. In 1978, the estimated population size was 50 animals (Sergeant *et al.* 1978) but, by 1988, the numbers had dwindled to only 6-8 individuals.

Given these circumstances, there was clearly an urgent need to develop and implement a strategy to preserve the monk seal. A programme to protect this species was initiated in 1988 and, by 1990, the Desertas islands were legally protected.

The strategy developed to protect the monk seal was a combination of management actions and scientific initiatives. On the management side, the main approach was to patrol the islands by boat, in order to ensure effective protection of both the seals and their habitat. Simultaneously, a monk seal monitoring programme was established in order to determine the status of the population and to obtain a much better understanding of the biology and ecology of the species. Such knowledge is essential to find the best strategies to conserve the monk seal in a real situation.

With such an endangered population it is very important that the monitoring methodology be as non-intrusive as possible.

Fortunately, the geography of the island enabled us to establish lookout sites along the 3 islands. From here

observations can be documented and photo-identification studies conducted.

During last 8 years, almost 4000 hours have been spent patrolling the islands by boat and just over 5000 hours occupying the lookout sites. In other words, we have averaged about two and half hours of observation effort per day.

As a result of the work that has been done, we have managed to eliminate the major direct impact on the population – fishing activity. In fact, there is now very little human disturbance on the Desertas Islands. In addition, we have made some 670 sightings of monk seals over the period, which is very significant for a population so small, and which is providing a sound basis for monitoring the status of the population.

One of the most exciting developments was that in 1997, we saw monk seals on the shore of the Desertas Islands for the first time in many years. For almost 20 days, two females, "Bi-risca" and "Desertinha" used Tabaqueiro beach to rest and to suckle their pups (Fig. 1 & 2).



Fig. 1



Fig. 2

This beach, on the extreme SE of Deserta Grande, is very close to the cave in which most of the births have occurred. This seems to be the primary area used by monk seals during the reproductive season.

Monk seals were seen on shore again in July 1999, also on the SE of Deserta Grande. However, this time the sighting was on Areias beach, where a juvenile, recognised as "Bi-risca's son", and an immature seal were observed at rest. During recent years we have noted that activity associated with monk seal breeding behaviour has mainly taken place in this area (Pires 1997).

A few months later in December, the same reproductive females with new pups again used Tabaqueiro beach in addition to the cave, and this time for a longer period. They used this site to rest and suckle for almost 2 months. In general, the animals sporadically use this as a place to rest.

It is significant that the seals only started to use open beaches 9 years after the start of the protection programme, in other words, 9 years after the cessation of human persecution on the islands.

Although it has taken a long time, the seals are now beginning to use the open beaches during the breeding period when they are at their most sensitive. Last year the time spent on the shore by the seals increased considerably. In addition, new individuals are showing a tendency to use the Desertas Islands' open beaches.

We view this as exceptionally positive news. It demonstrates that the seals are gradually reacquiring a sense of security on the Desertas Islands and consequently returning to their natural and original habitats and behaviour. This and the recovery of the population that we are assisting is a promising sign for the future of this species in the Madeira archipelago.

## Acknowledgements

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# Monachus Science Posters

## A FIELD METHOD FOR AGE ESTIMATION OF MEDITERRANEAN MONK SEAL PUPS

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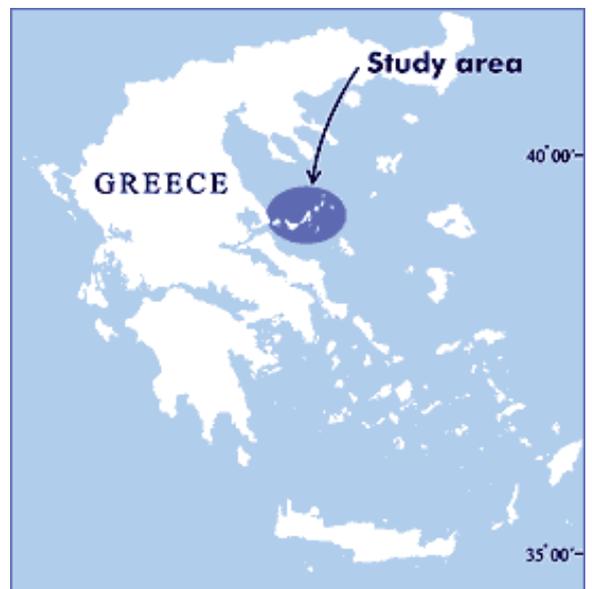
### Abstract

In 1990, a long-term program was established in order to monitor the status of the Mediterranean monk seal (*Monachus monachus*) population within the National Marine Park of Alonnisos, Northern Sporades, Greece. The methodology used for monitoring the population consisted of surveying all 35 seal-shelters found within the study area. Especially during the breeding season (July - December), the frequency of the surveys and the ability to exhaustively cover all shelters within a 24 hour period, provided the opportunity to estimate the date of birth (+/- 5 days) of each newborn pup encountered.

During the study period (1990 - 1998), 243 different encounters with monk seal pups were recorded. From these observations, 56 different individual newborn pups were identified and monitored during the first months of their development. In 71 cases, involving 27 different pups, external morphological features and their modification over time were recorded. These features are: the existence of the umbilical cord and/or the status of the umbilicus, the condition of the fur and the condition and shape of the animal's body. Based on these features and on their variation in relation to the increasing age of the animals, the data collected were categorized into four distinct morphological/age classes:

- Thin-newly born / age 0-10 days old
- Spindle-wooly coat / age 10-30 days old
- Spindle-patchy coat (molting) / age 30-50 days old
- Fat-short coat (fully molted) / age 50+ days old

The above classes may be used as a field method for age estimation of newborn pups, that could be applied in other areas of the species' range. An important element of such noninvasive methodology is that it can be applied from a distance, not requiring handling or restraining of the animals.



### Introduction

The Mediterranean monk seal (*Monachus monachus*) is considered to be a critically endangered species (IUCN, 1996). Its world population consists of several hundred individuals, while in Greece, based on data from sections of the country's coastline, it has been estimated that approximately 250 animals are found. The area of N. Sporades islands, N. Aegean, Greece, holds one of the largest breeding monk seal populations. In 1992 the area was officially declared a National Marine Park. The protected area covers 2200 km<sup>2</sup> and includes 17 islands, most of which are uninhabited.

In 1990, a long-term program was established in order to monitor the status of the monk seal population in the area (HSSPMS, 1995). An important part of this program was to monitor the newborn pups in the area and especially to identify them individually, to estimate the population's annual productivity, to determine the distribution of births in time and space and to collect data on the development and behavior of monk seal pups during the first months of

their life. From the data collected through this work, it became evident that a non-invasive field method for estimating the age of newborn pups could be developed.

## Methods

The methodology used for monitoring the seal population consisted of surveys of all 35 different shelters found within the study area (Dendrinis et al, 1996) Especially during the breeding season (July - December) the frequency of the surveys and the ability to exhaustively cover all monk seal shelters within an island in a very short time (1-2 hrs) provide the opportunity to estimate the date of birth of each newborn pup encountered within a 10 day range. Direct observations, the use of photographic cameras by the researchers during the surveys, and the application of pre-programmed automatic cameras, installed in several shelters within the study area, provided the data used for the identification of individual pups. The fact that all newborn pups encountered exhibited dark body coloration with a characteristic unique in shape, yellowish-white patch on the abdomen allowed the accurate identification of all pups in the study area.

## Results

During the study period (September 1990 - December 1998) 243 different encounters with monk seal pups were recorded. From the analysis of the above data 56 different individual newborn pups were identified and monitored during the first months of their development. During this study it became evident that monk seal pups exhibit a distinct change in their overall external morphology which varied in accordance with their age. The external features that were found to vary with time and which are possible to observe from a distance, are the condition of the animal's fur, the condition and shape of the animal's body and the existence of its umbilical cord and/or the status of its umbilicus. From the 243 observations, in 71 cases, involving 27 different pups, all the above morphological features were observed and recorded and thus only these cases were used in the development of the field age estimation method.

Based on these morphological features and on their variation through the age of the animals, all pups observed could be classified into the following morphological categories:

### Stage A

Thin-Newly Born. Age: 0-10 Days Old

Pups in this age category were observed 27 different times. In all cases their fur appearance was characterized by having the typical dark colored lanugo fur (long wooly coat of 2cm length) but the texture of the hair is in clumps and has a wet appearance even when dry. The patch in the belly area in the animals of this age appears yellowish-orange in coloration, possibly due to the amniotic fluids. In terms of the animal's body shape, it appears skinny, in such a way that the skeletal features (skull, neck, scapula-humerus joint and the femur-tibia/fibula joint) are visible. Furthermore, in all cases part of the umbilical cord was still attached to the abdomen or the umbilicus was still not healed completely having a fresh pink coloration.



### Stage B

Spindle-Wooly Coat. Age: 10-30 Days Old

Pups in this age category were observed 15 different times. With respect to their fur, they also had the dark gray to black lanugo fur, but its appearance and texture was wooly, even and fluffy when dry. Even when wet it still had an even and uniform appearance. The patch of the animal did not change in shape but the coloration became yellowish white. The body became clearly spindle shaped, and well rounded, while the skeletal features (neck, scapula-humerus joint and the femur-tibia/fibula joint) were no longer evident. In all the cases when the abdomen of the animals was evident, the umbilical cord had dropped and the umbilicus was healed.



### Stage C

Spindle-Patchy Coat. Age: 30-50 Days Old

Pups of this age were observed on 16 different occasions. The animals observed were undergoing their fur molt. The appearance of their fur was very irregular and patchy, since parts of their body were covered by the lanugo, while others were covered by the new fur (shorter in length and lighter in coloration). Relative to their body shape, all the animals observed exhibited again the spindle shape and were well rounded and their umbilicus was completely healed. In only one of the cases observed, an animal 40-50 days old had similar to the above features but its body shape was so round and fat that it appeared as bloated, a characteristic which was commonly observed in the next age group.



### Stage D

Fat-Short Coat. Age: 50+ Days Old

Animals of age more than 50 days old were observed on 13 different occasions. In all these cases the animals had similar appearance. They had completed their molt and were covered by a new short fur, of grayish coloration, dark dorsally and distinctly lighter ventrally. Their bodies were more developed and fat, giving the impression of being bloated. It is of interest to note that in the animals of this age, the characteristic abdominal patch is less distinct and is clearly identifiable only at the lateral borders where it meets the dark dorsal coloration. In certain cases it appears that the patch has completely faded away. This overall appearance may remain as such for several months, since in certain cases where animals of 4 to 5 months in age were observed, they exhibited all the above morphological characteristics.



### Conclusion

The above four distinct morphological categories, that appear consecutively as a monk seal newborn pup develops, form a relatively easy to use field method for estimating the age of pups. Such a method may be quite useful for researchers in cases where no additional information is available with respect to the individual history of an animal. The fact that this methodology is not invasive, since it is based on visual and photographic evidence, and does not require the handling or restraining of the animals, provides an additional advantage to its use in the field.

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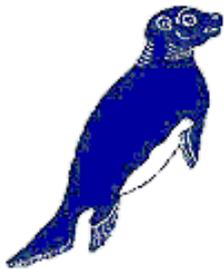
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# Monachus Science Posters

## THE MEDITERRANEAN MONK SEAL IN CYPRUS

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### Introduction

The Mediterranean monk seal (*Monachus monachus*) is considered to be a critically endangered species (IUCN, 1996). Its former distribution extended from the Black Sea, through the Mediterranean to the Atlantic coast of North Africa, as far south as the Cap Blanc peninsula in Mauritania. Currently, its distribution is extremely patchy with fragmentary populations, of which most important are considered the ones in the Eastern Mediterranean and the Mauritania coast (Reijnders et al., 1993, 1997). For most of the species' range, data on the status of the (sub)populations and the availability of suitable habitat are limited. In the island of Cyprus, data on the species have been limited to past reports of animal sightings, which have diminished in recent years leading to the hypothesis that the species may have become extinct.

In May 1997, a field survey was conducted along the western and southern coasts of the island of Cyprus (part of the island that is under the Cyprus Government control). More specifically the survey covered the total length of the coastline from Khrysokhou Bay, in the west part of the island, to Cape Greco, in the Southeast part. The survey was carried out by the Cyprus Wildlife Society, in collaboration with Cypriot authorities (Ministry of Agriculture and Natural Resources, Department of Fisheries), and MOM-Hellenic Society for the Study and Protection of the Monk Seal. The whole expedition was financially supported by SPA/RAC of the UNEP/MAP.

The island has a morphologically and geologically variable coastline of 772 km length. About 50% of this coastline is accessible, either being under the control of the Government of the Republic of Cyprus or found in the two British Sovereign Base Areas. Consequently only this part was surveyed.



## Objectives of the Study

The objectives of this particular survey were:

- the identification and localization of any possible monk seal shelters within the study area,
- the evaluation of the suitability of these habitats,
- the verification of the existence of monk seal individuals within the study area, and
- the verification of the use of these habitats by seals.

## Materials and Methods

The Department of Fisheries' surveillance boat "AMPHITRITI" was used as a base by the research team and a 4m. inflatable with a light, 4 HP out-board engine was used for the detailed examination of the coastline.

The following persons participated in the field survey:

Dr. Andreas Demetropoulos, Department of Fisheries  
Mr. Panayiotis Dendrinou, MOM/HSSPMS  
Mr. Andreas Pistentis, Department of Fisheries  
Dr. Myroula Hatjichristophorou, CWS  
Mr. Simon Demetropoulos, CWS

The Mediterranean Monk Seal, at least nowadays, when on land seeks refuge in isolated coastal caves (seal shelters). In such seal shelters one or more entrances (underwater or not) lead to a dry flat surface consisting of sand, pebbles, boulders or rock, where the seals haul-out in order to rest or give birth to their offspring. The field team circumnavigated and examined carefully the total length of the coastline within the study area. The team members examined in detail every possible cave entrance. The team members entered the caves by swimming/snorkelling. The suitable caves (seal shelters) were localised by a GPS receiver, measured and sketched.

The method used by the researchers for approaching and examining the caves has been standardised and tested for a number of years in the area of the National Marine Park of Alonnisos, N. Sporades, Greece, during the long-term monitoring of the monk seal population. According to this method the team approaches the shelters and, depending on the cave, enters each shelter with a dinghy, rowing, or by snorkelling. Using the minimal light source a team member checks the shelter for the presence of any animal:

- If no animal is found, any signs of previous seal presence are recorded. These signs are: tracks of movement and hollows or depressions from animals laying on the beach surface, smell from the animal, fecal matter deposited on the beach or on the surfaces of the cave, any hair that has fallen from an animal, or any other evidence (saliva, blood, placenta, etc.). The date, time of visit, location, state of the shelter, and findings are noted.
- If an animal is found within the shelter, then all visible characteristics (size, developmental stage, coloration, external skin marks or scars, overall status of the animal, sex) are recorded. Depending on the specific circumstances of each case and when possible (e.g. animal sleeping), a photograph of the animal is taken for a permanent record of the encounter with the specific individual. It is important to mention that all the above process lasts less than 2 minutes.

The methodology has as central consideration to minimise disturbance to the monk seals in the process of collecting the necessary data. Thus, at any time when animals observed appear to be disturbed by the presence of the researchers within a shelter, the visit is terminated and the team leaves the area.

In parallel, recent information on monk seal sightings were collected through interviews with locals (mainly fishermen).

## Results

During the survey approximately 150 nautical miles of coastline were examined in detail for the existence of suitable monk seal habitats. Within the study area 18 different suitable monk seal habitats (sea caves) were identified, explored and charted. Eight of the caves were recorded in the part of coastline north of Paphos up to the Cape Yeronissos (Cave Areas 3,4). Two were recorded in the area of Khrysokhou Bay (Cave Areas 1,2). Six caves were recorded in the area of Cape Gata (Akrotiri, Cave Area 5), one cave was recorded in the area of Cape Pyla (Cave Area 6) and one in the area of Ayia Napa (Cave Areas 7). Four of the above caves/seal shelters were evaluated as being suitable for breeding. Detailed characteristics for the caves identified are provided in the table below.

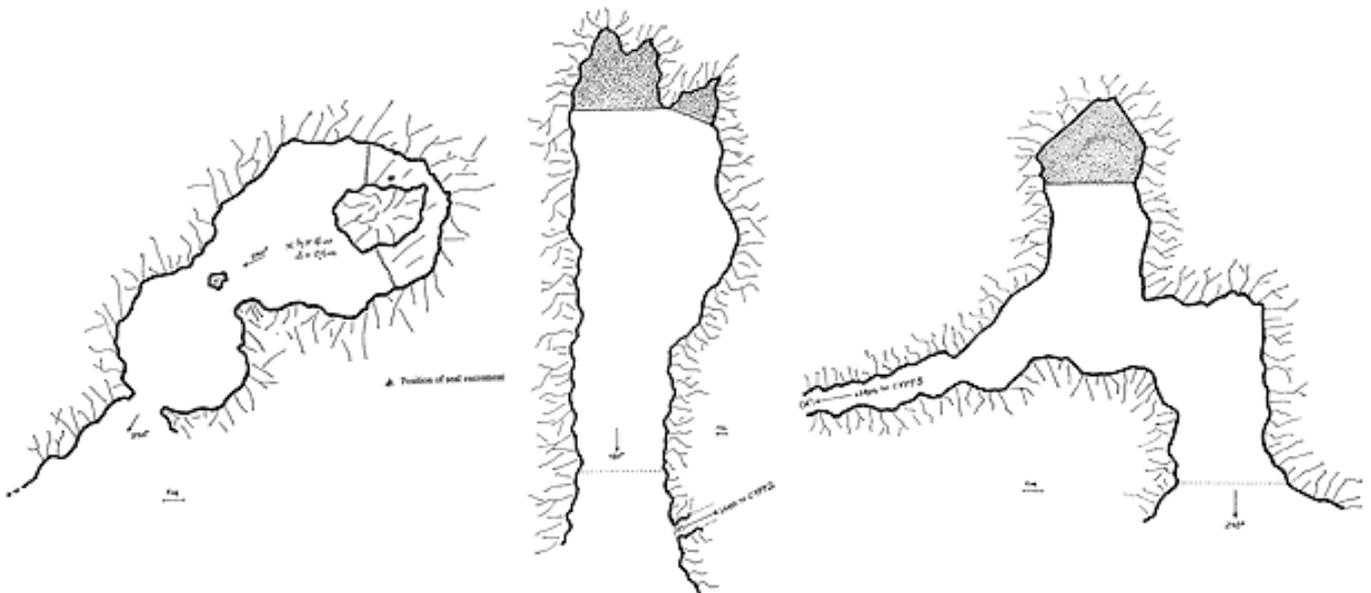
All the caves were examined thoroughly for the existence of individual seals or for any evidence of recent use by animals. In none of the above shelters were individual seals observed by the team members during the survey. However, an important finding was the existence of seal scats (excrements) in one of the caves (West Coast of Akamas, Cave Area 3). Upon detailed examination, the excrements were found to be fresh (left by the animal, on the rocky beach of the cave, within the last 12 hours). They contained a number of small fishbones. In addition, a

seal track was recorded in a cave (Cave Area 2, western part of Khrysokhou Bay).

The above findings provide evidence that monk seal individual(s), although rare, are still found in Cyprus and that, during the study period, used two suitable caves in this part of the Cypriot coastline.



Characteristic entrances of sea caves (suitable monk seal shelters) recorded during the study.



Sketches of suitable monk seal shelters recorded during the study.

## RECENT RECORDS OF MONK SEALS

LOCATION	DATE/YEAR	COMMENTS
Thalassines Spilies	1988	A single animal
Kioni Island	1991, 1992, 1993, 1994, 1995, 1996	Reports mainly of a single animal, but two were once mentioned.
Cape Yeronissos	1988, 1989, 1990, 1997, 1998	A single animal
Ayia Napa-Cape Pyla	1990	A single animal seen twice
Ayia Napa	June 1998	One animal seen near caves and also near fishing harbour
Larnaca Bay	February 1997	One animal seen near Larnaca fishing harbour and near Cape Kiti
Mazotos	February 1997	One animal seen
Fontana Amorosa (N. Akamas)	1997	One animal seen on several consecutive days

Halavron cave area	March 1997	One animal seen in 1997. Several sightings in 1998 near cave.
Limassol	Summer 1998	One small animal seen regularly near an offshore fish farm
Cape Gata	February 1997, 1998	One animal seen in 1997. One large animal seen several times in cave area
Polis Dasoudi	August 1998	One animal seen at 1 km from shore — approached fishing boat

## CHARACTERISTICS OF SEAL SHELTERS

Cave code	Location (GPS plotted)	Multiple Entrances	Entrance Direction (degrees)	Beach Area (m <sup>2</sup> )	Suitability of Shelter	Evidence of Seal Use	Seals Observed
CYPP 1	+	-	-	-	Resting	-	-
CYPP 2	+	2	210	20	Breeding	-	-
CYPP 3	+	2	180	25	Breeding	-	-
CYPP 4	+	-	190	12	Resting	-	-
CYPP 5	+	-	180	10	Resting	-	-
CYPP 6	+	2	260	40	Resting	-	-
CYPP 7	+	-	-	7	Resting	-	-
CYPY 8	+	-	230	8	Resting	+	-
CYPK 9	+	-	30	20	Resting	+	-
CYPK10	+	-	30	40	Breeding	-	-
CYPA11	+	2	210	20	Resting	-	-
CYPA12	+	-	200	15	Resting	-	-
CYPA13	+	2	210	25	Breeding	-	-
CYPA14	+	2	130/210	5	Resting	-	-
CYPA15	+	-	210	8	Resting	-	-
CYPA16	+	-	280	6	Resting	-	-
CYPCP17	+	-	210	15	Resting	-	-
CYPAN18	+	-	290	-	Resting	-	-

## Discussion

It is clear that though there has been a serious decline in the monk seal population in Cyprus, the species cannot be considered extinct on the island. We found evidence that at least a small number of animals continues to survive, using mainly the shelters found at Cape Gata and at the west and north-west part of the island. Apart from the direct evidence on the use of caves by the seals collected during this survey, records of recent monk seal sightings further support the use of these areas by the species.

Due to the fact that the survey was undertaken during late spring, a period of the year when seals least frequent caves (Dendrinios et al., 1994), the results obtained must be considered as conservative. Thus, in order to evaluate the status of the species in the island, additional fieldwork should be carried out throughout the year and especially during the reproductive period.

In addition to monitoring and surveys, however important they may be in enhancing our knowledge, effective conservation will be achieved only when critical habitats for the species receive appropriate protection. The status of this species, as one of the most endangered marine mammals in the world, more than justifies the implementation of effective conservation measures.

The two caves, in which direct evidence of the presence of seals was recorded, are already included in the

management plans for the core zone of the protected area of Akamas. It can therefore be assumed that these two locations will be protected, from the land side at least, with the implementation of the Akamas management plan. Appropriate protection measures also need to be designed for these caves as regards the adjacent marine area. Similar protection measures have to be envisaged for the other suitable-for-breeding areas recorded, and especially those of Cape Gata and Thalassines Spilies.

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*This poster was presented at the 8th International Congress on the Zoogeography and Ecology of Greece and Adjacent Regions, Kavala, Greece, 17-21 May 1999.*

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## Letters to the Editor

### Tourism in the Dock

J.J. Wilcox (TMG 3:1, [Tourism's Day in Court](#)) wonders if any type of legal action may be taken against those responsible in the tourism industry for the decline and regional extinction of the Mediterranean monk seal.

While the tourism industry is represented internationally by such bodies as the World Tourism Organization (WTO) in Madrid and the World Travel and Tourism Council (WTTC) in London, legal realities suggest that court action might be more successful if pursued against government institutions rather than private corporations and their international lobbying groups.

Indeed, the tourism interests that can be implicated in the decline and extinction of the Mediterranean monk seal operate in such a way as to imperil this species and its habitat in part because governments permit them to. It may therefore be reasoned that governments must be held accountable for not restraining the industry from its injurious impact upon the monk seal, and also for not establishing sufficient numbers of properly-guarded sanctuaries for the species.

Official inaction or laxness of this type can represent grounds for effective legal action under EC Directive 9243 of May 1992 (often known as the Habitats Directive).

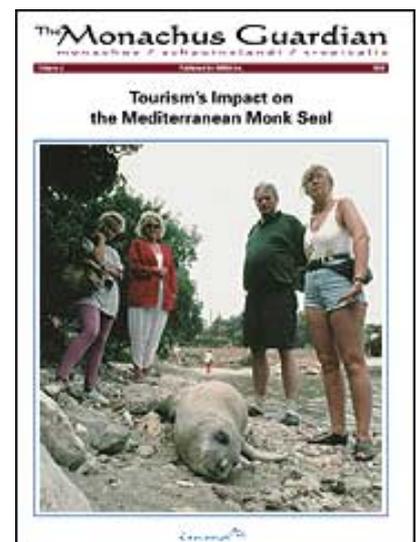
Following possible delays in implementation negotiated individually by governments, all European Union member states have the obligation to ratify and to transpose into national law, the directive duly adopted by the EC Commission.

If the directive has not been transposed as required within the specified timeframe, a citizen or an organization directly and personally concerned may sue before the EC Commission in application of article 169 of the EC Treaty. This permits the Commission to request from the state concerned the reason for its failure to meet its legal obligations. Should the state continue to default, the EC Commission may refer the case to the EC Court of Justice.

If, on the other hand, the directive has already been transposed into national law as required, but is not being effectively applied, other legal avenues can be pursued. In this case, any citizen or organization directly concerned by ineffective implementation of the law can sue before the court of that country, both to request proper application of the statute and to claim for damages.

*Xavier Jacques Bacquet, Avocat à La Cour, Paris*

✓ **Editor's note:** The Monachus Guardian conveys its thanks to the Bellerive Foundation for commissioning the legal opinion on which this letter is based.



### Your Humour

Re. [Surf's Up, Live! Maui on less than \\$500 a day](#) – Snapshots and outtakes from the 13th Biennial Conference on the Biology of Marine Mammals, Maui, Hawaii.

When do you plan to organize a Society of Marine Mammalogy Meeting in your neck of the woods?

*Paul Nachtigall, University of Hawaii, USA*

## Problems in Spain

While on vacation in southern Spain, I travelled to a cave outside of Ronda (Cueva de la Pileta). Among the old paintings on walls was something that looked like a monk seal. The Spanish guide told me then that there were sightings of monk seals along the rocky coast between Algeciras and Tarifa, but also that there were problems. Can you tell me what kind of problems?

*Richard Åkesson, Sweden*

✓ **Editor's reply:** Although effectively extinct in Spain, monk seal stragglers from Algeria and Mediterranean Morocco may make rare appearances in southern Spain. However, most observations in recent years have been around the Chafarinas Islands off Morocco and, to a lesser extent, the remote Isle of Alboran, lying virtually midway between Morocco and Spain. Intentional kills by fishers, accidental entrapment in fishing nets and collisions with boats have all been cited as causes of mortality. Lack of suitably protected and undisturbed habitat is blamed for discouraging the species from naturally recolonising the coasts of southern Spain.

## Price On Their Heads

I understand that the methodology and results can be controversial, but economists have made attempts to place a dollar value on certain endangered species. Would you know if anyone has attempted to do this for the monk seal?

*Donald Schug, USA*

✓ **Editor's note:** The Monachus Guardian would like to hear from anyone who can shed further light on this issue.

## Go Figure

What is the current population count of the Mediterranean monk seal (as of 2000)? How is that figure compiled?

*Craig Reineke*

✓ **Editor's reply:** Current population estimates for *Monachus monachus* range from 379 – 530 individuals. It is, however, a notoriously inexact science. Check out [The Numbers Game](#) in the International News section of TMG 3:1.

## Expanding Horizons

I am convinced that – with some work and goodwill – advocacy for the Mediterranean monk seal could expand beyond the exclusive range of a very few scientists and other concerned individuals into the larger (and therefore more vocal and powerful) range of the "general public." This could be accomplished without any expense: Environmental Defense (formerly Environmental Defense Fund or EDF) maintains an internet site known as ACTION NETWORK (<http://www.actionnetwork.org>) and is actually looking for other environmental organizations to join.

ACTION NETWORK is composed of many organizations. Periodically I receive emails from the environmental organizations I have registered with, which may, for example, ask me to write, call or email a legislator to urge him/her to vote for a stronger law to defend endangered species, or to ask the president of a company not to build a dam in the Philippines. The great part is, that if (as most times) I choose to contact these persons by email, a previously written email appears on my screen which I may personalise or change as I feel!

I may be idealistic, but if it works for 21 organizations, couldn't it work for a few more, too?

*Gian A. Morresi, USA*

## Hikers and Seals on Samos

Having visited the island of Samos in spring 2000, I only realized your information on the island's monk seals at [www.monachus.org](http://www.monachus.org) when I had returned home.

Now I'm preparing some fact sheets on Samos for friends who will organize hiking tours on the island next year [with each hiking group averaging 12-18 individuals). My questions:

1. Are the management plans for Seitani as proposed by MOm now being implemented. If not, what is the current state of play?
2. How should hikers behave when coming to Seitani? Or would you recommend not going there?

*Peter Merforth, Berlin*

✓ **Editor's reply:** A Special Environmental Study (SES), on which the management plan for the Seitani area of Samos will eventually be based, is still being developed by a private environmental consultancy firm commissioned by the Samos Prefecture. It will then have to undergo further scrutiny by the local authorities before the plan or any of its proposed measures are adopted. Opposition among certain factions, who would rather see the Seitani area developed for tourism, may further slow the pace towards a full protection that includes effective guarding and monitoring.

Seitani, lying on the northwest coast of Samos, was first declared "Strictly Protected" in 1980 by ministerial ruling, a decision that was eventually validated by Presidential Decree in February 1995. Although the Decree, by implication, strictly prohibits human activities in the core sector, without a management plan to define its structure, Seitani remains in a legal twilight zone. Regardless, the area is also identified as a Natura 2000 site, part of a network of protected areas being established under a European Union conservation plan for endangered species and habitats. MOm, Greece's leading monk seal conservation NGO, is pursuing the establishment of a number of Natura 2000 areas for the species, including the Fourni Islands-Samos complex, which incorporates Seitani (see TMG, *passim*). MOm has also provided specific monk seal protection proposals to the consultancy responsible for drawing up Seitani's management plan. These include two marine zones (200m and 500m wide) with regulations on fishing activities and boat traffic.

The aim of the Network 2000 areas – including Seitani – is to provide undisturbed habitat for a species that, in large part, is facing extinction precisely because of human harassment, persecution and disturbance. While it is unclear at present whether the Seitani management plan will allow public access – and if so, to what extent – people venturing into monk seal habitat anywhere should take the following precautions:

- Avoid entering sea caves that may provide shelter to monk seals.
- Keep talking and other noise to a minimum.
- Check beaches for seal presence from a distance, if possible. If a seal is observed on shore, stay at least 50 metres (165 feet ) away.
- If the seal shows signs of fatigue or illness, do not attempt to feed or to push it back into the sea.
- If in doubt, call MOm's emergency hotline in Athens: 01 5222 888 or 01 3304 688.
- If possible, keep a detailed record of your sighting and pass it on – together with copies of any photographic or video material – to: MOm, Solomou Str. 18, GR-10 682 Athens.

## When fishermen save seals

I am writing this letter in response to the Cover Story of The Monachus Guardian 3(1) May 2000 [[When Fishermen Save Seals](#)], relating to the entanglement of monk seals in fishing gear as an extinction factor.

In your article, you argue that "...incidental entanglement in fishing gear [is] considered a major threat contributing to the overall decline of the species..." Although I do not disagree that accidental capture in nets is a threat for the endangered monk seal population in the Eastern Mediterranean, this threat should be put in its proper perspective, based on the most recent scientific evidence available.

In support of your argument you present abundant evidence from several regions of the species' range. However, most of this work was conducted during past decades and almost all of it was based on fishermen's or layperson's reports. I would like to draw your attention to our recent article, Causes of Mortality in the Mediterranean Monk Seal in Greece ([Androukaki et al. 1999](#). Contributions to the Zoology & Ecology of the Eastern Mediterranean Region 1(1999): 405-411), that for the first time addresses the causes of death in this species through direct evidence from necropsies rather than from anecdotal reports from fishermen.

Although our paper does cite accidental death by entanglement in fishing gear as a mortality factor, it is by no means one of the main threats to the species. Unfortunately, deliberate killing remains the main source of mortality, accounting for 43% of the deaths of adult/juvenile animals. Natural mortality is high, accounting for 91% of the pups found dead. Accidental deaths in fishing gear account for the 12% of the total deaths recorded. All animals found dead by drowning in fishing nets are juveniles ranging from 1.5 - 4 years old. It

therefore seems that this is also the most vulnerable section of the population. This could be explained by the fact that these animals, although able to live independently, are not as strong and skilful as the adults. Lacking experience, they are less cautious when collecting fish from static nets and therefore risk entanglement.

Fortunately, in Greece, licenses were never issued for driftnets, which are far more harmful than traditional static nets for marine mammals.

In a strategy based on experience and the results of scientific research, MOm has concentrated its efforts on the protection of the monk seal's main breeding sites in the Aegean and Ionian seas. Our projects here include sensitizing the general public and persuading fishermen not to kill the seals (also using compensation measures, continuous patrolling in the protected areas, and proposing to the government sustainable management of fish stocks).

The example of the National Marine Park of Alonissos, Northern Sporades is encouraging, where combined efforts in field research, sensitization of the public, compensation and continuous patrolling of the protected area, have furnished positive results. No deliberately killed seal has been recorded over the last 10 years, while the monk seal population appears to be stable. Although the traditional fishery with static nets and longlines is still permitted in the Park (except in the core zone), no incidents of seals drowning in nets have been reported, although this possibility cannot be excluded.

The application of the same rationale to Kimolos in the Cyclades and Northern Karpathos in the Dodecanese, areas recently confirmed as important monk seal breeding sites, will lead to the establishment of a network of protected areas in the Greek archipelago. The achievement of this too long awaited goal provides us with hope for the effective conservation of the most important population of the species.

*Jeny Androukaki*, Rehabilitation Program Co-ordinator, MOm, Athens.

**The editor reserves the right to edit letters for the sake of clarity and space**

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