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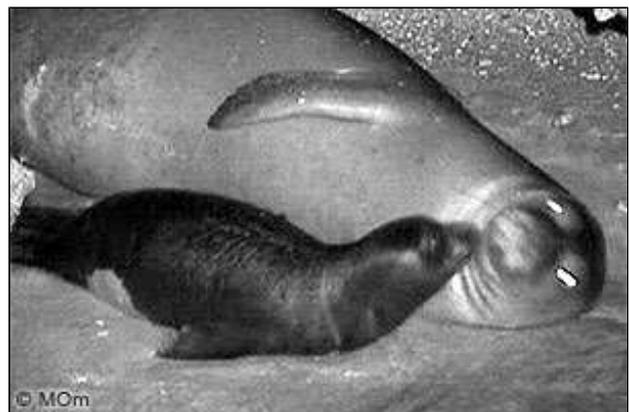
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Vol. 10 (2): November 2007

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## Guest Editorial

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### Banking on Conservation

by Vrassidas Zavras

In 2005, I joined Piraeus Bank as Head of its newly-formed Environmental Department. This followed some 16 years at MOM, the Hellenic Society for the Study and Protection of the Monk Seal, where among a group of talented colleagues, I helped develop the organisation and implement its programmes in research, conservation and public outreach.

There were ups and downs, victories as well as disappointments – a fact of life to grassroots organisations engaging with governments, industry and the general public on issues as critical as the need for responsible stewardship of the environment and the promotion of sustainable development.

After years of campaigning, May 1992 saw the inauguration of Greece's First National Marine Park of Alonnisos, Northern Sporades, protecting the Mediterranean's largest surviving colony of monk seals. Operating our own fast patrol boat, we instituted the first guarding activities within the core zone of the Park, working closely with the local Port Police authorities. Elsewhere, we discovered important monk seal colonies in Kimolos in the Cyclades, and Karpathos in the Eastern Aegean. Eventually we succeeded in having these new monk seal habitats included in the Natura 2000 network of European protected areas. At the same time, it remains an uphill battle to convince those who need to be convinced that protected areas, no-fishing zones and other environmental measures are not anti-development but a means by which economic opportunities are created or sustained. Managed ecotourism, for example, that serves an increasingly high-profile international demand, and no-fishing zones that act as fish nurseries, and at the end of the day benefit coastal fishermen and their families.

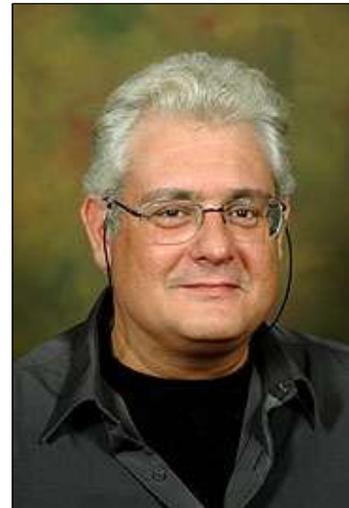
My departure for the Corporate Social Responsibility sector did not mark a departure from monk seal conservation – far from it. Piraeus Bank continues to support the rescue and rehabilitation of orphaned monk seal pups in Greece as a longstanding sponsor of MOM's initiatives, and in a personal capacity, I continue to serve on MOM's Board of Directors.

With increasing concerns over global warming and environmental impacts generally, one of my chief responsibilities at the Environmental Department is to maximise Piraeus Bank's own environmental efficiency.

In keeping with its longstanding commitment to both environmental and social responsibility, Piraeus Bank recently launched an ambitious 3-year initiative in an effort to meet that challenge – the '[GREENbanking4Life](#)' project.

GREENbanking4Life recognizes that we all have impacts upon our environment – businesses and private individuals alike. Banks are no exception.

Supported by the European Union's LIFE ENVIRONMENT financial instrument, GREENbanking4Life is implementing a range of actions designed to reduce the Bank's ecological



footprint, reduce energy consumption, improve recycling, and bring innovative 'green banking' opportunities to its corporate and individual clients.

The Ecological Recycling Society, a Greek NGO, is partnering Piraeus Bank in the project.

The initiative also marks a 'first' for the EU, in that it is the first time that the LIFE ENVIRONMENT financial instrument has supported a bank in implementing its environmental policy.

Among specific targets, the Bank has committed itself to achieving recycling targets of 70% in its disposed paper, 50% of PET plastics and 70% of toners and ink cartridges. It also aims to reduce water consumption overall by 30%, and to achieve an overall reduction in transport of 5%. Additionally, it intends that 80% of its cleaning products be eco-labelled, and for 80% of all A4 paper it uses be recycled.

GREENbanking4Life is also deploying renewable energy systems in some of the Bank's branches, including the installation at four of its branches in Greece of Building Integrated Photovoltaic (BIPV) solar systems. It is expected that these installations will be completed and switched on during the summer of 2008.

Other key targets include designing and launching green banking products that promote environmentally friendly investments, and encouraging businesses and private individuals to invest in renewable sources of energy.

While some might consider the environmental efforts underway at the Bank a far cry from the cause of the monk seal, I would have to disagree; for if monk seal conservation has taught us anything over the years it is that the species is an ecological symbol of the health of the planet – our health. Ultimately, it will only be through more sustainable living by humans that critically endangered species, like the monk seal, will have a fair chance to survive.

**Vrassidas Zavras**, Athens, November 2007.

Vrassidas Zavras is the Head of the Environmental Department at the Piraeus Bank.



## International News

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### Balearic Islands renews TMG support

The Monachus Guardian is pleased to announce that the Government of the Balearic Islands, Spain, has decided to renew its financial support of the journal and website for another year. This modest but important grant will help us continue reporting news and opinion about monk seal and marine conservation issues from across the current and former range of the species.



The grant, together with the indispensable translation efforts of Toni Font, consultant to the Balearic Islands Government, also permitted a Spanish version of the journal to be published in 2006. This marked a “first” for the Guardian, and also helped bring the plight of the monk seals and their threatened habitats to an even wider international audience.

With the renewed grant, a Spanish language version of the 2007 TMG editions will appear shortly.

The Spanish translation can be accessed at <http://www.monachus-guardian.org/spanish>, or through TMG's home page via the linked flag.

Anyone wishing to discuss the possibilities of arranging or funding translations into other languages (for instance, Arabic, Greek, Turkish) is kindly requested to contact the [editor@monachus-guardian.org](mailto:editor@monachus-guardian.org).

### Agreement might save the Mediterranean monk seal, claims CMS

Adeje, Tenerife, Spain, 18 October 2007 – A new Memorandum of Understanding (MoU) for the protection of the Eastern Atlantic Populations of the Mediterranean monk seal was concluded under the auspices of CMS [reports the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals].

The Islamic Republic of Mauritania, the Kingdom of Morocco, the Republic of Portugal and the Kingdom of Spain signed the agreement in Adeje at the margins of the CMS meeting on Western African Talks on Cetaceans and their Habitats (WATCH). The agreement will be open for signature to all the Atlantic range states.

Since 1986, the populations of Mediterranean monk seals have been at the centre of the Mediterranean Action Plan of UNEP. The Mediterranean monk seal has also been a main focus of CMS conservation measures for marine mammals. The Mediterranean monk seal is one of the most threatened marine mammals in the world and is listed on the Appendices of the Convention. Only approximately 500 Mediterranean monk seals remain in the wild. Appendix I listing commits member states to ban seal hunting and capture and to conserve its habitat to counteract factors impeding migration. This includes surveying other threat factors as well as preventing disturbance to the species.



CMS



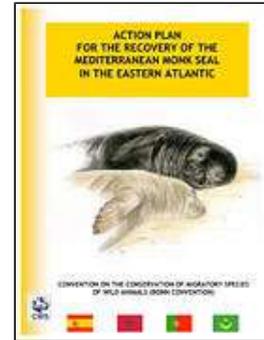
UNEP

Monk seal populations play an important role in coastal and marine ecosystems. But natural phenomena and the development of human activities have significantly reduced them. The Eastern Atlantic Populations of the Mediterranean monk seal greatly suffer from entanglement and mortality in fishing gears, over fishing, hunting and human persecution, pollution, as well as from natural factors such as toxic phytoplankton. In addition, destruction of breeding sites and

collapsing breeding caves further accelerate habitat loss. As a result of the alarming conservation status – no more than 500 seals remain in the Mediterranean and along the Eastern Atlantic coastline – IUCN has classified the species as Critically Endangered.

The species has disappeared from most of its distribution range, except for a few isolated groups. There are two breeding colonies of Mediterranean monk seal in the Eastern Atlantic: one on the Desertas Islands (Madeira) and the other on the Cabo Blanco Peninsula (Morocco-Mauritania). Since the colonies are probably isolated demographically and genetically with less than 200 seals each concentrated along a few kilometres of coastline, experts regard its status in the Atlantic as very critical.

Over the last years, an Action Plan for the Conservation of the Eastern Atlantic monk seal was elaborated and finally approved at the Eighth Meeting of the Conference of the Parties to CMS, held in Nairobi, Kenya in November 2005. CMS Executive Secretary Robert Hepworth said: “The Action Plan provides a new focus for cross-border monk seal conservation by identifying the obligations of the range states. It is the first time that monk seal conservation actions in the Atlantic region have been approached in a spirit of international co-operation. This instrument is a significant step towards improving the conservation status and the habitat of the Eastern Atlantic monk seal throughout its range in cooperation with the four signatory states.”



The Action Plan lays down the procedures to implement co-ordinated actions. It provides a means to combine programmes from different states, local and private organizations into efficient, co-ordinated efforts, which should lead to the recovery of the depleted population of the species. The immediate goal is to stop the decline and, in medium term, promote recovery.

The Action Plan will include measures to evaluate the status and threats to monk seals and increase monk seal populations. The main action is the creation of a Network of Special Areas of Conservation for the Monk Seal (SACMS) to help restore populations. Increased liaison and coordination between the Barcelona Convention and CMS is expected to promote the conservation of the species.

CMS and its partners are looking forward to seeing recovery for the situation of the monk seal. The CMS Secretariat is confident that the new agreement will prevent the only pinniped in the Mediterranean from becoming extinct. – Moulay Lahcen El Kabiri, UNEP/CMS.

### Further information

**Convention on the conservation of migratory species of wild animals (CMS).** 2005. Action Plan for the Recovery of the Mediterranean Monk Seal (*Monachus monachus*) in the Eastern Atlantic. Prepared by the Working Group of the Mediterranean Monk Seal in the Eastern Atlantic for the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention): 1-104. [[PDF](#) 3.9 MB]

### Publications Watch

We take the opportunity of alerting our readers to the following publications, on protected area management and funding, and fisheries.

**Becker, N. and Y. Choresch.** 2006. Economic Aspects of Marine Protected Areas (MPAs). Ed: UNEP-MAP RAC/SPA, Tunis: 1-68. [[PDF](#) 1.7 MB]

“Marine Protected Areas are subject to conflicting uses,” the authors write. “As such, decision making analysis with respect to their management should be made on a sound base. This book was devoted to introduce the reader to the concept of economics, how it is implemented to natural resources management and especially how it could be applied to MPAs.”



**E.C.** 2007. Guidelines for the establishment of the Natura 2000 network in the marine environment. Application of the Habitats and Birds Directives. European Commission – Environment: 1-112 + appendices. [PDF 1.7 MB]

“The need to fully apply the Habitats and Birds Directives to the offshore marine environment of the European Union, especially with regards to the establishment of the Natura 2000 network, represents a key challenge for EU biodiversity policy in the coming years.

The establishment of a marine network of conservation areas under Natura 2000 will significantly contribute, not only to the target of halting the loss of biodiversity in the EU, but also to broader marine conservation and sustainable use objectives.

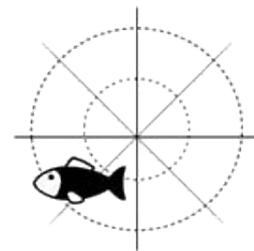
To date there have been relatively few Natura 2000 sites identified for the offshore marine environment and this represents the most significant gap in the Natura network.”

Appendices and related information at [EUROPA > European Commission > Environment > Nature & Biodiversity](#).



**FAO.** 2007-. [Marine Protected Areas as a tool for fisheries management \(MPAs\)](#).

“This web site is part of the programme implemented by FAO for a better understanding of the contribution of MPAs to fisheries management, and the identification and promotion of best practices and integrated approaches to MPAs. A set of current issues regarding the use of MPAs as a tool for fisheries management is introduced, including links to external internet resources of interest. A specific section presents the guidelines being prepared by FAO, on the design, implementation and testing of MPAs.”



**MedPAN.** 2007. Map of Mediterranean MPAs. MedPAN – The Network of Managers of Marine Protected Areas in the Mediterranean, <http://www.medpan.org>. [PDF 792 KB]

This poster, produced by the Office de l'Environnement of Corsica, delineates some 93 marine protected areas that currently exist in the Mediterranean, from the Straits of Gibraltar in the west to Syria in the east. The key presents MPAs by country, listing dimensions in hectares.



## EndQuote

### All Creatures great, small and disappearing

Ever caught a glimpse of the secretive Iberian lynx? Or heard the croaking bark of a Mediterranean monk seal? If not, and you want to do so, you had better hurry because pollution and habitat degradation have pushed both species to the brink of extinction.

According to a recent study by the Switzerland-based World Conservation Union (IUCN) human activity is threatening 15 percent, or almost one-sixth of Europe's total land mammal population. Among marine mammals the situation is even more grave, with some 22 percent of total numbers being inexorably pushed towards annihilation.

The IUCN's recently published [European Mammal Assessment](#) identified 17 European mammal species that are "vulnerable," seven that are "endangered" and six that are "critically endangered."

The Mediterranean monk seal population, for example, has now dwindled to just 350-450 individuals...

“This new assessment proves that many European mammals are declining at an alarming rate,” says IUCN Director-General Julia Marton-Lefèvre, a position echoed by the EU's Environment Commissioner Stavros Dimas.

“The results of the report highlight the challenge we currently face to halt the loss of Europe's biodiversity,” said Dimas. “It is clear that the full implementation of the Habitats Directive (adopted by the EU in 1992 to safeguard Europe's endangered wildlife) is of the utmost importance to protect Europe's native mammals...”

[All creatures great, small and disappearing](#), CNN.com Science and Space, June 12, 2007.



## Hawaiian News

Vol. 10 (2): November 2007

### NOAA signs new Hawaiian Monk Seal Recovery Plan

NOAA Fisheries Service signed and implemented a new Hawaiian Monk Seal Recovery Plan in a ceremony held on 22 August at the Waikiki Aquarium. This is the first time changes have been made to the plan since it was originally drafted in 1983. The Hawaiian monk seal is one of the world's most endangered species, and this recovery plan is designed to help save the species from extinction.

Sen. Daniel K. Inouye and William T. Hogarth, Assistant Administrator for NOAA Fisheries Service, spoke at the ceremony, while a host of honored guests including volunteers, NOAA staff, and organizations that contribute to monk seal recovery efforts looked on. NOAA Ocean Service's Assistant Administrator John H. Dunnigan attended as well, representing NOAA's National Marine Sanctuary Program which will be involved in future recovery efforts for the monk seal through coordination with the new [Papahānaumokuākea Marine National Monument](#).

Recovery plans are designed to describe the threats facing the species and the actions needed to address those threats, under an Endangered Species Act requirement. Although the monk seal population remained stable in the 1990s, the Hawaiian monk seal is in crisis because the population is now declining at a rate of about 4 percent per year.

Biologists estimate the current population at about 1,200 individuals. Biologists' models predict the species' population will fall below 1000 animals within the next three to four years. This places the Hawaiian monk seal among the world's most endangered species.

"The Hawaiian monk seal is a treasure to be preserved for future generations," said Hogarth. "This new recovery plan is a positive step to save them from possible extinction."

For more than two decades, NOAA scientists have worked to manage and study the population. Although their numbers would be much lower if nothing had been done, significant and potential threats continue to threaten this species. Most importantly, very low survival of juvenile animals, believed to be principally related to food limitation, has persisted for many years across much of the population. Unless the numbers of young females increase, biologists fear there will not be enough reproductive animals in the population for recovery to occur.

This new version of the recovery plan is significant since it addresses these and other threats, and details the management and research needed to give monk seals the best chance for survival. Although most of the monk seal population is found in the Northwestern Hawaiian Islands, now part of the Papahānaumokuākea Marine National Monument; the new plan also addresses the growing population in the main Hawaiian Islands.

Senator Daniel K. Inouye said, "The Hawaiian monk seal is the only species of seal in the world whose natural habitat is entirely contained within the borders of a single nation – the United States of America. As a nation, therefore, we bear a grave responsibility – a responsibility that falls most directly on us, here in Hawaii, who are closest to this most cherished of marine mammals. I am



William T. Hogarth, Assistant Administrator of NOAA Fisheries Service, signing the new Hawaiian Monk Seal Recovery Plan at a ceremony at the Waikiki Aquarium on Wednesday, Aug. 22. With him to celebrate the recovery plan are from left, U.S. Sen. Daniel K. Inouye of Hawaii, William L. Robinson, the Pacific Islands Regional Administrator, and John H. Dunnigan, Assistant Administrator for NOAA's Ocean Service.

pleased to report to you that in my estimation, we have risen to meet the challenge. For over ten years, we have studied and intervened on the monk seal's behalf. From direct observation and protection of monk seal populations, to careful surveys of their habitat, to the development of management principles to preserve their environment, the plan we announce today rests securely on a history of intense dedication and commitment.”

The [National Oceanic and Atmospheric Administration](#), an agency of the U.S. Commerce Department, is celebrating 200 years of science and service to the nation. From the establishment of the Survey of the Coast in 1807 by Thomas Jefferson to the formation of the Weather Bureau and the Commission of Fish and Fisheries in the 1870s, much of America's scientific heritage is rooted in NOAA.



Hawaiian monk seal swimming offshore.

[NOAA Fisheries Service](#) is dedicated to protecting and preserving our nation's living marine resources and their habitat through scientific research, management and enforcement. NOAA Fisheries Service provides effective stewardship of these resources for the benefit of the nation, supporting coastal communities that depend upon them, and helping to provide safe and healthy seafood to consumers and recreational opportunities for the American public. – NOAA, 22 August 2007.

### Further information

**NMFS.** 2007. Hawaiian monk seal (*Monachus schauinslandi*). 5-Year Review: Summary and Evaluation. National Marine Fisheries Service Pacific Islands Regional Office, Honolulu, Hawaii, August 2007: 1-15. [PDF 260 KB]

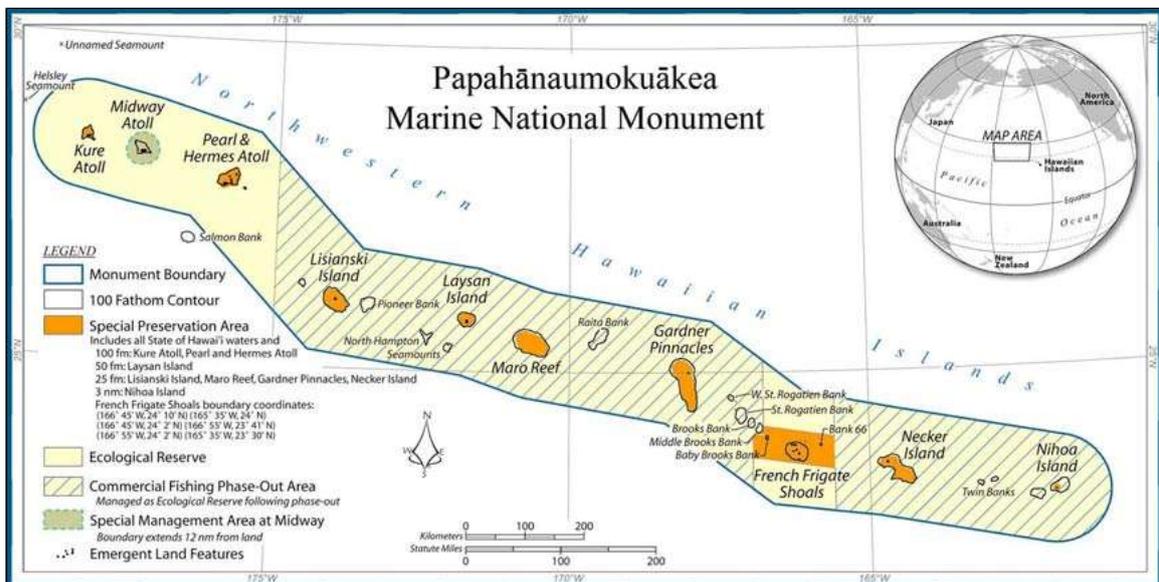
**NMFS.** 2007. Response to Public Comments on the Recovery Plan for the Hawaiian Monk Seal (*Monachus schauinslandi*). National Marine Fisheries Service Pacific Islands Regional Office, Honolulu, Hawaii, August 2007: 1-6. [PDF 25KB]

**NMFS.** 2007. The Hawaiian monk seal, in the Northwestern Hawaiian Islands, 2003. Thea C. Johanos, Jason D. Baker (eds.). NOAA Technical Memorandum NMFS-PIFSC-9, March 2007: 1-161. [PDF 16.2MB]

**NOAA.** 2007. Recovery Plan for the Hawaiian monk seal (*Monachus schauinslandi*). Revised. National Marine Fisheries Service, National Oceanic and Atmospheric Administration: 1-165. [PDF 1.2MB]

### First federal enforcement case in NWHI Monument

The National Oceanic and Atmospheric Administration (NOAA) announced in August that it had charged the owner and operator of a U.S. vessel with unlawfully fishing in the [Papahānaumokuākea Marine National Monument](#). This case is the first federal enforcement action taken since President Bush declared the area around the Northwestern Hawaiian Islands a marine national monument on June 15, 2006.



NOAA issued a Notice of Violation and Assessment (NOVA) of civil penalty in the amount of \$61,000. The NOVA was issued to ASTARA Company LLC, the owner, and Robert Flores, the operator, of the fishing vessel ASTARA for alleged violations in the Papahānaumokuākea Marine National Monument.

The NOVA includes three counts of entering the monument and unlawfully harvesting monument resources. The owner and operator also are charged with possessing fishing gear that was not stowed or unavailable for use. The NOVA includes an additional count of failing to possess a valid Hawai'i longline permit, which is not a monument violation but is in violation of other federal regulations.

While commercial bottom-fishing continues to be allowed in the monument for a limited time for those already in possession of valid Federal bottom-fish permits, all other commercial and recreational fishing is prohibited in the monument.

"NOAA takes its stewardship responsibilities in the new monument seriously," said Dale Jones, director of NOAA's Office for Law Enforcement. "The monument is spread over an immense area in a relatively remote location. It is home to a wide variety of natural resources including the endangered Hawaiian monk seal and threatened and endangered sea turtles. The monument co-trustees are committed to enforcing the prohibitions established by the Presidential Proclamation and protecting these resources through hard work and the cooperative efforts of law enforcement partners like the U.S. Coast Guard."

Following receipt of the NOVA, the vessel's owner and operator may admit the alleged violations and pay the assessed civil penalty, attempt to resolve the matter through settlement or request a hearing in front of an Administrative Law Judge (ALJ). They may appeal any adverse decision by the ALJ to the NOAA Administrator and then to the U.S. District Court.

The Papahānaumokuākea Marine National Monument is managed jointly by three co-trustees – the Department of Commerce, Department of the Interior and the state of Hawai'i – and represents a cooperative conservation approach to protecting the entire ecosystem. The monument area includes the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, the Midway Atoll National Wildlife Refuge/Battle of Midway National Memorial, the Hawaiian Islands National Wildlife Refuge, the Hawai'i State Seabird Sanctuary at Kure Atoll, and Northwestern Hawaiian Islands State Marine Refuge. – NOAA, 21 August 2007.

### **DLNR charges suspect in monk seal net drowning case**

The Department of Land and Natural Resources for Hawaii ([DLNR](#)) has charged a Wai'ānae man with violations of state lay gillnet rules which are believed to have caused the death of a male monk seal that became entangled in a net set in waters offshore of Makua beach.

Necropsy of the seal, conducted by NOAA's Fisheries Service, revealed that the seal's death was probably caused by drowning. Another monk seal death attributed to drowning in a lay gill net occurred on October 16, 2006 near the Makai Pier on O'ahu, making the total two deaths within a 12 month period.

On Sunday May 27, about 4 p.m. a DLNR Division of Conservation and Resources Enforcement (DOCARE) officer on routine patrol of the state Makua Beach Park was stopped by a park visitor who reported that a monk seal was stuck in fishing net offshore and might be dying. The witness also reported that a second seal might also be entangled.

The officer swam out to the seal about 100 feet from shore and dived down to find the seal entangled in a gillnet, and floating head down in about 20 feet of water. The seal appeared to be



Entanglement remains one of the most serious mortality factors and causes of decline affecting the Hawaiian monk seal. Here, a monk seal is being rescued from entanglement in marine debris.

dead. The officer was able to cut the seal free, and with the help of two beachgoers was able to haul the body onto the beach.

"We are saddened by the tragic death of this rare endangered Hawaiian monk seal," said Allan Smith, DLNR interim chairperson.

"We commend and thank the witnesses who were on scene, for their prompt action and assistance. A second and perhaps a third monk seal death may have been prevented by their actions, since at least two other seals were in close proximity to the dead seal and gillnet. I would also like to commend our Conservation and Resources Enforcement Officer who tried to save the seal," said Smith.

DLNR Conservation Enforcement Officers began an investigation into the circumstances surrounding the seal's death and were later joined by the NOAA Fisheries Service, Office of Law Enforcement (OLE).

On Friday June 1, 2007, a man identified at the scene on the day of the seal's death, John P. Kahalekii, 52, was charged with violations of DLNR Hawai'i Administrative Rule 13-75-12.4 for failure to visually inspect his gillnet; failure to register the lay net; and deployment of a lay net longer than 125 feet in length.

The person charged is cooperating with the continuing investigation. Additional state and/or federal charges are possible.

Violations of state gillnet rules relating to the killing of an endangered species is punishable by a fine of up to \$5,000 and a jail term not to exceed 30 days or both for the first offense when it involves an endangered species. Persons responsible for the death of an endangered species like the Hawaiian monk seal may be made to pay the state restitution and an additional fine of up to \$10,000 for each specimen of an endangered species killed.

"We urge net fishers to follow all applicable rules and use their nets in a responsible fashion," said Dan Polhemus, Division of Aquatic Resources administrator. "Continued violations of this type can put the State in a difficult position in terms of compliance with the Endangered Species Act, and it would be very unfortunate if the actions of a few individuals were to compromise the future use of nets by fishers state-wide."

"This Hawaiian monk seal death was preventable and can only be viewed as tragic, unnecessary and unacceptable" said Gary D. Moniz, DLNR Chief of Enforcement. "To make matters worse our investigation has revealed that the lay (gill) net used in this case was illegally deployed and did not meet current net use requirements".

DLNR urges anyone who witnesses a monk seal entanglement or any other marine-related violation to call the NOAA Fisheries hotline for marine mammal health issues (including strandings and entanglements) at 1-888-256-9840.

Or call DLNR's new 24 hour DLNR Hotline at 643 – DLNR (643 – 3567) to report these and other natural resource violations as quickly as possible.

Please try to obtain as much detailed information about the violation as possible so that investigating officers can follow-up and confront the violators.

Information that is helpful to an investigation includes vehicle license plate numbers, colour, make and model of vehicles and boats, physical descriptions of the violators, names of the violators if known, boat and trailer identification numbers, and details of incident. It is also important to leave a contact phone number or e-mail address so that conservation officers can call back and clarify the information received. – DNLR, 7 June 2007.

## **Oahu Monk Seal Response Team**

Currently a team of approximately 50 volunteers routinely assist NOAA's Pacific Island Regional Office (PIRO) and Pacific Islands Fisheries Science Center (PIFSC) in monk seal response issues. Volunteers assist with the following:

- Responding to seals hauling out to rest and providing a 'seal protection zone' to protect them from disturbance.
- Providing public passersby with information about the Hawaiian monk seal and its endangered status.
- Monitoring monk seal pupping events.
- Reporting animals in distress (due to hooking, entanglement or otherwise) and standing by until help arrives.

If you are interested in volunteering with the Oahu Monk Seal Response Team or would like more information please contact [david.schofield@noaa.gov](mailto:david.schofield@noaa.gov), Marine Mammal Response Coordinator at [PIRO](#). – PIRO/NOAA.

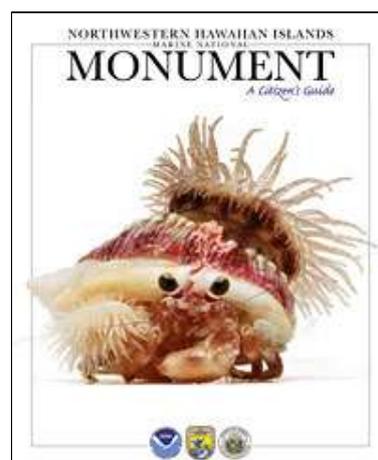
## Papahānaumokuākea info

Wide-ranging information on the [Papahānaumokuākea Marine National Monument](#) is becoming available through the protected area's website.

Announcements and periodical newsletter updates are also available by email by subscribing to the [List Serve](#).

Apart from other reports and news published online, the site is also making available for download a beautifully-illustrated 15-page Citizen's Guide to the NWHI monument and its inhabitants, published by NOAA, the U.S. Fish and Wildlife Service, and the State of Hawaii.

Northwestern Hawaiian Islands Marine National Monument. 2007. A Citizen's Guide. National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, and the State of Hawaii: 1-15. [[PDF](#) 2.9 MB]



Citizen's Guide.

## NOAA to release Monument Science Plan framework

NOAA will present its framework for developing the Natural Resources Science Plan for the NWHI Monument at a scoping meeting on November 15, 2007, reports [KAHEA](#).

The framework, in principle, will form the founding guidance on which the NWHI Natural Resources Science Plan will be developed. Ultimately, the Natural Resources Science Plan will determine what kind of research is allowed and funded in the Monument, and when and where it will occur. The public will have a mere 15 days to review and provide input on this important piece of Monument planning.

KAHEA is working with partner organizations to ensure that the Natural Resources Science Plan addresses the information needs for the proper management of the NWHI. In preparation for the 15-day window for public comment, we have provided some useful background information: a summary of 100 scientists' consensus on the research and information needs of the NWHI [[PDF](#) 420 KB]. – KAHEA.

## Press Watch

### Man films self harassing seal Myspace video could cost him \$25,000

An Alaska man who posted an online video that appears to show him harassing a Big Island monk seal might be in trouble with federal authorities.

Conservation officials say the incident has been referred to federal agents, and the 22-year-old man from Juneau, identified on his Myspace Web site simply as Chris, could face a \$25,000 fine

under the Endangered Species Act and the Marine Mammal Protection Act.

Titled "This thing wanted a piece of me," the Aug. 19 video on myspacetv.com shows a furious mother seal making repeated charges at the camera on what local scientists believe is a remote stretch of beach on the northern shore of the Big Island.

At one point, the mother appears to partially roll on top of her pup. Baring her teeth and lunging, the animal chases the camera, letting out hissing yelps. By the time the 21/2-minute video concludes, the animal appears exhausted. [...]

The posting brought an outcry from the local marine science community and from many Web site viewers, who berated the man in blog postings. [...]

"The point we would like to stress is that the individual in question was harassing a mother seal with a newborn nursing pup, and this is a most critical stage for the species development and survival," said Jason Turner, assistant professor at the Marine Science Department of the University of Hawaii and Hilo.

There are between 80 and 120 monk seals in the Main Hawaiian Islands. Only eight to 12 new pups are born each year. It is recommended that people stay at least 150 feet away from monk seals, and it is illegal to kill, capture or harass the animals.

"Harassing a monk seal is bad, but harassing a mom and pup is really bad," [David] Schofield said [marine mammal response coordinator for the National Oceanic and Atmospheric Administration offices on Oahu]. "We need every pup to survive. If she's stressed, the mother may abandon the pup. The pup was only about a week old when this individual did what he did." [...] (Bret Yager, Tribune-Herald, 8 September 2007)

[http://www.hawaiitribune-herald.com/articles/2007/09/08/local\\_news/local02.txt](http://www.hawaiitribune-herald.com/articles/2007/09/08/local_news/local02.txt)

### **Monk seal moves to more isolated digs Federal crews remove the 13-month-old beast from a populated area**

Wildlife officials have relocated an overly "friendly" young Hawaiian monk seal from the Big Island's North Kohala Coast to a less populated area on the Puna Coast.

The 13-month-old female was "becoming friendly with people, letting people pet her and swim with her," said David Schofield, marine mammal response coordinator for the National Oceanic and Atmospheric Administration's Pacific islands region.

It is hoped the more remote location will allow the seal, dubbed "O-42" by scientists, "to have a second try at her childhood and learn to grow up as a monk seal, not a person," Schofield said yesterday. [...] (Diana Leone, Honolulu Star Bulletin, 28 August 2007)

<http://starbulletin.com/2007/08/28/news/story08.html>

### **We cannot risk losing Hawaiian monk seal**

Some 100 years ago, Mark Twain called Hawai'i "the loveliest fleet of islands that lies anchored in any ocean." We have shamefully squandered much of Hawai'i's beauty, and the Islands now have the dubious distinction of being the endangered species capital of the world.

One of those endangered species is the Hawaiian monk seal, endemic to the Hawaiian Islands, with a population in critical decline. Limited food sources, marine debris and human interaction have taken their toll. The seals are also an easy prey for sharks.

Last week, the National Oceanic and Atmospheric Administration Fisheries Service implemented a recovery plan to turn around that decline. NOAA hopes to get at least \$1.8 million in federal money next year to set up a captive care program to feed and protect juvenile female seals. The plan details more than \$30 million in funding over the first five years.

It will be tempting for Congress to make protecting Hawaiian monk seals a low priority. That would be a mistake – what must not get lost is our responsibility to be good stewards of the land and sea. [...] (Opinion, The Honolulu Advertiser, 27 August 2007)

<http://www.honoluluadvertiser.com/apps/pbcs.dll/article?AID=/20070827/OPINION01/708270303/1105/OPINION01>

## **With monk seal pups dying, new help on way Efforts around Hawaiian islands shifts from protection to reproduction**

HONOLULU - Young female Hawaiian monk seals will be raised in captivity as part of a new plan to save their diminishing population from extinction.

The federal recovery plan will nab about 50 malnourished young seals each year, put them in protective custody to help them survive their early years, and then release them back into the ocean to start new families. [...]

This plan is a departure from previous efforts to save the monk seals because it emphasizes breeding instead of protection from predators like sharks, said William Hogarth, assistant administrator for the National Oceanic and Atmospheric Administration's Fisheries Service.

"What we've been doing has not been working, and now we need to focus on reproduction," Hogarth said at a ceremony Wednesday at the Waikiki Aquarium where he signed the recovery plan. [...]

To start, the program will cost \$1.8 million per year in federal money, which Hawaii Sen. Daniel Inouye said he would work to provide.

"Well-meaning citizens come up to me almost every day saying, 'Why spend money saving a seal? Don't we have enough?'" Inouye said at the aquarium. "I want my grandsons and ... granddaughters to see a monk seal – a live one, not a toy, not a poster." (MSNBC, 24 August 2007)

<http://www.msnbc.msn.com/id/20424401/>

## **Saving monk seals A new program aims to protect the animals from starvation in their first years of life**

Helping Hawaiian monk seals survive their crucial first few years is the key to a new recovery plan for the endangered species announced yesterday. The National Oceanic and Atmospheric Administration hopes that bolder steps will reverse a steep decline in the number of seals.

"As most of you know, the Hawaiian monk seal is in crisis, declining at a rate of 4 percent a year," William Hogarth, NOAA Fisheries administrator, told Hawaii wildlife professionals and supporters yesterday at the Waikiki Aquarium. The current population of 1,200 seals is expected to drop below 1,000 in the next three to four years, Hogarth said. [...]

The biggest threats to the seals are starvation at an early age or being killed by Galapagos sharks or entanglement in marine debris.

"Outside of Hawaii, very few people are aware of monk seals," said U.S. Sen. Daniel Inouye, D-Hawaii. "We who are interested should make it a point to tell other people about the monk seal and why it's important." Inouye said he will seek \$2.6 million for the monk seals this year, which would amount to about \$2,100 per living seal.

"He will do whatever it takes to keep the monk seals from extinction," Hogarth said of Inouye. NOAA's recovery plan calls for \$30 million in spending over the next five years to:

- Capture and care for a number of young female seals each year, then release them back to the wild.
- Continue study of monk seals' food supply.
- Continue removal of marine debris from the Northwestern Hawaiian Islands, where a majority of monk seals live. [...] (Diana Leone, Honolulu Star Bulletin, 23 August 2007)

<http://starbulletin.com/2007/08/23/news/story03.html>

## **Endangered Hawaiian Monk Seal Population Continues to Decline**

[...] Anthropologist Joe Heacock is one of a handful of dive masters who take small groups to the remote waters near Niihau Island to see the seals. "A true seal is perfectly made for water, totally

hydrodynamic and you see their little flippers do this little side to side switch thing... they are fast and beautiful."

For the past three years, Heacock has taken more than 1,000 divers to see the seals in their natural habitat along dramatic lava formations and vertical rock walls running 90 meters straight down. A solitary monk seal often stays close to the divers.

"Monk seals are the most endangered marine mammal we have in the United States, so there is a lot of concern about making sure that they will be around for future generations to see," said Heacock. "But from what biologists are saying we may only have 12 to 15 years to enjoy them." (Zulima Palacio, VOA News, 11 June 2007)

<http://www.voanews.com/english/archive/2007-06/2007-06-11-voa18.cfm?CFID=191754257&CFTOKEN=65962197>

## EndQuote

### Rethinking Hawaiian monk seal conservation

For more than two decades, great effort has been made to manage, study, and recover the Hawaiian monk seal. However, actions to date have not been sufficient to result in a recovering population. The species status would undoubtedly have been worse but for these actions. Nonetheless, significant threats face this species:

- Very low survival of juveniles and sub-adults due to starvation (believed to be principally related to food limitation) has persisted for many years across much of the population
- Entanglement of seals in marine debris has and continues to result in significant levels of seal mortality
- Predation of juvenile seals by Galapagos sharks has significantly increased
- Human interactions in the Main Hawaiian Islands (MHI) including recreational fishery interactions, mother-pup disturbance on popular beaches, and exposure to disease
- Hawaiian monk seal haul-out and pupping beaches are being lost to erosion in the Northwest Hawaiian Islands (NWHI), and monk seal prey resources in the NWHI may have been reduced as a result of climate cycles and other factors
- Potential disease outbreaks could have a devastating effect due to small population size and limited geographic range

**Source: NOAA.** 2007. Recovery Plan for the Hawaiian monk seal (*Monachus schauinslandi*). Revised. National Marine Fisheries Service, National Oceanic and Atmospheric Administration: 1-165. [PDF  1.2MB]



## Mediterranean News

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### Algeria

#### Posted in French

In the Monachus Science section of the June 2007 issue of TMG, we published [Results of a research and information campaign on the possible presence of monk seals on the west coast of Algeria – First recorded instance of a hooded seal \(\*Cystophora cristata\*\) in Algeria](#), by researchers and scientists of the University of Oran.

For French-speakers we are now able to make this available in the French original as a PDF download from the Monk Seal Library:

**Bouderbala M., D. Bouras, D. Bekrattou, K. Doukara, M.F. Abdelghani et Z. Boutiba.**  
2007. Résultats de la campagne de sensibilisation et recherche de la possible présence de phoque moine sur le littoral occidental d'Algérie – Première citation de phoque à capuchon (*Cystophora cristata*) en Algérie: 1-12. [[PDF](#) 422KB]

### Croatia

Another seal sighting has been reported from Pula in Istria, writes Jasna Antalovic, of the [Mediterranean Monk Seal Group](#) (Grupa Sredozemna Medvjedica).

Ingrid Ugussi, a visiting biologist, reported the observation on 21.09.2007 near Banjola, south of Pula. A previous sighting in the same area, at Verudela, was made and photographed in November 2005 [see [Back from the Dead?](#) TMG 8 (2): December 2005].

The latest sighting, at a distance of approximately 10m, lasted several minutes, during which a photograph was taken. Though no positive identification of the species is possible, experts who have analysed the image believe that it may be the hind flippers of a young Mediterranean monk seal.



Seal sighting at Banjola, south of Pula.



Sighting area.

## Greece

### Newborn pup in dramatic rescue

A newborn monk seal pup was the focus of a dramatic rescue on the Aegean island of Tinos on 1 October, in the midst of a force-9 gale.

The cries of the infant, echoing across the deserted waterfront of Kolimpithra beach on Tinos' north coast, attracted the attention of Viktoria Drouga, the owner of a local taverna and boarding-house. Seeing the pup fighting the storm waves, Viktoria jumped into the sea herself to rescue the animal.

"We all owe Viktoria a debt of gratitude," says Jeny Androukaki, head of [MOM's](#) Monk Seal Rescue Centre. "She managed to grab the pup and carry it ashore, and then take all the right steps in an emergency like this – calling the Port Police and calling us."

MOM, a Greek charity specialising in the study and protection of the Mediterranean monk seal, was then able to provide basic care instructions by telephone before dispatching their own rescue team to the island.

"Viktoria had already taken the first essential steps herself," says Androukaki, "laying the pup on the dry sand of the beach to calm down and to dry in the sun, because it was shivering, very cold and very exhausted. We then asked her to keep watch over it, making sure that it wouldn't be disturbed by people or animals."



Rescue on Tinos.

Based on previous cases in which monk seals have been orphaned, it is thought that storm waves may have washed the pup out of its cave shelter, separating it from its mother.

"During the next seven hours," explains Androukaki, "the seal didn't move at all, only slept. Then it started to bark, but didn't make any attempt to re-enter the sea, which was still very rough. We had hoped that being there on the beach, the mother might appear and find her pup. When that proved increasingly unlikely, we asked Viktoria to place the pup inside a boat that was hauled up on the sand, so that it could be kept safe but would still be heard by its mother if she did appear."

There was still no sign of the mother, however, and as the storms continued to rage, MOM's own rescue team remained stranded in Athens, with all sailings from Piraeus cancelled by order of Port Police authorities.

It was to be another 3 hours before the ban was lifted and the ferry could finally sail for Tinos.

"When we arrived, 24 hours after the alert, the pup was still inside the boat," says Androukaki. "It was in rather good condition under the circumstances, but weak. It was also very small, the umbilical cord still attached when Viktoria first found it. Although it was no longer attached, the umbilicus was completely open. We therefore estimated its age at about 4 days when we first examined it then, on 2 October."



On the boat at Kolimpithra beach.

The pup, a female, had sustained wounds after being dashed against the rocks, some superficial, some deeper and potentially more serious. The rescue team administered first aid, including oral rehydration salts, a standard treatment in stabilising the pup's condition.

In consultation with their veterinarian, Prof. Anastasia Komninou of the Veterinary Faculty of Aristotle University, Thessalonica, it was decided that the pup would have to be transferred to the Monk Seal Rehabilitation Centre on Alonnisos, in the Northern Sporades Marine Park.

There was no other option for the pup than to undergo long-term rehabilitation. “At this young age the animals are still in lactation,” explains Androukaki, “and they are dependant on their mother’s milk until they are 3-4 months old.”

The rescue team returned with the pup to Athens – another 4-hour journey in stormy conditions.

Meanwhile, veterinarian Anastasia Komninou flew in from Thessalonica, ready to make a clinical examination of the patient that same night.

Blood, bacteriological and parasitological samples were all taken, the first laboratory results indicating low sugar and protein counts, due to lack of food, though no anaemia or parasite infestation. “Following a 24-period administering the rehydration salts,” says Androukaki, “we began treatment with fish porridge, using fatty fish like tuna, with the addition of glucose and salts. We administered antibiotics for the treatment of the wounds, but also preventively in case the umbilicus should become infected – such an infection could be lethal for a seal.”

A day after arriving in Athens, the rescue team headed for the Rehabilitation Centre at Steni Vala, Alonnisos, the pup quickly settling in despite the long journey and its fright on Tinos.

Staff described the pup as adapting well to her new surroundings, feeding well, sleeping peacefully when tired, and learning to swim.

“At this stage,” says Androukaki, “we feed the animal 6 times a day, every 4 hours, including a night feeding at 4 o’clock. The feedings alternate between fish porridge and oral rehydration therapy, so as to gradually acclimatise her to the food.”

In honour of her rescuer, the seal was given the name Viktoria.

Her prospects for survival – always touch and go in critical cases like these – are likely to become more apparent over the following weeks. –William Johnson.

### Stop press...

Seal pup Viktoria has continued to make good and steady progress in her rehabilitation at Steni Vala, Alonnisos. As of 14 November when we went to press, she weighed in at 26 kg.



Jeny Androukaki supervises a swimming lesson.

## Seal friend succumbs to old age

It was one of the few occasions that MOm’s Rescue Team had conducted a monk seal necropsy only to find that the animal had died of old age – a possibly newsworthy event in itself given the high percentage of monk seal deaths that are human-induced. The other side of the story, however, was that this male seal, found dead in early June was ‘Aggelis’ – sad news for the local (fishing) community of Alonnisos.

Aggelis was well known amongst the ‘Alonissians’; for the past five years, they used to watch him swim into the main harbour of the island, with no fear of man and an obviously outgoing personality. The seal used to frequent the area, ‘stroll’ around the fishing boats, have his picture taken and even get a treat from the local fishermen. For the inhabitants of the island, Aggelis was not as rare a sight as Mediterranean monk seals usually are. He was actually part of their everyday life.



‘Aggelis’

The body of Aggelis was found on 2 June near the island of Skopelos by a tourist, who immediately alerted MOm. MOm's Rescue Team conducted the necropsy the very next day and Aggelis was identified by marks on his body as well as the distinctive patch that male monk seals have on their abdomen. At the necropsy no signs of a violent death were found. The examination of his teeth showed that he was of advanced age, while his stomach contained only a few remains of food, indicating that the animal hadn't eaten for some time. –Calliope I. Lagonika, MOm.

## Seal school in Alonnisos

While we all remember the joys of memorizing multiplication tables and passing notes in class, 'seal school', in MOm's information centre in Patitiri, Alonnisos, is anything but your typical school. Through the use of books, games, videos, arts and crafts, and hands-on experiments, the programme seeks to educate children about the environment and to introduce critical themes in conservation. Furthermore, the programme endeavors to empower children with the skills they will need to become our planet's future problem-solvers: creativity, team-work, and a hunger for knowledge.

Seal school was launched in the summer of 2006 and has been expanding ever since. Daily children's hour allows kids of all ages to participate in reading contests, create artworks, or increase computer skills. Through inspiration from MOm volunteers, special evening programmes ranging from yoga to song-writing to jewellery-making classes are also offered. The heart of the programme, however, consists of weekly classes that educate students about the environment around them. While themes range from forests to sea creatures, the focus of every lesson is to combine book-based learning with hands-on experiences: a lesson about insects challenges kids to collect and study live specimens, while a lesson about trash concludes with in-house paper recycling. Additionally, a new programme, 'I Care', called on students to perform a weekly service to the environment such as turning off lights in a vacant room, conserving paper, or doing one thing to be of service to someone else. A progress chart was maintained in the centre to record student actions.



Seal School, Alonnisos.

The summer of 2007 proved very successful for the school. In addition to local children who frequented the centre, visitors to the island also took part in the activities. In total, 150 children participated in the summer lessons, hundreds of books were loaned from the centre's children's library, and an enjoyable and productive summer was had by both students and MOm volunteers.

The school will strive to continue to expand and to seek new and innovative ways to both strengthen kids' understanding of the environment as well as to enrich the minds of tomorrow's leaders. –Emily Joseph, MOm.

The school will strive to continue to expand and to seek new and innovative ways to both strengthen kids' understanding of the environment as well as to enrich the minds of tomorrow's leaders. –Emily Joseph, MOm.

## Researchers aboard fishing boats at Kimolos

The Greek island of Kimolos, along with its neighbour Polyaiagos, is one of the most important habitats for the Mediterranean monk seal, hosting 43 adult individuals with an average reproduction rate of 8 pups per year. It also hosts a small but active fishing community that depends on coastal fisheries for its livelihoods. For these reasons, the area (which is also a Natura 2000 site) was selected as one of the two most important of 7 hot spots for MOm's MOFI project on the interaction between the Mediterranean monk seal and fisheries in Greece.

Research activities on the island began in early March, with MOFI researchers being invited aboard local fishing boats and, in collaboration with the fishermen themselves, measuring the actual intensity of interactions between monk seals and fisheries.

During each expedition, sample fishing with trammel nets and gillnets is conducted for at least 5 consecutive days on active fishing boats. The sampling scheme involves one fishing boat available for multiple days and multiple expeditions, or multiple fishing boats. The parameters measured include catch per unit of effort, seasonal variation and variation by type of fishing gear along with damages from seals or other marine species.



MOFI biologists fish sampling at Kimolos.

Also yield data from local fishing boats during landings are recorded every month for a total of 24 consecutive months in each area. The data involve relative fish stock abundance and damages sustained from marine mammals. Parallel to this, a survey is conducted among as many fishermen as possible seeking information on damage attributable to marine animals. The survey also provides an excellent opportunity for the fishermen to make their own suggestions on how to resolve their ancient conflict with the seals. –Calliope I. Lagonika, MOm.

### Short and in focus

MOm's short documentary 'Monk Seals and Fishermen' depicts the uneasy relationship between man and wildlife. The documentary reveals a true story behind the 'sea-sun-sand' stereotype that usually follows the Greek islands: a dying coastal fisheries sector and a protected marine mammal that is facing extinction partly due to its interaction with fisheries.

Through strong images and interviews with local fishermen filmed on site during the MOFI project's activities, one gets to see what it means being a coastal fisherman in Greece. Facing financial problems that don't seem to be getting any better, these fishermen also face the cost of damage that monk seals inflict on fishing gear while hunting for food. On the other hand, the documentary reveals how fisheries pose a serious threat to this critically endangered marine mammal.

The aim of the film is to sensitise the local and national public about the survival of local fishing communities and the monk seal. The documentary was already aired on the island of Zakynthos, where the first of a series of open public meetings was held. A clip of MOm's documentary (in Greek) will soon be available at [www.mofi.gr](http://www.mofi.gr). –Calliope I. Lagonika, MOm.

### Helping hand to the Karpathos Protected Area

In order to further support the operation of the Karpathos-Saria protected area, MOm has provided its speed boat 'SARIA' to the PA's Management Body, as well as the exhibition items of its Information Centre.



Handing over the patrol boat 'Saria' to the Karpathos-Saria protected area management body.

MOm has been contributing towards the protection of this NATURA 2000 site since 1997. The monitoring of the local monk seal population, the operation of the Information Centre and the implementation of a pilot guarding project, are among some of MOm's activities in the area. Since 2006, MOm has also served as a member of the Management Body. –Stella Adamantopoulou, MOm.

### High-tech research boat at remote Karpathos Island

The morning of the 13th of September was horribly windy in the north of Karpathos. The streets of Diafani, the only harbour of the area, were deserted – but not for long. Two school buses soon arrived at the dock and children of all ages along with parents, grandparents, aunts and uncles

disembarked, eager to set foot on one of the most unusual boats they had ever seen: IFAW's research vessel 'Song of the Whale'.

This 21 metre-long sailing boat, specially adapted for cetacean research, had already embarked on its Mediterranean travels months earlier. The Karpathos expedition was planned by IFAW, MOM and the protected area's Management Body. IFAW has supported a number of MOM monk seal conservation programmes since 1990.



Object of curiosity at Diafani.



Aboard the 'Song of the Whale'.

The researchers on the 'Song of the Whale' study whales, dolphins and porpoises by recording them through hydrophones, take photographs of the animals, monitor cetacean populations across the world and even respond to incidents of animals entangled in fishing gear. All this and more was presented to the locals of Diafani, the researchers fielding their questions and relating stories about encounters with cetaceans. Lesley O'Donnell, Director of IFAW's European Union Office, who joined the expedition said, "we were surprised by the high turn-out, especially with such bad weather."

The 'Song of the Whale' left Karpathos Island a couple of days later to continue its journeys around the world. –Calliope I. Lagonika, MOM.

## **Pupping season**

With the monk seal pupping season gradually reaching its peak in Greek waters, MOM researchers are currently reporting that 26 pups have already been born in various cave shelters – a number that is expected to grow in the weeks to come.

New research data from visits to pupping sites in the Aegean Sea estimate the number of newborn monk seals to be 16. Seven pups have been recorded in the Kimolos – Polyaigos island complex (of which 1 was unfortunately found dead), while 8 were found in the wider area of the central Aegean. One of these, encountered at Tinos island, was found orphaned and was subsequently transferred to the monk seal rehabilitation centre in Steni Vala on Alonnisos. One more pup was recorded in Argolis on the Peloponnese, but the cave shelter where it was born was heavily exposed to bad weather, resulting in the loss of the pup.

Local reporters from the Rescue and Information Network (RINT) have recorded 10 additional pups at other Greek mainland coasts and islands. After many years, 2 pups were sighted near the city of Kavala, in the Northern Aegean. The remainder of the newborns were sighted at the islands of Milos (2), Naxos (1), Karpathos (1), Zakynthos (1), Evia (2) and Kithira (1). However, the latter sightings in Evia and Kithira islands concern dead animals. – Vangelis Paravas, Mom.

## **Monk seal population status at the National Marine Park of Alonnisos, Northern Sporades – November 2007**

Monitoring activities throughout the wider Marine Park Area have been carried out by the scientific team of the NMPANS Management Body, mainly to assess the status of the monk seal habitats and population.

Since the middle of August the scientists of the Park have conducted several surveys of the Park's monk seal shelters by visiting the monk seal sites in order to record the condition of the shelters, signs of occupation (tracks, sleeping hollows, smell, scats and fur) or presence of monk seals. A database and special forms to record data have been also designed.

Surveys showed a degradation of the monk seal shelters due to structural morphological changes caused by wind and wave action. Despite the decrease of suitable monk seal breeding sites, the results regarding the breeding season of 2007 are very encouraging.



The first two pups were observed during the first week of October and a week later three more newborn pups were recorded in the shelters of the Marine Park. Until now the pups are in excellent health, nursed and looked after by their mothers.

The rangers and the scientific team of the NMPANS are patrolling the area of the Marine Park, checking on human activities and monitoring the condition of the pups, offering the safest possible environment for the survival of the newborn seals during the first critical weeks of their life.

Until the beginning of November 2007, five newborn pups, one juvenile, and four adult monk seals were observed in the wider area of the NMPANS. – Management Body of the National Marine Park of Alonnisos Northern Sporades.

## News Watch

### Deadly puffer fish seen in Greek waters

Rising temperatures in the Mediterranean Sea have created appropriate conditions for the migration of a puffer fish from the Red Sea that can be lethal to humans, authorities said yesterday. According to researchers, the *Lagocephalus sceleratus* carries potentially deadly toxins in its liver, skin and reproductive organs which are capable of causing muscle paralysis, breathing and blood circulation problems if consumed.

“Our health inspection office has alerted all associations of fishermen and fish merchants,” the Athens prefecture said in a statement. The grey fish, which has a beak-shaped mouth and four large teeth, has been sighted in waters off the Dodecanese islands of Rhodes and Symi as well as off Crete. (Kathemerini English Edition, 5 June 2007)

[http://www.ekathimerini.com/4dcgi/\\_w\\_articles\\_politics\\_100022\\_05/06/2007\\_84126](http://www.ekathimerini.com/4dcgi/_w_articles_politics_100022_05/06/2007_84126)

### Tourists take action

Tourists aren't turning a blind eye to animal suffering. Protests from visitors concerning the abuse of animals are so common that the [ministry of tourism standard complaints form](#) has 'Animals, maltreatment' listed among other such popular grievances as unscrupulous taxi drivers and overpriced restaurants. (Athens News, 3 August 2007)

[http://www.athensnews.gr/athweb/nathens.prnt\\_article?e=C&f=13246&t=01&m=A07&aa=1](http://www.athensnews.gr/athweb/nathens.prnt_article?e=C&f=13246&t=01&m=A07&aa=1)

### The two young seals that are making Alonnisos “go nuts”!

According to the Chairman of the Management Board of the NMPANS [National Marine Park of Alonnisos, Northern Sporades] and Professor of Ichthyology at the University of Thessaly's Department of Marine Environment - Ichthyology Christos Neofytou: “Officials of our Board were visiting the caves in Piperi since the beginning of the summer and had seen no trails of seals. We were concerned, as we thought that the seals were not visiting any more the caves in the specific area. Nevertheless, members of our Board continued to visit these caves for various observations and eventually, last Sunday we had the good news, as two young seals were sighted in different caves.” [...]

There are 17 caves in Piperi that constitute seal refuges, while caves also exist in other parts of the islands, such as Gioura.

As Mr. Neofytou underlined, “this development with the first seal births is very encouraging. Seal births usually take place in the October-November period. Every year around 7-8 seals are born and manage to survive. Of course, a larger number of seals are born, but they don’t manage to survive, either because they are eaten by other animals or because they are abandoned by their mothers.” (Espresso, 17 October 2007)

<http://www.espressonews.gr/default.asp?pid=21&la=1&catid=1&artid=470887>

## A fishy situation

Seaside tavernas are overflowing with tourists and locals craving the culinary delights of traditional Greek cuisine, but few are likely aware of a growing problem that threatens to eclipse the delights of their zesty seafood appetiser: overfishing.

The routine overfishing of various stocks of fish, and the resulting practice of catching and selling fish that are smaller than the minimum size limit enforced by the ministry of agriculture, says Greenpeace Greece ocean campaigner Sophia Tsenikli, is a major issue in Greece.

“Unfortunately, there are still no adequate controls in place for the protection of undersized fish,” she says. “Therefore, small fish are still sold in Greek markets and restaurants, especially in areas with high levels of tourism and, therefore, high demand for fish.” [...]

Tsenikli asserts that laws mandating the size and quantity of fish that may be caught and sold are largely being evaded throughout the country, as well as across the EU. [...]

Greenpeace has taken active measures in campaigning for the enforcement of regulatory laws. GP Greece, for example, launched the Size Matters project in the summer of 2005. Its investigation of Greece's main landing sites revealed that enormous amounts of undersized fish were regularly being sold free of any restrictions or controls.

As a result, the ministry of agriculture sent an official reply to Greenpeace, promising to create a control mechanism for fisheries products. However, in 2006, GP Greece conducted follow-up investigations at the main fish markets in Athens and Piraeus, and discovered that nothing has changed – small fish are still being caught and sold in large amounts. [...] (Athens News, 17 August 2007)

[http://www.athensnews.gr/athweb/nathens.prnt\\_article?e=C&f=13248&t=01&m=A11&aa=1](http://www.athensnews.gr/athweb/nathens.prnt_article?e=C&f=13248&t=01&m=A11&aa=1)

### EndQuote

Residents on the island of Alonnisos, in the Sporades, have asked authorities to curb the alleged expansionist activities of a monastery on the nearby islet of Kyra Panayia, which, they say, are a threat to local archaeological sites and the national park of which the islands form a part.

According to local environmental groups and residents, monks have already built roads on the islet and are seeking a license to build five desalination units.

Furthermore, the monastery keeper is alleged to have increased his flock of sheep and goats from 300 to 4,400 in order to apply for EU subsidies to fund the planned construction.

The monastery has reportedly been cautioned by local authorities, and a Volos magistrate has launched a probe into its alleged activities. But the monks have appealed to the Central Archaeological Council for leave to press ahead with construction plans.

**Source:** [Islanders protest expansionist monks](#), Kathemerini English Edition, Wednesday September 5, 2007.



[Algeria](#) / [Croatia](#) / [Greece](#) / [Madeira](#) / [Mauritania & Western Sahara](#) / [Morocco](#) / [Turkey](#)

## Madeira

### Action Plan Working Group convenes in Funchal

The IV Meeting of the Working Group for the Action Plan for the Recovery of the Mediterranean Monk Seal in the Eastern Atlantic was held in Funchal, Madeira (Portugal) on 26-28 June, organized by the Secretary of the Environment and Natural Resources through the Parque Natural da Madeira Service and coordinated by the Spanish Environment Ministry.



The meeting was attended by members of the Working Group from Mauritania, Morocco, Portugal and Spain as well as one representative from the Bonn Convention.

With earlier meetings having established the Action Plan, the objective of this latest meeting was to define and agree the priority actions to be funded for the conservation of this species in each participating country.

The first part of the agenda featured presentations about the conservation status of the Atlantic monk seal populations, as well as monitoring and research conducted in Madeira and in Cabo Blanco. In a second part, the working group defined the priorities for each country in the period 2008-2010, which were successfully agreed by all. These priorities include:



Meeting participants in Funchal.

- The protection and monitoring of the Cabo Blanco and Madeira monk seal colonies.
- Measures to enlarge the distribution range of the Cabo Blanco colony.
- Improving the control of the Madeira population.
- Establishing emergency protocols for both Atlantic populations in case of catastrophes.

The meeting ended with a visit to the Desertas Islands Nature Reserve on the Parque Natural da Madeira's sailing ship "Buteo", allowing participants of the meeting close contact with the reality of the islands in terms of monk seal habitat and work done to monitor the species. –Rosa Pires, Parque Natural da Madeira and Pablo Fernández de Larrinoa, Fundación CBD-Habitat.

## Mauritania & Western Sahara

### They're back!!!

### Monk seals reoccupy lost habitats on Cabo Blanco peninsula

In Cabo Blanco, as in most parts of their distribution range, monk seals use the beaches of marine caves to haul out and breed. As is commonly known in monk seal conservation circles, this is not their original habitat, human persecution, disturbance and habitat destruction having led them to abandon open beaches.

Up until today, only in Madeira, after years of strict protection of the Desertas Islands Nature Reserve, and in a remote and isolated island in Greece, have seals used open beaches for basking and even rearing their pups.

In the Cabo Blanco peninsula, home to the largest aggregation of monk seals in the world, only a few adult male monk seals have been known to use open beaches, protected by cliffs, to haul-out in areas far away from the breeding caves of the colony. Following Madeira's experience, and within the framework of the Action Plan for the Monk Seal in the Atlantic, in 2001 [CBD-Habitat Foundation](#), in collaboration with local and regional authorities and artisanal fishermen, created a strict protection reserve to protect the breeding caves and vicinity.

After 6 years of strict protection and elimination of threats and disturbance – including the presence of fishermen and the setting of fishing gear, and from land, goose barnacle collectors – monk seals are reacting as expected. In the last two years, more and more seals have been using open beaches inside the reserve and in the vicinity of the breeding caves. In the beginning, only adult males were observed; in fact, more than 6 identified adult males are currently using different beaches of the area, one of them reoccupying Morales beach, where D. Eugenio Morales Agacino discovered this monk seal population in 1945, and where Jacques Cousteau captured two youngsters a few years later. Previously, there had been no evidence of monk seals using this beach since the 1950s.

Even more importantly, since October 2006 several younger animals, juveniles, subadults, and pups with their mothers have been observed occupying an open beach very near to the vicinity of one of the breeding caves.

This trend in reutilization of open beaches for basking is another good sign of the progressive recovery of the Cabo Blanco monk seal colony. –Pablo Fernández de Larrinoa, Mercedes Muñoz and Hamdi M'Barek, CBD-Habitat.

### Grey seal sighting in Mauritania

On 23 August the guard of a local sports club observed a seal resting over a rock at a little breakwater at Cansado bay, 7km south from the city of Nouadhibou, at the Cabo Blanco Peninsula. Alerting the Mauritanian Oceanographic and Fishing Investigation Institute (IMROP), and the CBD-Habitat foundation, technicians from both institutions arrived at the scene, where they found and identified the animal as a subadult or juvenile female grey seal (*Halichoerus grypus*). The individual was found in the water a few meters away from shore displaying "bottling" behaviour typical of the species. The seal seemed at first sight in good physical condition, without



Seals hauled out at Playa Halcón, 18 October 2007.



Seals on Playa Halcón, including mother with pup, 29 October 2007.

wounds or hair loss. The coloration was white with black patches and its length was estimated at around 1.5m.



Technicians from both institutions agreed to attempt a capture of the animal in order to check its health and for possible infectious diseases, because of the potential danger that could represent for the monk seals of the Cabo Blanco peninsula. However, after several days of searching to effect the capture, the seal did not reappear in the area. This observation is believed to be the first of grey seal at this low latitude. –Miguel Angel Cedenilla and Moulaye Haye, Fundación CBD-Habitat.

### Commemorative plaque in Didier Marchessaux's memory

Last February a small commemoration took place at CBD-Habitat's Biological station 'Las Cuevecillas' at the 'Costa de las Focas' (Coast of Seals) reserve, in which the memory of Didier Marchessaux was honoured, along with his colleagues Alain Argiolas, Gérard Vuignier and Ely oud Elemine. The researchers had been working towards the protection of the monk seal colony, when their vehicle was involved in a tragic landmine accident. –Miguel Angel Cedenilla, Fundación CBD-Habitat.



### Improvements to satellite reserve aim to benefit monk seals

CBD-Habitat Foundation and the National Park of Banc D'Arguin are jointly developing a cooperation project to improve the surveillance and communication strategy of the Satellite Reserve of Cap Blanc.

This protected area, located at the tip of the Cabo Blanco peninsula, was created in 1986 with the objective of protecting the adult male monk seals that used its beaches and surroundings waters. Sadly, after the mass die off that reduced the Cabo Blanco monk seal population to one third of its former strength in 1997, only one adult male continued using Satellite Reserve.



PNBA (Parque Nacional Banc d'Arguin) marine surveillance vessel.

Today, the Cabo Blanco monk seal population is recovering, and the Cabo Blanco Satellite Reserve, designated as a Special Area of Conservation for Monk Seals by the Action Plan in the Atlantic, is a solid candidate for recolonization if surveillance can guarantee non-disturbance of beaches and cliffs. Therefore, this project has as one of its main objectives the training of guards, also in the use of equipment, including a marine surveillance vessel.

Since the area can be visited by local inhabitants of nearby Nouadhibou, the second city of Mauritania and the economic capital of the country, a visitors centre is also being built here, focusing on the monk seal and the marine environment. The centre will inform visitors about the threatened status of the monk seal, the efforts being undertaken to help its survival, and the contribution local inhabitants can make to achieve this goal. The centre is currently under construction and will be inaugurated in the beginning of 2008. –Ana Maroto, Hamdi M'barek and Pablo Fernández de Larrinoa, CBD-Habitat.

### **Monk seal sightings network (REDFOM) has expanded to Morocco**

The monk seal sightings network (REDFOM) has been expanded to Spanish vessels that fish in Moroccan fishing grounds in the Atlantic. Of the 79 vessels we were in contact with, 67 are currently collaborating with the project. Together with the 85 contacted in Mauritania, this brings the total of cooperating vessels to 152, while also expanding the monk seal sightings network throughout Saharan fishing grounds.

The network meets two simultaneous objectives: to provide more information about the biology of the species, while bringing fishermen into the conservation process, helping them to understand the importance of the protection of marine biodiversity. – Mercedes Muñoz, Fundación CBD-Habitat.



## Mediterranean News

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### Morocco

#### Al-Hoceima National Park under coast road threat

Houssine Nibani, of the Moroccan environmental protection organisation [AZIR](#), reports a grave and looming threat to the country's Al-Hoceima National Park, whose highest cliffs, it is thought, may still act as a refuge for the country's last surviving monk seals as well as other rare and endangered species.

The shores of the Park are characterised by some of the highest rocky cliffs in the whole of the Mediterranean, with marine caves, and several small islands. Such mountainous geography, however, says Nibani in his report [*Rapport justifiant la préservation de la falaise Ar-Moud Tara-Youssef*] is still interpreted as a handicap to development, and a planned cliff-top coast road, according to various experts, is likely to inflict serious ecological damage upon this still unspoilt area.

Al-Hoceima National Park is situated on the Moroccan Mediterranean coast, approximately 150 km east of the Gibraltar Straits. Covering 48.000 ha, it is the only protected area in Morocco which also comprises a marine area (19.600 ha).

The ecological importance of the coastal zone between Cala Iris and Al-Hoceima was first recognised in 1983, and following various research and management programmes, it was formally established as Al-Hoceima National Park on 8 October 2004 by Royal Decree. Its significance also received recognition internationally by, amongst others, IUCN.



Caves under threat at the Tara Youssef cliff.

Threatened and endangered species found within the Park – its mountainous areas, cliffs and off-lying islands – include ospreys, Audouin gulls and possibly the last surviving monk seals of Mediterranean Morocco.

A 2003 report commissioned by UNEP's Regional Activity Centre for Specially Protected Areas (Tunesi et al., 2003) emphasised the importance of marine caves within the Tara Youssef cliffs as monk seal habitat. The cliffs, say environmentalists, are likely to suffer irreversible damage from the coast road construction project.

Opponents of the coast road believe it to be incompatible with the protection of the Al-Hoceima National Park, part of which has been recommended as an internationally-recognised Ramsar site.

They call instead for the old road to be upgraded and for the development of ecotourism and other alternative economic opportunities that will benefit the local community.

#### Further information

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[\[PDF 484 KB\]](#)

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## Turkey

### Orphaned pup's welfare monitored daily

Badem, Turkey's first *ex-situ* rehabilitated monk seal pup, has been monitored by [SAD-AFAG](#) at her current home on Gökova Bay.

Following her return to the wild on 28 April 2007, she was observed interacting with people in Datça and Gökova [see [Turkey](#), TMG 10(1): 2007]. Afterwards, SAD-AFAG, with the further financial support of Turkish businessman, Mustafa Koç, continued monitoring Badem and, when required, attempted to stop/reduce interactions with the passengers of visiting tour boats. Monitoring is expected to continue until the end of October 2007, when the 'blue voyage' season comes to an end.



Informing visiting tour boats.

The monitoring team consists of 2 people, a local SAD-AFAG representative, and a volunteer. SAD-AFAG's Servet Deniz, the field leader, has been monitoring Badem since mid-June 2007. It should be emphasised that as of mid-November Badem's existing location is very remote from the nearest coastal settlements; its human population is so small that it cannot be compared to the population and tourism pressures of Datça.

Every day during the monitoring programme, the team ascertains the location of Badem along the open beach of the area. If any tour boats are in the vicinity, the captain, crew and passengers are warned of Badem's presence, and are requested, as far as possible, not to interact with her.

Though some have an interest in seeing the seal, most of the people informed do not approach the animal; however, it is clear that this would not necessarily be the case if no information was provided by the monitoring team. To that end, a specially-prepared bi-lingual brochure is distributed among the visitors to this pristine area, which hosts only two tourist facilities.

Badem forages during the night and comes ashore around noon for sleeping until sunset. She does not have any injury nor any sign of malnutrition. Therefore, we believe that she has adapted well to foraging. As we observed during rehab, she is fond of eels; however, this time, instead of eel *Anguilla anguilla*, she forages mainly on conger, moray eels or octopus. Also, contrary to some reports, she never takes dead fish offered by people.



Monitoring Badem.

Updated information on Badem is fed back to the MoEF and the Coast Guard Command when necessary.

According to local observers, she has been sighted twice in the company of one and two seals.

We expect the winter season to encourage her adaptation to the wild, so that interactions with summer visitors will be avoided next year. – Harun Güçlüsoy, SAD-AFAG.

## Further info

SAD-AFAG Badem information brochure. [PDF 286KB]

Video of Badem and her rehabilitation can be found on youtube.com at:

<http://www.youtube.com/watch?v=XMOSb3-tGgI>

<http://www.youtube.com/watch?v=MolDeS241jg>

For the rehab diary of Badem (English and Turkish), visit <http://www.sadafag.org>.

## Foça SPA enlarged

The borders of the Foça Specially Protected Area were enlarged by a decision of the Council of Ministers and appeared in the Official Gazette on 13 June 2007. SAD-AFAG had been advocating and actively campaigning for the proposal since 2004.

Foça and its vicinity represents one of the most important coastal zones in terms of marine and coastal biological diversity in Turkey, and it was first declared a Specially Protected Area (SPA) in 1990 by a decision of the Council of Ministers, with the borders depicted in the map below.

After detailed long-term field surveys had been carried out by SAD-AFAG during the Foça Pilot Project, funded by WWF, Türkiye Is Bank and Henry Ford European Conservation Awards between 1993 and 2003, an analysis of results indicated the need for enlargement of the Foça SPA. In the original design of 1990, Hayırsız Island, Kartdere Island and Cape Aslan and the uninhabited mainland coasts were excluded. Following SAD-AFAG's proposal to the government, the enlargement of the Foça SPA was announced in early 2004 by the Minister of Environment and Forest (MoEF), Osman Pepe, in a joint press conference with SAD-AFAG held in the Çiragan Palace in Istanbul. [See [Turkish government pledges 5 new protected areas for the Monk Seal](#), TMG 7 (1): June 2004]



Siren Rocks of Orak Island.



Hayırsız Island.

As agreed by the MoEF before the press conference, the Minister also made a keynote speech in which he emphasized the importance of protecting the endangered monk seal along Turkish coasts, and pledged that the 5 high-priority Important Monk Seal Sites will have improved protection status by becoming 'Species Protection/Management Areas' according to IUCN criteria; as the first step towards that aim, the Minister announced, the Foça SPA would be enlarged.

After the joint press conference, SAD-AFAG maintained close contact with the MoEF and the Authority for Specially Protected Areas (ASPA) in Ankara and continued lobbying, also within the National Monk Seal Committee meetings, until that commitment was realised.

Following a review by ASPA officials, the Foça SPA was finally enlarged in June 2007 by 158,8% in total area and 37,6% in coastal length, as originally proposed by SAD-AFAG.

Our justification included the importance of missing islands and a mainland coastal stretch, with special emphasis on the Mediterranean monk seals (*Monachus monachus*), Shag (*Phalacrocorax aristotelis desmarestii*), Lesser kestrel (*Falco naumanni*) and Peregrine falcon (*Falco peregrinus*) found on Hayırsız and Kartdere islands, as well as Kartdere valley, including a wetland habitat with its rich bird biodiversity. With the new borders, marine and coastal species in the Foça SPA will have more protected habitat against coastal development, fish farms, illegal fishing and hunting. Navigational safety measures had already brought important advances to enhance marine environmental protection and reduce the risk of marine accidents in the sensitive marine zones within the Foça SPA[see Kirac, C.O. and H. Güçlüsoy in [Recent Publications](#)].

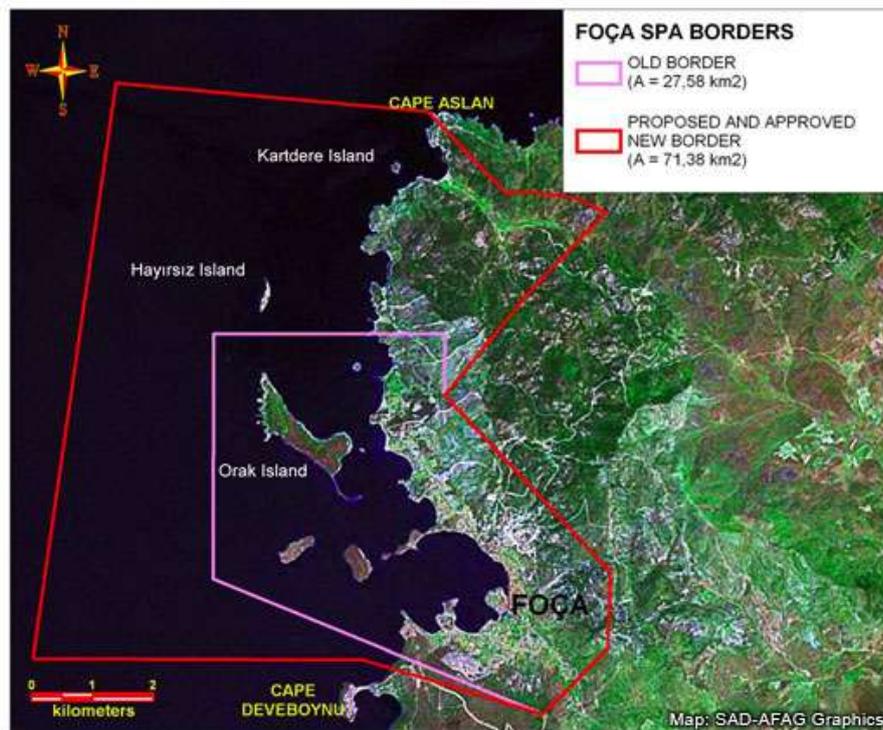
Some TMG readers may remember that Foça was the first coastal area where a long-term pilot study for the conservation of the monk seal was conducted between 1992 and 2002. During the research, 9 seals were identified. Foça coasts and adjacent islands have been used for resting, breeding and foraging by the monk seals in the newly established areas very frequently.

As a conclusion, one may judge now that the marine and coastal protected area in the Foça region has reached a size covering all the important habitats which still remain fairly undisturbed or unspoiled. And finally, NGOs play important roles in guiding the decision-making for nature conservation and may contribute towards the protection of wildlife and natural habitats with a systematic approach using scientific tools. – Cem Orkun Kır aç and Harun G u l soy, SAD-AFAG.

### Foça SPA, Then and Now

	ORIGINAL	NEW	INCREASE(%)
TOTAL AREA (km <sup>2</sup> )	27,58	71,38	158,8
SEA AREA (km <sup>2</sup> )	15,16	50,55	233,4
LAND AREA (km <sup>2</sup> )	12,42	20,83	67,7
COASTALSTRETCH(km)	35,14	48,36	37,6

**Table:** Increase of total area, sea area, land area and coastline in the Foça SPA following the 13 June 2007 decision.



### Further information

For the original wording and English translation of the Decision of the Council of Ministers, please refer to AFAG's 2007 press release on the Foça SPA expansion. [\[PDF 428KB\]](#)

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## **Ecotourism in Cilicia: the enthusiastic experience continues**

The fascination and the colours of the Cilician sea strike again! The small group of 6 ecotourists, led by GFM-Gruppo Foca Monaca, returned to Italy enthusiastic but sad to be back home: they had been visiting, at the end of October, the area where the monk seal conservation project of the Levant Nature Conservation Society takes place, following an agreement and a formula already well established in the past.

The seals made their appearance on three occasions. Sea turtles (*Caretta caretta* and *Chelonya midas*) were also seen during the group excursions on the local fishermen's boats, as well as many rare birds, following a bird-watching day at the Goksu river delta.

Another alternative and very interesting activity was a visit to the forests (hosting the rare Cedar of Lebanon) and old villages on the wild Taurus mountains, dominating most of the southern Turkish coasts: a jump back to the early 20th century. It is very important to underline (as some speculations have been made by uninformed and unfriendly people) that the visitors never entered any sea cave, but followed the strict rules requested by the Levant experts (Serdar Sekinan was leading the group): they were looking at seals only from specific observation points, causing no stress at all to the seals, whose behaviour always appeared very calm and natural.

Two seals were seen fishing together, and the same – on different days – were again seen entering a cave which seems to be one of their most favourite. As in the past, the visit did involve as far as possible local people, first of all starting with the fishermen (only their boats were used for sea excursions), but also using all local facilities (bus, hotel, restaurants). The support that the group provided to Levant Nature included a donation to the association for its important activities. GFM (and the WWF-Italy 'Panda Adventure' excursions agency) are planning to continue organizing the trips in 2008 (June and October), probably including also a trip in July to the Madeira monk seal project (contacts are underway). Furthermore, GFM has 'adopted' Levant Nature Conservation Society to support as far as possible its activities, and it is studying the possibility of promoting other 'dedicated' supporting events for 2008.

2008's GFM excursion programmes will be published by the end of this year on the GFM web site: [www.focamonaca.it](http://www.focamonaca.it). – Luigi Guarrera, GFM Italia.

## **SAD-AFAG and IFAW in joint habitat survey in SW Turkey**

The Underwater Research Society - Mediterranean Monk Seal Research Group (SAD-AFAG) and the International Fund for Animal Welfare (IFAW) undertook an extensive survey between Dalaman and Antalya, SW Turkey, in search of possible breeding caves and habitats of Mediterranean monk seals this summer. Team members spent two weeks in July 2007 on board 'Song of The Whale', IFAW's marine mammal research vessel, following the entire coastline. Each cave judged suitable for breeding was marked and carefully mapped for future studies. SAD-AFAG discovered 20 promising breeding caves overall, some bearing apparent seal traces.

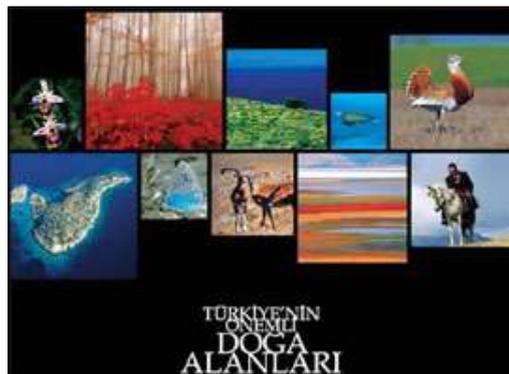


The research team observed two adult male monk seals at Cape Gelidonya for more than an hour. Interviews with fishermen suggest that the number of monk seals in the area is rather better than SAD-AFAG estimates. “An unspoilt coastline, together with seal traces in the caves gives us a lot of hope for the future status of seals in the region,” says researcher Harun Güçlüsoy. AFAG’s Cem Kiraç also points to other ecological highlights observed during the expedition, including the third breeding colony of the endangered Audouin's Gull (*Larus audouinii*) discovered in Turkey and abundant numbers of Cory's Shearwater (*Calonectris diomedea*).

On 23 July 2007, the team also spotted a large male sperm whale on the offshore waters of Fethiye Bay. – Zafer Kizilkaya, SAD-AFAG.

### **‘Key biodiversity areas of Turkey’**

A book entitled ‘Key Biodiversity Areas of Turkey’ has been published by Doga Dernegi (DD, Nature Society) in cooperation with the Turkish Ministry of Environment and Forest (MoEF) and several conservationists and academics. The publication covers all key bird species, mammals, freshwater fish, reptiles, amphibians, butterflies, dragonflies and key botanical biodiversity areas (KBAs) of Turkey in an integrated manner.



SAD-AFAG contributed to this important publication with a description of the ‘Important Monk Seal Sites of Turkey’, together with the general status appraisal of the species and its habitats, major threats and other relevant information. In two volumes and 1,112 pages, this book provides a full overview of all 305 Key Biodiversity Areas in Turkey defined until now.

Published this year, the book took 2 years to prepare, and involved 144 writers, 100 photographers, 31 consultants and many other contributors from universities, NGOs, governmental bodies and freelance conservationists. – Münevver Çakir, SAD-AFAG.

### **Foça to receive its new patrol boat in December 2007**

The Foça Specially Protected Area will soon be patrolled by a new speed boat. As reported in the November 2006 issue of TMG [[Campaign to replace patrol boat in Foça SPA](#)], SAD-AFAG had contacted and continued to lobby the Authority for Specially Protected Areas (ASPA) for a new patrol boat. The issue was given added urgency by the fact that guarding within the SPA had not taken place since 2004, when the previous patrol boat, ‘Çevre’ became unusable.



New patrol boat to be used in the Foça SPA.

The budget for replacement was finally approved in December 2006 and the tender announced by ASPA in spring 2007. The technical specification of the boat was prepared jointly by SAD-AFAG and the Foça Aqua Products Cooperative based on previous experience. In August this year, a contract was signed with the winning company for the manufacture of a 9-meter long High Density Polyurethane (HDPE) craft powered by a 240 HP inboard diesel engine. The boat will have an operational speed of 30 knots, sufficient to undertake effective patrolling in cooperation with the Coast Guard boats in Foça against illegal fishing activities. The boat will also be equipped with radar, fish finder and GPS. SAD-AFAG also provided a draft protocol to be signed principally between ASPA and the Foça Municipality. According to the protocol, the Foça Fishing Cooperative, whose members consist only of artisanal fishermen, will be responsible for providing the captain of the boat. Patrolling will be made based on unscheduled sorties, day and night, while

SAD-AFAG may provide observers on some patrols. Following transfer of the boat from ASPA to the Foça Municipality, the Municipality will be fully responsible for its operation and maintenance costs. The patrol boat should be delivered turnkey to ASPA in Foça in December 2007 in accordance with the contract. Such a marine patrolling system, actively involving local stakeholders, was unique in Turkey when first introduced, and proved very successful during the Foça Pilot Project when the boat was run effectively. Since then, a similar marine patrolling system has been activated in Aydıncık, Mersin with the patrol boat DK01 owned by SAD-AFAG. – Cem O. Kiraç and Harun Güçlüsoy, SAD-AFAG.

### **EndQuote**

Seven European countries including France and Italy were threatened with legal action over lax fisheries controls Wednesday as part of new efforts to prevent the collapse of bluefin tuna from overfishing. Driven by the high prices from the Japanese sushi market, European fishermen have already caught their entire quota of 16,779.5 tons of bluefin tuna for 2007 and last week were ordered to stop fishing until next year.

The European Commission said Wednesday that it intended to get tough with the countries that fail to police their national fishing fleets. In a statement it said that "high rates of undeclared overfishing have been singled out as a key cause of the decline of the stock." Cyprus, Greece, Italy, Malta, Portugal and Spain were sent legal letters for failing to send official data on catches to the commission. France and Italy received the same warning though theirs also referred to shortcomings in their controls. If their answers fail to satisfy the European Commission, the countries can be taken to the European Court of Justice, the European Union's highest court.

**Source:** [France, Italy and 5 other European countries threatened for overfishing tuna](#), International Herald Tribune, 26 September 2007.



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## Cover Story

### Revealing secrets of the Mediterranean monk seal

**Panagiotis Dendrinis, Alexandros Karamanlidis and Vangelis Paravas**

It is well known among marine mammalogists that the rarity of the Mediterranean monk seal makes the study of the biology, ecology and behaviour of the species an extremely difficult task. Also, in contrast to other Pinnipeds that give birth and suckle their pups on open beaches or on pack ice, often forming large reproductive colonies, Mediterranean monk seals give birth in dark and secluded caves, where they can only with difficulty be observed by humans. As a result, important aspects of the life cycle of the species, such as pupping and lactation, which in other species have been studied systematically for years, are still poorly understood, thus significantly limiting our knowledge on basic aspects of the species' biology and behaviour. On the other hand, such information is essential in order to design and implement effective conservation and management actions.



A bird's eye view of the Kimolos Natura 2000 site.

Ongoing technological developments, especially in the field of recording, transmitting and storing digital images have provided biologists with new tools for studying rare and secretive species such as the Mediterranean monk seal. According to the latest scientific information, more than half of the world's population of this endangered species, which does not exceed 600 individuals, survives in Greece. Although small in size, Greece possesses an extensive coastline of more than 15,000km, as well as 4000 islands and islets and numerous sea caves. According to information collected through the Rescue and Information Network, that **MOm** has been operating since 1990, the species remains widely distributed throughout mainland coasts and islands of the country. Important reproductive areas for the species have been identified and closely monitored by MOm researchers at the Northern Sporades, at the islands of Kimolos-Polyaigos in the Cyclades and the islands of Karpathos-Saria in the Dodecanese.

As members of the MOm research team, in the summer of 2003 we designed and installed, for the first time in Greece, an automatic video surveillance system in a seal breeding cave at the island of Piperi, in the core zone of the National Marine Park of Alonnisos, Northern Sporades. This first attempt to remotely monitor the species proved a success, and rare images of seals interacting were collected. The results of this research project have recently been published in the scientific journal *Aquatic Mammals* [A video surveillance system for monitoring the endangered Mediterranean monk seal: [PDF](#) 771KB].

This year, as part of a programme carried out in cooperation with the Cyclades Prefectural Administration, we installed a second video surveillance system at the island of Kimolos. Kimolos is a beautiful volcanic island in the south-western Cyclades with a striking landscape and numerous sea caves. In these sea caves and the ones of neighbouring Polyaigos, an equally important population of Mediterranean monk seals finds shelter. The annual birth rate is 7-8 pups. Our main objectives in installing the video surveillance system at Kimolos were twofold. The first

was the collection of data on the reproductive behaviour of the species. The second, of equal, if not of greater importance, was to bring this rare mammal closer to the general public and especially to children. This would be achieved by broadcasting images from within the dark cave to a specially designed educational website.

In June this year, we installed the surveillance system in cooperation with an expert team of technicians. The selection of the time and location of the installation was based on detailed and long-term research data, as well as our extensive knowledge of the area. In fact, the first survey of monk seal shelters in the Kimolos-Polyaigos island complex was carried out by MOm in 1992, which emphasised the area's importance to the survival of the species. Following that, in 1997, a local monitoring programme was established, through which detailed data on the use of the caves by the monk seal population was obtained. The cave chosen for the installation of the surveillance system had an annual birth rate of 2-3 pups. The month of June was chosen as the most suitable for installing the system, our data indicating that cave use during this time was negligible. In this way, disturbance to the animals during installation could be kept to an absolute minimum.



Installing the video surveillance system on Kimolos.

The video surveillance system operates on a 24-hour basis and is totally autonomous, with energy being provided by solar panels. It consists of three cameras, one of which is remote controlled; the cameras are connected to a hard drive which stores all recorded data. A satellite connection on site transmits the images to the Internet, thus providing an opportunity to view events in the cave in real time from anywhere on the planet. It also gives us researchers the opportunity to operate the remote controlled camera and to point and zoom it to any point of particular interest.

The first visit to the cave by a monk seal took place in August and since then cave usage has increased steadily. Up until the end of October, when this article was written, the presence of at least nine different individuals was documented. At the same time, unique images of the reproductive biology and behaviour of the species were recorded. More importantly, for the first time in the Mediterranean sea, it was possible to witness the birth of two Mediterranean monk seals, to document the behaviour of mothers when protecting their pups against bad weather conditions, and also against other intruding monk seals. And all this, without disturbing the animals!



The surveillance system was installed at a cave with an annual birth rate of 2-3 pups.

So far, the use of remote video surveillance systems in the Northern Sporades and Kimolos has shown that this methodology is an amazing tool in studying this rare species, but also in educating and bringing the conservation message to the wider public. The ongoing advances in modern technology, the introduction of new and more advanced equipment, as well as decreasing costs, predict a rosy future for this methodology. An essential requirement for its successful application, however, is the detailed knowledge of the area where the surveillance system will be installed and the availability of the necessary background data. These requirements ensure that where and when such a system is installed disturbance to the animals will be avoided, thus increasing the project's likelihood of success.



Mediterranean monk seal birth.

[View video.](#)



Mother-pup interaction.

[View video.](#)

*The authors would like to acknowledge the Hellenic Ministry of Rural Development and Food, the Prefecture of Cyclades, the Municipality of Kimolos, the Port Police Authority of Milos, the Zoological Museum of Athens University, especially Prof. A. Legakis and Mr Charalambos Sardis, and Hellas Sat, particularly Stella Ilioudi.*



## In Focus

Vol. 10 (2): November 2007

### Encouraging signals from the management of the National Marine Park of Alonnisos Northern Sporades

Vassilis Kouroutos\* and Christos Neofitou\*\*

In the last edition of the Monachus Guardian, reservations and criticism were expressed by members of a Greek NGO regarding the “intentions” and ability of the Management Body of the Marine Park of Alonnisos, Northern Sporades (NMPANS) to “implement key *in situ* conservation activities” [see [Mixed signals from the management bodies of key protected areas](#), TMG 10(1): June 2007].

The writer was anxious to articulate doubts concerning the capacity of [NMPANS Management Body](#) to manage efficiently the European funds allocated through the Structural Funds for the effective conservation of the NMPANS.

Certainly they are proved wrong, as since May 2007, with more than 3 million Euros secured from the ‘Environment’ Operational Programme (EPPER) the Management Body has already begun producing results.

For the first time ever, 12 scientists and technical staff were employed, responsible for the day-to-day management of the Marine Park; offices were established in Alonnisos; a 10 metre speed boat has been chartered for the implementation of guarding, research and public awareness programmes; a 4 metre inflatable speed boat has been purchased for research and monitoring of the monk seal population; and the preparation of a five-year Management Plan is about to begin.

The Management Body of the NMPANS is in the process of acquiring oil spill control equipment and two patrol boats for the surveillance, monitoring, research and guarding of the Marine Park’s large area. The two fully equipped boats are expected to be operational in May, 2008.

Monitoring activities throughout the Marine Park Area have been carried out mainly to assess the status of the monk seal habitats and population as well as to measure the condition of the fish stocks.

Since the middle of August, several surveys of the Park’s monk seal shelters were carried out to record the condition of the shelters, signs of occupation (tracks, sleeping hollows, smell, scats and fur) or presence of monk seals. Until the middle of October 2007, five newborn pups, one juvenile and four adult monk seals were observed.



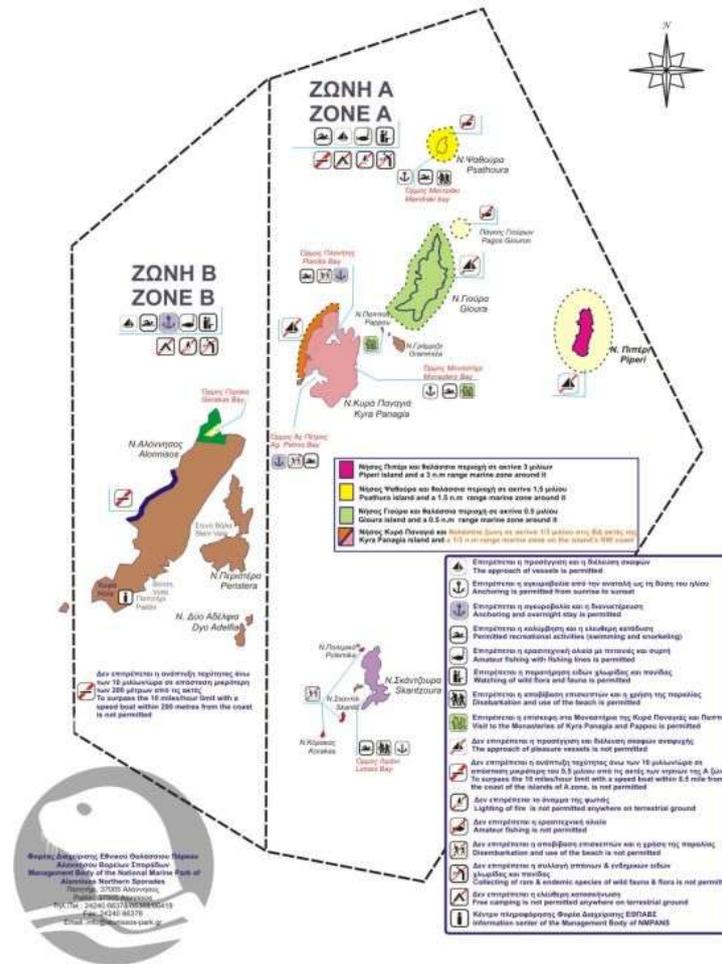
Newborn pups in the NMPANS, autumn 2007.



On patrol in the NMPANS.

Monitoring and guarding such a large area as the Marine Park, requires a systematic and disciplined operation. Boat patrols operate in the Marine Park on a daily basis, checking on activities and monitoring ecological conditions.

ΕΘΝΙΚΟ ΘΑΛΑΣΣΙΟ ΠΑΡΚΟ ΑΛΟΝΝΗΣΟΥ ΒΟΡΕΙΩΝ ΣΠΟΡΑΔΩΝ - Οδηγός για τον επισκέπτη  
 NATIONAL MARINE PARK OF ALONNISOS NORTHERN SPORADES - A guide for the visitor



Map of NMPANS park regulations.

During the first few months of the programme we did not take any course of action against illegal activities as we believe that education and awareness is the most effective strategy to encourage compliance with Marine Park management principles. Since July 2007, Park officers informed more than 1,200 of the Park's users about the regulations and permitted activities within the protected area, and recorded in the A zone of the Park more than 1,250 boats (recreational and professional fishing boats) and 125 cases of illegal activities (speargun fishing, illegal professional and amateur fishing, speed boats exceeding the speed limits, camping, lighting of fires etc.). Since the middle of September when the Management Body decided to start taking action against illegal activities, the Park's officers have taken legal action in five cases involving Park legislation violations.

In the Marine Park's office an information and public awareness centre operates. A [web site](#) in Greek and English has been created, as well as a DVD. An IT-based Resource Centre is under development in order to attain a strategic and coordinated approach to information acquisition, management, analysis and interpretation.

Volunteer programmes offer the opportunity to individuals to assist in the implementation of the Park's day-to-day Management Programme which includes field work and office duties.

In collaboration with volunteer groups and local professional tourist boat owners, a beach cleaning programme was implemented which resulted in the collection of 150 large bags of garbage.

Regular meetings with local stakeholders (fishermen, tourism operators, tourist boat owners etc.) were organised to exchange experiences and ideas regarding the effective current and future management of the Marine Park.

During the meetings with representatives of local associations we had the chance to increase the trust between the Management Body and local stakeholders and solve problems and disputes.

Nevertheless, as expected, we have faced a few problems with some local people who are opposed to the Park's regulations and the existence of the Management Body.

One of the primary objectives of the Management Body is the compilation of a five year Management Plan, which will combine the conservation of biodiversity and protection of natural ecosystems with increasing economic development and social cohesion under the principles of sustainable development.

The Management Body believes that time spent in preparation is a necessary investment that will be repaid many times over in the future. There is a strong need to show demonstrable benefits for local stakeholders, and this takes time and diplomacy. We believe that planning and management of the Marine Park must be both top-down and bottom-up. It is better to have a Park which may not be ideal in the ecological sense but meets its primary objectives.

\* Vassilis Kouroutos, a Marine Biologist, is Co-ordinator of the Alonnisos office of the NMPANS

\*\* Professor Christos Neofitou is President of the Management Body of the NMPANS



Beach cleaning in the NMPANS.



## Perspectives

Vol. 10 (2): November 2007

### Forty days on Psathura

Giorgos Catsadorakis\*

Psathoura is the northernmost isle of the National Marine Park of Alonnisos-Northern Sporades, Greece. It lies 27 nautical miles away from Patitiri on Alonnisos Island, the closest sizable settlement. It is a flat, presently uninhabited, piece of land with a maximum height of 17m asl. and an area of ca 78ha, the only one in the archipelago consisting entirely of rocks of volcanic origin. The sea extending to its north had for many years been training waters for the bomber crews of the Greek air force and navy warships as well.

The lighthouse on the north part of the island has warned sailors since 1895 about these dangerous waters, full of rocky shallows that have been the cause of numerous shipwrecks. Lighthouse-keepers lived permanently in the attached building up until the late 1980s, while today it is used by the officers of the Lighthouse Service who spend some days here from time to time, doing maintenance works for the beacon and the other installations.

In 2004 I visited the island while participating in a country-wide survey for Eleonora's Falcons organized by the Hellenic Ornithological Society (HOS). I discovered then on the rocky coastal cliffs a number of nests of the Mediterranean Shag *Phalacrocorax aristotelis desmarestii*, a seabird subspecies whose nesting colonies are scattered all over the Aegean Sea but whose breeding ecology has been very poorly studied. As soon as I discovered the existence of the well-maintained lighthouse, the idea struck me: to spend a couple of months in the island's solitude, to study the shags, to experience the winter isolation, and to look better inside myself, undisturbed by the daily routines.

My vision materialized in spring 2007. The preparations lasted some weeks and were supported financially, materially and morally by the three environmental NGOs to which I am most closely related: WWF Greece, the HOS and MOM. A number of enterprises and individuals offered technical assistance and donated necessary equipment, mainly for the setting up of a satellite antenna to ensure an Internet connection.

I reached the island at the beginning of March on 'Odyssey', the research caique of MOM. From Alonnisos I had collected provisions to last the first twenty days. Immediately after the six people who escorted me there had left, I realized I was alone, in paradise.

The most numerous inhabitants of paradise were lizards, rats, wild-rabbits, Yellow-legged Gulls and Shags. Passing through paradise were thousands of migratory birds that were flying continuously unseen overhead, but flooded every corner and shrub of the island when pinned down by storms and strong northerly winds.

Beyond my personal tasks – concentration, re-evaluation, contemplation – I had to pursue three main research objectives: **a.** locate and monitor as many Shag nests as possible, **b.** monitor and assess the foraging activities



of Shags in the marine areas around the island, c. count migratory birds along a transect line traversing the island from north to south. My fourth task, a communications one, was to daily update the blog I had created ([www.lifeatfaros.blogspot.com](http://www.lifeatfaros.blogspot.com)) with texts and photos to provide a live report of what was going on in this remote stretch of the Aegean. My aim had been to sensitize as many people as possible, especially the young, and provide them with hints of the beauty and the thrill of being a wildlife researcher. Naturally, there was also the daily effort to keep on discovering the island – 40 days are not enough at all to explore a 78 ha island, to inventory birds, animals and plants, and fulfill the daily practicalities.

The venture itself proved very attractive to the mass media and captured the interest of the public, so that the blog also became a big success. I gave many radio interviews, while two TV programs visited me on the island as well as two journalists for an extensive article in a weekly magazine.

I do not really know how much of the beauty I experienced I was able to transfer to the outside world. The invigorating feeling of isolation in nature – which has been used as a means of achieving self-balance in many civilizations – is not easy to convey. It must be experienced.

Photographs help, but senses other than sight are missing, and they are frequently more decisive and valuable for exploring oneself. The feel of salt wind on the face, the smell of salt on the stones and of the nest of the Shag, the fragrance of sea daffodils, the humidity of dusks and dawns, the touch of the basaltic rocks, the fierce whistling of the 10 Beaufort wind on the lighthouse-tower walls, the immenseness of the starry sky above that no camera can capture, the unceasing music of the waves beating the coastal cliffs and forming a magic background to any instant.

I was lucky enough to see over 70 different bird species; among them dozens of Marsh Harriers (*Circus aeruginosus*) and over 20 (to 60) of the rare Pallid Harriers (*Circus macrourus*), both males and females. I enjoyed many times the courtship flights and games of a pair of Peregrine Falcons around the lighthouse tower. I was lucky to discover over 20 active nests of the Shag, to see and touch their eggs and young, to be threatened by the cornered parents at the nest, to be allowed to photograph them; to have seen them fishing in groups of 10-15, along with hundreds of Mediterranean Shearwaters soaring over a group of dolphins chasing fish-shoals very close to the coastline. I was also privileged enough to be in the right place at the right time – the roof of the lighthouse – to enjoy the visit of an immature monk seal that gave me the opportunity to capture it in a few photos. I was lucky enough to stay for 16 days totally cut-off due to stormy seas and strong winds, and to know this strange kind of feeling which the islanders know very well, but not we who live on the mainland. Finally, I was lucky because during the last three days, circumstances allowed my wife and my 28-month-old son to visit me on the island and share a few of my experiences.



A few basic conclusions of the study of the Shag: On 60-70% of occasions the birds fish alone, in 15-20% in twos and less frequently in groups of 3-15. Half of the time they fish less than 100m off the coast. There were 14-16 active nests on Psathoura and 8-10 nests on Psathonisi or Myiga (a 4.5ha islet, 1200m to the south of Psathoura). In total, 50 adult birds and 5-6 immatures were present. Average clutch size was 1.8 eggs, but a figure closer to 2-2.1 would be more realistic because some nests suffered depredation after the laying of the first egg. On average, the first

egg-laying date was, for 2007, the 26th of February  $\pm$  16 days. Breeding success was rather low, with only 1.1 young fledgling per nest.

The remaining scientific data gathered, on the phenology of bird migration and the other wildlife of the island are not negligible, but what was invaluable to me was this life experience as a whole, as well as the satisfaction I gained from the close collaboration of the three NGOs in this effort, and the feedback of a multitude of known and unknown friends in cyberspace.

\* Dr Giorgos Catsadorakis (48) is a conservation biologist and environmental interpretation specialist. He is a freelance consultant and a Scientific Advisor to WWF Greece.



## Research

Vol. 10 (2): November 2007

### Response of monk seals to monitoring activities on the Mersin coast

Ali Cemal Gücü

[Levant Nature Conservation Society](#)

In 1995, when the first monk seal survey on the Mersin coast had been concluded, the main aggregation of monk seals was found to be on the pristine coast stretching between Tasucu and Gazipasa. Although there were occasional seal sightings, no resident seals could be spotted in neighbouring sites. Later, in 2003, a seal began frequenting a cave located outside the range of the colony, near to an urbanized area.

To prevent human entry and hence provide a better shelter, the Levant Nature Conservation Society blocked the terrestrial access to this cave in July 2005 [see [Monk seal cave closed to land access](#), TMG 9(1): June 2006]. The cave has since been equipped with camera and infrared sensors to monitor seal presence. At first, a single female was recorded in the cave on an irregular basis. In 2006, the female was accompanied by a young male, apparently yet to attain maturity.

As of July 2007, however, the cave is now being used by 3 different seals among which the female (Ceren) has significantly prolonged her stay in the shelter. Initially, the seal(s) were recorded mainly at night (dusk to dawn). Later, this pattern shifted slightly, with haul-out times spread intermittently throughout the day. As the entry to the cave by humans had been confined to daylight hours before the closure, the changes in the cave use pattern may be a positive sign of protection.

The monitoring systems used until now are composed of an infrared sensor sensitive to heat in motion, which triggers a digital camera with programmable intervals. The digital camera has a resolution of 5.1 megapixels. The camera also incorporates a built-in flash that is sufficient to illuminate a range of 7 meters. This combination is essential to obtain images detailed enough to be used in photo-identification.



Fig. 1. Seal appearing to react to the camera flash.



Fig. 2. A seal appearing to react to the infrared light source.

Depending on the desired length of use, which may extend up to 2-3 months, the interval between 2 subsequent camera shots is set at between 10 to 30 minutes. That means that every 10 to 30 minutes the camera flashes if a seal is within detection range. The images obtained from the camera demonstrate that the flash is recognized by the seals; there are several cases in which the animals have their head extended or directed toward the camera. Hence, the concern was raised whether the flash disturbs the seals or not (Fig. 1).

The Levant Nature Conservation Society therefore began testing the effects of flash use on the seals. Two cameras, one with flash and the other with infrared light source are now being deployed in the cave consecutively each for an average deployment time of one week. The system is then replaced with the other in order to discount possible behavioural change by the seal due to time/season. Until now, 192 events have been recorded by the cameras. The first and preliminary results show that the average haul-out duration of a seal exposed to a flash is longer than those recorded by infrared light source. Evaluation of the results of the two systems did not show a statistically significant difference (F test:  $p>0.05$ ).

The number of times that a seal was exposed to the flash during a haul-out varied between 1 and 27. This number is slightly lower than compared to infrared shots. The average shots of the two systems are almost identical (F test:  $p>0.05$ ).

System/statistics	With flash	Infrared
<b>Total events recorded</b>	118	74
<b>Average haul-out (S.D.)</b>	429 min (551)	247 min (231)
<b>Max. shot</b>	27	23
<b>Mean shot (S.D.)</b>	6.6 (7.9)	5.5 (7.1)
<b>Sample size</b>	18	14

**Table:** Statistical results.

All additional features of the camera, such as red-eye pre-flashing, audible click etc. are disabled in order to minimise as far as possible any unnecessary disturbance.

Some images obtained in infrared mode suggest that seals may react briefly to the triggering of the infrared bulbs that momentarily turn red when activated (Fig. 2). However, the light is sufficiently brief and unobtrusive that the animals quickly resume their resting and haul-out behaviour.



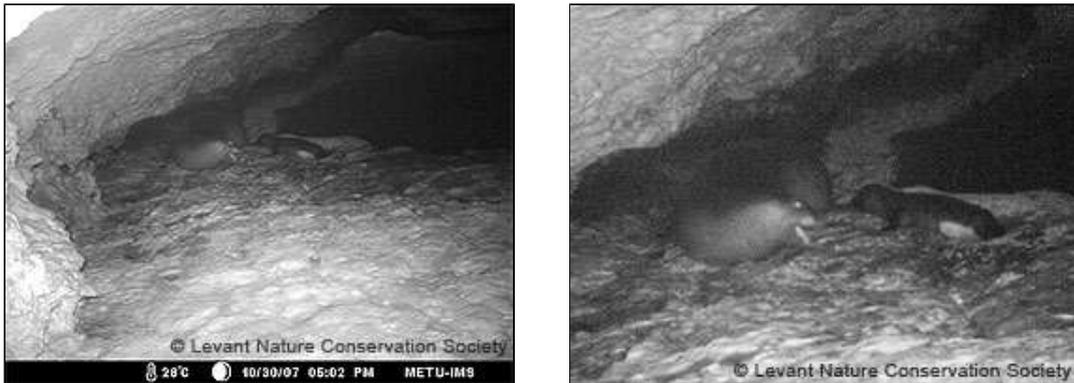
**Fig. 3.** Seal captured in infrared mode, where little image detail is available.



**Fig. 4.** A hauled-out seal captured by the camera operating in flash mode. Colouration and marking is clearly visible compared to images obtained in infrared mode.

Collecting data of this kind is inherently difficult because of the rarity of the species. However, the data at hand, although scarce, provides evidence that the use of built-in flashes with 10-minute

intervals does not inflict disturbance upon the seals in the cave. The use of colour images in seal photo-identification has great advantages over infrared images, in which the details, such as scars and discolorations, are inevitably faded out (Fig. 3 & 4).



**Fig. 5 and 6.** On 30 October, shortly before this article went to press, the infrared monitoring system recorded a mother with newborn pup in the cave.

*The author expresses his thanks to Giulia Mo of ICRAM for commenting upon and reviewing this article.*



## Recent Publications

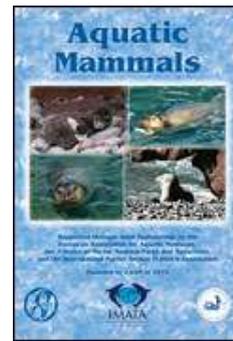
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M. Schnellmann  
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All e-mail communications, including letters to the Editor, should be sent to:  
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