

Editorial: An epidemic of killings

by William M. Johnson

International News

Hawaiian News

including Seal numbers continue to dive

Mediterranean News

including

Greece: Alarming numbers of dead seals...

Mauritania: Record births at Cabo Blanco...

Turkey: Monk seal deaths in the Turkish Aegean coasts... New population size assessment study in the NE Mediterranean...

Cover Story: Markos' Case: Trauma, Treatment, and Reflections

by Emily Joseph

In Focus I: Monk seal killed by dynamite blast in the Aegean

by Anastasia Miliou

In Focus II: Nefeli's rehabilitation: methods, results, and challenges

by Emily Joseph

Perspectives: The world's two remaining monk seal species: how many different ways are there of being Critically Endangered?

by Giuseppe Notarbartolo di Sciarra

Research: Mediterranean monk seal, *Monachus monachus*, re-sighted along the Israeli coastline after more than half a century

by Aviad Scheinin, Oz Goffman, Mia Elasar and Dani Kerem

Recent Publications

Publishing Info



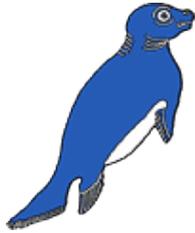
An epidemic of killings: critically wounded in Evia



Shot dead in Turkey



Dynamited on Samos



Editorial

Vol. 13 (1): June 2010

An epidemic of killings

William M. Johnson

It is hard to imagine anyone not being moved by the tragic tale of 'Markos' – the young Mediterranean monk seal who was brought into intensive care, struggling for life, but horribly mutilated by the bullet that shattered his jaw and nasal cavity.

Possibly it was a blessing in disguise that, despite the valiant attempts to save him, he ultimately succumbed to his injuries, for it seemed doubtful that he would ever swim, dive, or grace the Aegean again.

The killing of monk seals in Greece, according to national NGO [MOM](#), is reaching "epidemic proportions".

The organisation has recorded 15 deaths since January, 5 of which yielded conclusive evidence of deliberate killing. Another killing by gunfire was reported in Turkey on the Bodrum peninsula on 21 April. With other killings just as likely to go undetected along remote coastlines, the final death toll is anybody's guess.



Bullet ...



... and victim.

Some 13,600 kilometres away on the Main Hawaiian Islands, authorities, NGOs and volunteers face a similar crisis, contending with an upsurge in hostility towards the Hawaiian monk seal that has left three animals shot dead since 2009. What has the collective response been? On the legislative front, the Hawaiian State Senate unanimously passed a bill making the killing or harassing of a monk seal punishable by up to one year in jail and a \$50,000 fine [[Tougher penalties for seal killers](#), this issue]. On the investigations front, the NOAA Office of Law Enforcement is on the trail of the killers. One was tried, convicted, and sent to jail in September last year [[Killings on Kauai](#), TMG 12(2): November 2009]. In another case, NOAA announced a \$5000 reward for information leading to the arrest of the perpetrator, a bounty that was raised to \$30,000 through NGO action and private donations. In tandem with enforcement, NOAA are mounting a well-funded public outreach and education

campaign, aimed at bringing the monk seal, Hawaii's official state animal now, into local hearts and minds.

So what, may you ask, is being done to reduce the shooting and dynamiting of the Mediterranean monk seal – supposedly Europe's most endangered marine mammal? The answer, unfortunately, is very little:

- There are no ongoing criminal investigations into the recent shooting and dynamiting incidents that have left at least 5 monk seals dead since January 2010.
- No reward for further information is being offered, either by the authorities or international organisations.

Some additional facts:

- Under Greek legislation (Presidential Decree 67/81/29·11·1980) it is illegal to kill, capture or harass endangered species, including the monk seal. However, with no penalties established, the law is regarded as largely ineffectual. As far as we are aware, no one has ever been tried or convicted of killing a monk seal in Greece.
- Some fishermen are known to carry firearms in their boats, though the practice is also illegal.
- Facing dwindling fish stocks, and fierce competition from commercially intensive fisheries, coastal fishermen have long considered the monk seal a pest that 'steals' their catch and damages their nets.
- MOm estimates that some 54% of monk seal fatalities can directly or indirectly be attributed to the fisheries sector, with 35% of dead seals examined having been deliberately killed, and 18% having drowned in nets.
- Last year, MOm concluded a 3-year EU-funded research programme in association with the Fisheries Research Institute aimed at bringing about practical solutions to reducing monk seal-fisheries interactions. Although their recommendations – which included improved fisheries management to increase fish stocks and yields – were submitted to the relevant ministries, it reports that "unfortunately, up to date, no significant progress has been made."

2010, we are told, is the UN's International Year of Biodiversity and yet for all the talk about meeting future biodiversity targets, admissions of past failure, remedying mistakes, and 1000-page reports, ironically the most eloquent testimony belongs to a young seal already shot dead – the future of a dying species.

We are presenting several stories this issue devoted to the Mediterranean monk seals who have been killed since January:

- [Markos's Case: Trauma, Treatment, and Reflections](#), by Emily Joseph
- [Monk seal killed by dynamite blast in the Aegean](#), by Anastasia Miliou
- [Alarming numbers of dead seals](#), by Marianna Psaradellis
- [Monk seal deaths in the Turkish Aegean](#), by Cem O. Kiraç

If you would like to air your views on these stories, please let us know: editor@monachus-guardian.org.

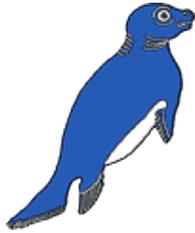
Further information

MOm. 2009. Action Plan for the mitigation of the negative effects of monk seal · fisheries interactions in Greece, Summary Report. MOm, WWF Greece, Fisheries Research Institute, 2009: 1-11. [[PDF](#)  2.9MB]

MOm. 2009. [Εξάρση των θανάτων μεσογειακών φώκων](#), 20 April 2010.

Notarbartolo di Sciara, G., S. Adamantopoulou, E. Androukaki, P. Dendrinis, A.A. Karamanlidis, V. Paravas and S. Kotomatas. 2009. National strategy and action plan for the conservation of the Mediterranean monk seal in Greece, 2009 · 2015. Report on evaluating the past and structuring the future. Publication prepared as part of the LIFE-Nature Project: MOFI: Monk Seal and Fisheries: Mitigating the conflict in Greek Seas. Hellenic Society for the Study and Protection of the Mediterranean monk seal (MOm), Athens. 1-70. [[PDF](#)  3.4MB]

SAD-AFAG. 2010. [Unsolved seal murder in Bodrum Yalıkavak](#), 27 April 2010.



International News

Vol. 13 (1): June 2010

Monachus Guardian 2009 in Spanish

Thanks to the support of the Government of the Balearic Islands, and the translation efforts of Toni Font, the June and November 2009 issues of The Monachus Guardian have now been published in Spanish.

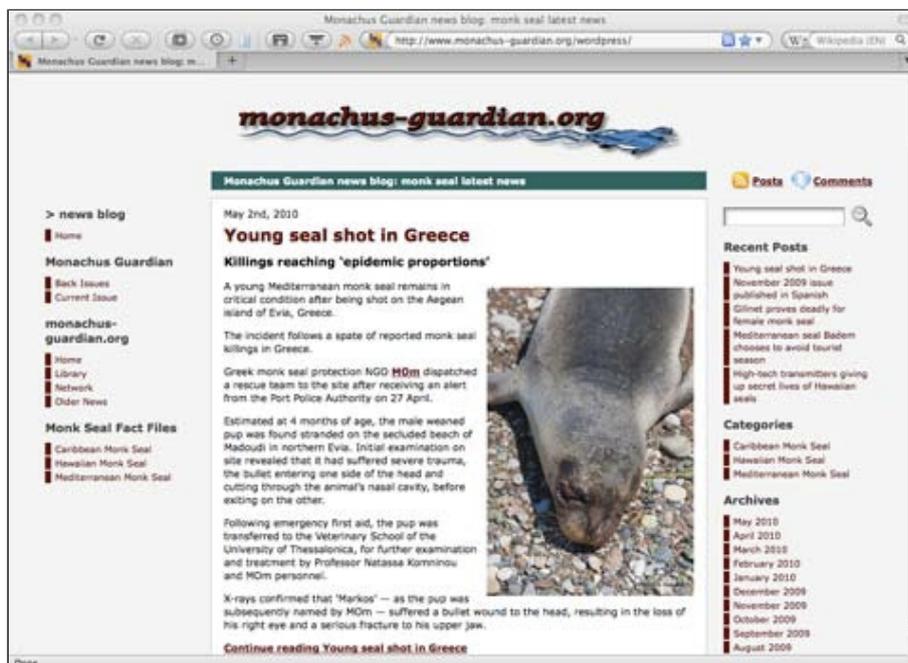
If you have Spanish-language friends or colleagues who might be interested in the publication, please let them know.

The Spanish translation can be accessed at www.monachus-guardian.org/spanish or through the TMG portal www.monachus-guardian.org.



Monachus Guardian news blog

The Monachus Guardian [news blog](http://www.monachus-guardian.org/news-blog) continues to deliver breaking news updates between the summer and winter issues of the journal.



If you have monk seal-related news, images or video you would like to submit for publication, please contact the editor@monachus-guardian.org.

Publications Watch

We take the opportunity of alerting our readers to the following publications, on monk seal, marine biodiversity or broader conservation issues.

King, Judith E. 1956. [The Monk Seals](#) (Genus *Monachus*). Bulletin of the British Museum (Natural History – Zoology) London 3: 201-256, 8 pls.

Judith King's landmark 1956 review of the Genus *Monachus* has been republished online by Biostor via the Biodiversity Heritage Library. The publication is also available as a PDF or text file download. [\[PDF\]](#) 16.2MB]

Fulton, Tara L. and Curtis Strobeck. 2010. Multiple fossil calibrations, nuclear loci and mitochondrial genomes provide new insight into biogeography and divergence timing for true seals (Phocidae, Pinnipedia). *Journal of Biogeography* 37(5): 814-829. DOI: 10.1111/j.1365-2699.2010.02271.x [\[Abstract\]](#)

A new publication on the historical biogeography of the true seals, employing genetic analysis of fossil samples. In their main conclusions, the authors state: "Incorporating multiple nuclear genes and fossil calibrations had a profound effect on the estimated divergence times. Most estimated divergences within Phocinae (Arctic seals) correspond to Arctic oceanic events and all occur within the last 12 Myr, a time when the Arctic and Atlantic oceans were freely exchanging and perennial Arctic sea ice existed, indicating that the Arctic seals may have had a longer association with ice than previously thought. The Monachinae ('southern' seals) split from the Phocinae c. 15 Ma on the eastern US coast. Several early trans-Atlantic dispersals possibly occurred, leaving no living descendants, as divergence estimates suggest that the *Monachus* (monk seal) species divergences occurred in the western Atlantic c. 6 Ma, with the Mediterranean monk seal ancestor dispersing afterwards. The tribes Lobodontini (Antarctic seals) and Miroungini (elephant seals) are also estimated to have diverged in the eastern Atlantic c. 7 Ma and a single Lobodontini dispersal to Antarctica occurred shortly afterwards. Many of the newly estimated dates are used to infer how extinct lineages/taxa are allied with their living relatives."

IUCN. 2010. 2010: Mediterranean Biodiversity – Our Life, Centro de Cooperación del Mediterráneo de IUCN, Málaga, Spain: 1-26. [\[PDF\]](#) 470KB]

A 2010 calendar marking and celebrating the International Year of Biodiversity. Devoting a page of facts and figures per month to Mediterranean biodiversity, IUCN brings its own characteristic slant to the issue, highlighting perceived threats and benefits to the reigning top of the food chain, *Homo sapiens*.



"Species provide us with essential services: not only food, fuel, clothes and medicine, but also purification of water and air, prevention of soil erosion, regulation of climate, pollination of crops by insects, and many more. In the Mediterranean, they provide a vital resource for the tourism and fishing industries, as well as having significant cultural, aesthetic and spiritual values. Consequently the loss of species diminishes the quality of our lives and our basic economic security. From an ethical point of view, species are part of our natural heritage and we owe it to future generations to preserve and protect them. [...]

The Mediterranean is a densely populated region that receives large numbers of visitors each year, and direct disturbance by humans is an important threat to some animals and plants, including iconic Mediterranean species such as the Northern Bald Ibis *Geronticus eremita* and the Mediterranean Monk Seal *Monachus monachus*, both listed as Critically Endangered. Disturbance at breeding sites can be particularly problematic, as species may abandon their young.”

EPOCA. 2010. Ocean acidification: the facts. A special introductory guide for policy advisers and decision makers. European Project on Ocean Acidification: 1-12. [PDF 2.6MB]

Climate change and ocean acidification pose serious threats to the marine environment, including Hawaiian and Mediterranean monk seals. Acidification is expected to result in plummeting fish stocks, while rising sea levels may deprive monk seals of vital resting, breeding and nursing habitat. In the Mediterranean, extreme weather events associated with global warming may increase the frequency and severity of storm surges into caves, especially during the critical autumn/winter birthing season.



This guide to the potential impacts of ocean acidification was prepared by the EU-funded [European Project on Ocean Acidification](#), a consortium of 27 research institutes and environment agencies.

“This introductory guide is written especially for policy advisers and decision makers worldwide and is a wake-up call about the double impact on our seas of climate change and ocean acidification caused by increasing atmospheric carbon dioxide levels.[...] The Earth’s geological record shows that previous episodes of ocean acidification were linked to mass extinctions of some species, and it is reasonable to assume that this episode could have the same consequences. [...] Ocean acidity has increased by 30% since the beginning of the Industrial Revolution and the rate of acidification will accelerate in the coming decades. This rate of change, to the best of our knowledge, is many times faster than anything previously experienced over the last 55 million years.”

EndQuote

Europe warns of critical species loss

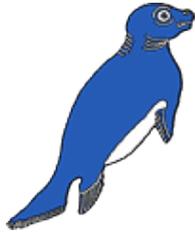
The European Commission will warn next week that, alongside climate change, the loss of plant and animal species is “the most critical global environmental threat” to the planet.

More than 700 species, including the Iberian lynx and the Mediterranean monk seal, face possible extinction. Only one in six of the EU's protected habitats has a favourable conservation status as required by EU law. Grasslands, coastlands, bogs and fens have been in decline, although forest cover has increased. [...]

“There is mounting evidence that the status of many ecosystems is reaching or has already reached the point of no

return,” states the draft. “The loss of biodiversity beyond certain limits would have far-reaching consequences for the very functioning of the planet.”

Source: [Commission paper warns of critical loss of species](#), Jennifer Rankin, European Voice, 14 January 2010.



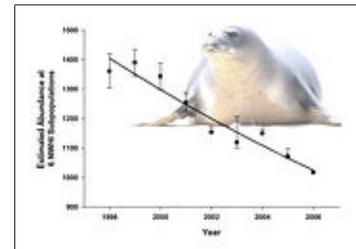
Hawaiian News

Vol. 13 (1): June 2010

Seal numbers continue to dive

NOAA Fisheries biologists recorded the lowest Hawaiian monk seal pup count in a decade during the 2009 breeding season.

In the Northwestern Hawaiian Islands (NWHI), most of which is contained within the Papahānaumokuākea Marine National Monument, researchers counted 119 pups, compared to 138 in 2008.



Charles Littnan, lead scientist in NOAA's Hawaiian Monk Seal Research Program, expressed disappointment in the results, stating that "The biggest problem is poor juvenile survival. Less than 1 in 5 pups that are born live to adulthood."

A large number of juveniles, he added, are starving to death, despite the protection offered by the Papahānaumokuākea Marine National Monument. Although researchers are still unable to pinpoint with certainty a single threat or a combination of factors responsible for the seal's tailspin into extinction, Littnan maintains that, ecologically, Papahānaumokuākea is not as pristine as appearances or popular opinion would suggest, having suffered "hundreds of years of disturbance". Such imbalances, he went on, might be causing younger and inexperienced monk seals to lose out in competition over the same prey with other apex predators, such as sharks and ulua (*Caranx ignobilis*), a species that has adapted the hunting technique of pursuing foraging monk seals and 'stealing' the prey they flush out.

As reported in previous issues of TMG, pup production at French Frigate Shoals has been hit hard by attacks from patrolling Galapagos sharks. NOAA reports that up to 35% of pups born at the shoals are lost as a result, with sharks attacking the still-nursing animals in as little as 5 centimetres of water.



Caranx ignobilis.

Previous efforts to eliminate patrolling sharks have led to controversy, while efforts to drive sharks away rather than kill them using amplified boat engine noise and electromagnetic arrays, have proved unsuccessful, admits Littnan.

The US Marine Mammal Commission, in a March 2010 letter [\[PDF 63KB\]](#) addressed to the Hawaii Board of Land and Natural Resources, supported NOAA's proposal to kill up to 20 Galapagos sharks at French Frigate Shoals, reasoning that "Each year of the

past decade sharks have killed approximately 20 to 33 percent of all monk seal pups at French Frigate Shoals. This colony's abundance has declined by two-thirds over the past two decades and reducing shark predation is necessary to maintain monk seals as functioning components of the atoll ecosystem."

However, the plan to eradicate sharks remains highly contentious among some academics, as well as ecologists who argue that such interventions will do nothing to restore the natural ecological balance of the NWHI.

An alternative strategy pursued by NOAA in the interim has instead focused on deworming in order to strengthen pups against parasite infection, and translocation to Laysan Island, where the Galapagos shark threat is minimal.

As a result of these and other threats, such as entanglement and drowning in discarded fishing gear, the Hawaiian monk seal continues to decline at an alarming rate of 4% a year, and may plunge through the psychologically important 1,000 mark within 3-4 years.

In contrast to the NWHI, the Main Hawaiian Islands, says Littnan, offer something of a ray of hope for the continued survival of the species, with the population now reaching a hundred plus.



Courtesy: NOAA PIFSC
An endangered Hawaiian monk seal with a discarded container lodged over its muzzle. Further information on NOAA's Marine Debris Program: <http://marinedebris.noaa.gov/>

During 2009 counts, 6 births were reported on Molokai, 5 on Kauai, and 2 each on Oahu and Maui.

The species, however, continues to face varied threats on the heavily developed Islands, including entanglement and drowning in gill nets, injury from fishing hooks, deliberate shooting incidents, as well as the perils posed by too close a contact with humans - that might just earn the offending animal a one-way ticket to the aquarium.

Further information

NOAA. 2009. [Field season for Hawaiian monk seal population research draws to close](#). Quarterly Research Bulletin / October 2009. NOAA Pacific Islands Fisheries Science Center.

Wilson, Christie. 2009. [Fewer Hawaiian monk seal pups](#), Honolulu Advertiser, February 1, 2010.

KP2, aka 'Ho'ailona'

The orphaned monk seal known by its NOAA code KP2 (Kauai Pup 2) was transferred from its temporary home at the Waikiki Aquarium to the Long Marine Laboratory at the University of California in Santa Cruz (UCSC) in March 2009. The seal is now under the care of specialist researchers, animal trainers and veterinarians at the [Marine Mammal Physiology Project](#), under the leadership of Dr. Terrie Williams.

Though successfully hand-reared in captivity at the Kewalo Research Facility in Honolulu, KP2's subsequent interactions with swimmers and beachgoers led to increasing concerns both over public safety and the viability of his own readaption to the wild.

Diagnosis of cataracts in both eyes and diminishing eyesight led NOAA officials to intervene by taking the pup into captivity. The move provoked public anger on

Molokai, where KP2 had become something of a celebrity [see [Short-lived freedom for KP2](#), TMG 12(2): 2009 and [Freedom at last for KP2](#), TMG 12(1): 2009], and even unprecedented [demonstrations outside the Waikiki Aquarium](#).

KP2 has now been renamed Ho'ailona (Hawaiian for "a sign from the ocean"). Researchers at the Marine Mammal Physiology Project state that the seal will be studied to yield insights into "the energetic needs of Hawaiian monk seals", and point to - as yet hazy - conservation benefits for the species.

A [press release](#) issued by the University on 18 March states that "Williams is particularly interested in conducting basic metabolic studies that will help researchers understand how much energy a monk seal has to expend to find food and thrive in different environments. In the controlled environment at Long Marine Lab, researchers can measure Ho'ailona's oxygen consumption and calculate how much energy he expends per swimming stroke. They can also study his responses to different water temperatures. [...] Williams hopes to learn how sensitive monk seals are to changes in ocean temperature. This is important for understanding how vulnerable the species may be to climate change, she said."



Head trainer Beau Richter has Ho'ailona lie on a platform scale so researchers can weigh him. Photo: Terrie Williams.

Beyond an acknowledgement of the possibility, there has been no indication as yet when Ho'ailona may receive surgery to remove the cataracts that are affecting both eyes.

Further information

[Ho'ailona's Journal](#). A new web site at UCSC to follow Ho'ailona's progress.

[Ho'ailona Monk Seal](#). A Facebook page dedicated to Ho'ailona, also run by UCSC.

Schofield, D., G. Levine, F. Gulland and C. Littnan. 2009. The first rehabilitation and release of an abandoned endangered Hawaiian monk seal (*Monachus schauinslandi*) pup in the Main Hawaiian islands. Poster presentation, *in*: Workshop "Research, Management, Conservation, and Policy in Monk Seal Recovery: A Global Perspective", 18th Biennial Conference of the Society for Marine Mammalogy. 10th October 2009, Quebec, Canada. [[PDF](#) 552 KB]

Schofield, D. 2009. [Freedom at last for KP2](#). The Monachus Guardian 12 (1): June 2009.

TMG. 2009. [Short-lived freedom for KP2](#). 12 (2): November 2009.

Tougher penalties for seal killers

The 90-day imprisonment and \$25 fine imposed on a Kauai man convicted of the shooting death of a pregnant Hawaiian monk seal in May 2009 [see [Killings on Kauai](#), TMG 12(2): November 2009] drew widespread criticism at the time for its perceived leniency. That, in turn, also spurred the state legislature to draft tougher penalties.

Reasoning that the existing misdemeanour penalty is insufficient to deter repeat offences in the future, Hawaiian legislators drafted a bill that would make the harming, killing or harassing of a monk seal a felony punishable by up to one year in jail and a \$50,000 fine.

Senate Bill 2441 was passed unanimously by the state House and Senate in mid-April, and sent to the office of Governor Linda Lingle for further action.

Three known monk seal killings have occurred on the Main Hawaiian Islands of Kauai and Molokai since 2009. The killing of a 4-year old male seal in April 2009 remains under federal investigation, with a reward of \$30,000 now being offered for further information on the perpetrator(s), increasing substantially the original \$5000 offered by NOAA. The latest deliberate killing occurred on or around 14 December on Molokai, with NOAA officials announcing that the large male seal identified as R019 had been deliberately shot.

NOAA officials in Hawaii have voiced guarded support for the planned increase in legal penalties, though with animosity towards the species on the rise in certain parts of the MHI, has reiterated its view that community outreach and education may ultimately prove the most effective protector of the monk seal.

NOAA seal staff and NGOs are having to counter the growing misconception among some Hawaiian communities that the monk seal is an alien, non-native species.

Hawaiian Publications watch

Marine Mammal Commission. 2009. Annual Report to Congress 2008. Marine Mammal Commission, Bethesda, Maryland: 1-282. [\[PDF\]](#) 4.4MB]

The [Marine Mammal Commission's](#) Annual Report to Congress for 2008 was published in November last year. For those interested in Hawaiian monk seal population trends, human and natural threats to the species, as well as efforts underway to stem the species' continuing decline, the MMC's annual report remains an indispensable guide. The current edition assesses conservation efforts led by NOAA agency NMFS, in addressing the multiple threats that are currently reducing monk seal numbers by 4% per year. Within the NWHI, where the population fell below the 1,000 mark in 2007 for the first time, these measures include: Increasing juvenile survival, reducing shark predation and lessening the impact of marine debris. The report also assesses the current state of play for the monk seal in the Main Hawaiian Islands, where the monk seal is showing unexpected signs of recovery yet faces different threats.



NOAA. 2010. Pacific Islands Region Marine Mammal Response Network Activity Update, Volume 12, May - August 2009. [\[PDF\]](#) 2.4MB]

January 2010 saw the publication of the NOAA's [Marine Mammal Response Network Activity Update](#) (Pacific Islands Regional Office), a newsletter focusing on marine mammal rescue, monitoring and monk seal pupping

around the Main Hawaiian Islands, as well as efforts to limit human-seal interactions. The current edition covers the May-August 2009 period and, among other issues, focuses on monk seal births during the 2009 pupping season, and use of a specially designed instrument to remove fishing hooks from the mouths and throats of monk seals.

News Watch Highlights

Gillnet proves deadly for female monk seal

The state Department of Land and Natural Resources is investigating the apparent drowning of a 9 1/2 -month-old Hawaiian monk seal that was discovered tangled in a gillnet – the sixth such death since 1976.

At 10:26 a.m. Tuesday, the female monk seal, identified by scientists as RA14, was spotted floating off Bellows Beach. Lifeguards discovered the seal wrapped in a monofilament gillnet and pulled her from the water.



RA14, found entangled in a gillnet.

Necropsy results determined the seal, nicknamed Mikala, died of an apparent drowning due to the entanglement. [...]

The Conservation and Resources Enforcement Division seized the netting as part of its investigation. It is unknown who owns the net.

Under state law all lay nets must be registered with the Department of Land and Natural Resources. It is unlawful to leave a lay net unattended for more than a half-hour. Nets also must be inspected within two hours after they are set.

Hawaiian monk seals are protected under the U.S. Endangered Species Act. Killing one is punishable by up to a year in jail and a \$50,000 fine. [...]

[Gillnet proves deadly for female monk seal](#), Honolulu Star Bulletin, 16 April 2010.

High-tech transmitters giving up secret lives of Hawaiian seals

Navy pays for devices that also gauge how sonar affects species

Up to 15 monk seals in Hawai'i will be doing their part over the coming year to help scientists understand them better.

The critically endangered animals will wear small transmitters that reveal their movements, including how deep they dive, when they haul out on land and how far they roam.

Accumulating normal habits of the seals also will be used to gauge the effect Navy training exercises, including use of sonar, may have on the animals.



Hawaiian monk seal 'Kermit', equipped with mobile phone tag.

The Navy is footing the bill for the \$4,500-each transmitters, NOAA scientists' travel and veterinary costs associated with the project. The project is slated to last several years.

Currently five seals are wearing the transmitters – one on O'ahu and four on Moloka'i. Additional transmitters will be placed on 10 more seals on Kaua'i and O'ahu in coming months, said Charles Littnan, lead scientist for NOAA Fisheries' Hawaiian Monk Seal Research Program. [...]



Kermit, an adult male monk seal, was tracked for three days along the south shore of Kauai. The line shows his path; each dot is a location. Kermit dived 100 to 150 feet and surfaced about every six minutes. Courtesy: Charles Littnan / NOAA

The transmitters “are a lot like a smartphone,” Littnan said. They show a seal’s location with global positioning coordinates and also track water temperature, salinity and depth of dives. They “phone home” when the seals are on the surface of the water or on land and the devices can transmit via a cell phone tower, Littnan said. [...]

[High-tech transmitters giving up secret lives of Hawaiian seals](#), Diana Leone, Honolulu Advertiser, 11 April 2010.

~ Other News Watch items are carried on our [TMG News blog](#) ~

EndQuote

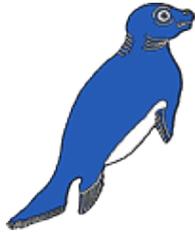
Unsuspecting tourists

A dozen years ago I met a strapping young man, just out of high school and working as first mate on a snorkel cruise boat. Much to my amazement, one of his duties on daily excursions to Molokini was to discourage a rambunctious teenage monk seal, known for making amorous advances on unsuspecting tourists.

I had read about "Humpy," as the seal was dubbed, and his interactions with surprised swimmers, mainly in the Makena area of South Maui. Agencies responded to the ongoing

incidents by relocating the frisky seal to Kaho'olawe. But within days, the seal had returned and was frequenting Molokini islet, with its hundreds of daily snorkelers and divers. While some visitors were undoubtedly thrilled to encounter the rare pinniped, they may not have been aware of the dangers associated. To humans, yes, as seals are known to nip or bite. But much more so to the seal. [...]

Source: [The Plight of the Hawaiian Monk Seal](#), Rob Parsons, Maui Time, 8 April 2010.



Mediterranean News

Vol. 13 (1): June 2010

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

Croatia

Monk seal appearances at Kamenjak

Sightings at Cape Kamenjak near Pula in northern Croatia continue to be recorded by observers on a frequent basis, reports Jasna Antolovic, of the [Mediterranean Monk Seal Group](#) (Grupa Sredozemna Medvjedica).

The Italian monk seal NGO [Gruppo Foca Monaca](#) (GFM), led by Emanuele Coppola, has been assisting in the monitoring programme, which posted observers in suitable vantage points from dawn-to-dusk.



The seal nears observers on 27 February 2010.



Teamwork: Italian and Croatian colleagues at Cape Kamenjak.

Greece

Alarming numbers of dead seals

Fifteen dead monk seals have been reported to [MOM](#)'s Rescue and Information Network (RINT) so far since January 2010. The cases involve seals of all age groups (6 adults, 3 sub-adults, 4 weaners, 1 pup and 1 of unknown age group) and both sexes.

The cases also originate from different areas of Greece, namely 5 in the Dodecanese (Eastern Aegean), 3 in the Northern Aegean and 6 in the Cyclades. Of these cases, 3 animals were shot to death, while 2 more reveal signs of violent death.

Although it is still too early to draw firm conclusions, the number of deaths is already high and the number of deliberate killings even more alarming.

MOm has already brought these concerns to the attention of the Minister of Environment, Tina Birbili, and urgently requested the implementation of the Action Plan for the Mitigation of the Negative Effects of Monk Seal-Fisheries Interactions in Greece, published last year, following a 3-year research project funded by the EU Life/Nature programme. - Marianna Psaradellis, MOm.



Shot dead on Tilos.

Further info

MOm. 2009. Action Plan for the mitigation of the negative effects of monk seal · fisheries interactions in Greece, Summary Report. MOm, WWF Greece, Fisheries Research Institute, 2009: 1-11. [[PDF](#) 2.9 MB]

Gyaros enters the NATURA 2000 network

Following the opening-up of a restricted naval zone at the island of Gyaros in the central Aegean, MOm undertook a research effort to assess the status of the Mediterranean monk seal in the area.



Gyaros.

Data collected quickly led us to the conclusion that this newly discovered breeding colony is of utmost importance for the conservation of the species and that it needs urgent protection. Since Gyaros was not at that time part of the NATURA 2000 network, it was feared that its new status, free of military access restrictions, would spell trouble for the monk seal colony.

MOm presented these findings and scientific evidence to the Greek authorities, with an appeal that the island be incorporated in the Natura 2000 network. The Ministry of Environment subsequently agreed, and has recently taken the necessary legal steps to achieve that objective. This should be considered an important first step for the protection of the species on Gyaros before detailed protected area management plans can be designed and implemented. - Panos Dendrinis, MOm.

Further info

Dendrinis, P., A.A. Karamanlidis, S. Kotomatas, V. Paravas and S. Adamantopoulou. 2008. Report of a new Mediterranean monk seal (*Monachus monachus*) breeding colony in the Aegean Sea, Greece. *Aquatic Mammals* 34(3): 355-361. [[Abstract](#)]

EndQuote

More emotion, less science

Croatian Doctor Sasa Nesic from Pula recorded the first sighting of a Mediterranean Monk Seal in 20 years on 24 January.

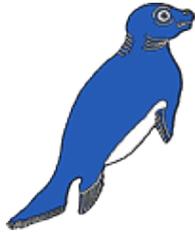
Nesic saw the "beauty Glaxiana," as he named his Mediterranean Monk Seal, at the place where he usually goes to relax and play the guitar.

He recorded more than 20 minutes of Glaxiana, but their "meeting" lasted for an hour and a half.

In his interview with the Croatian Times, he said: "I would love to talk more about emotion and less about scientific facts. My friend told me the appearance of the Mediterranean Monk Seal in front of me in my favourite place symbolised love, and I find that beautiful. I have proved the seal exists in the Adriatic Sea. She enchanted me totally, like sirens in fairy tales."

Nesic added he would love it if his experience was educational for the younger generation and make it more aware of the value of one of the most-endangered mammals in the world.

Source: [A Croatian doctor sights a Mediterranean Monk Seal](#), Croatian Times, 11 February 2010.



Mediterranean News

Vol. 13 (1): June 2010

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

Mauritania & Western Sahara

New surveillance vessel for the “Coast of the Seals” Reserve

At the beginning of 2010 a new inflatable vessel was introduced to the surveillance system of the “Coast of the Seals” reserve. This new 5 meter long boat will replace the old one that has provided excellent service over the last 8 years.

Marine surveillance has proved an essential tool in eliminating fishing gear from the area, bringing tranquillity to the monk seal colony that lives along these six kilometres of coast, and minimising the risk of entanglements, mainly for juveniles and pups. – Mercedes Muñoz and Abba O.Mohamed, CBD-Habitat.

Monk seal catalogue updated

As is the practice every year, at the beginning of 2010 the [CBD-Habitat](#) catalogue of the monk seal colony of the Cabo Blanc peninsula was updated with photographs obtained from the annual photo-identification campaign and from the images obtained from the recordings of the video-monitoring system during 2009.



Following the revision the monk seal catalogue now features a total of 156 files of subadults and adults (66 females, 61 males and 24 of undetermined sex). Comparing the results with previous years and taking into account the high recapture rates of the animals and the high level of monitoring effort, we can see a clear rising trend in the population dynamics evolution that makes us optimistic about the colony’s recovery and the protection measures already established. – Mercedes Muñoz and Miguel A.Cedenilla, CBD-Habitat.

Record births at Cabo Blanco

In the previous issue of The Monachus Guardian [[Towards a 50-pup annual birth rate](#), TMG 12(2): November 2009], we reported that the number of pups born during 2009 at that point was 48. We added that, with more births expected, 2009 productivity might even reach the 50 births barrier.

With the 2009 results now in, we can announce with enthusiasm that the number of pups born was 51, breaking the last record set in 2006, when the baby boom rose the average productivity from 26 to 48 [[Notable increase of newborn pups at Cabo Blanco in 2006](#), TMG 9(2): November 2006].



This last year (2009) the breeding season began in May and the maximum number of births took place between September and October, with 13 and 14 births respectively. – Miguel A. Cedenilla, Moulaye O. Haye and Anna Varea, CBD-Habitat.

Teachers trained in responsible and sustainable fisheries

Under a project co-funded by the Spanish Agency for International Cooperation (AECID) and the MAVA Foundation, CBD-Habitat signed a collaboration agreement with the National School of Fisheries of Mauritania (ENEMP), in order to introduce to their training Curriculum a course on sustainable and responsible fisheries. This school is responsible for the 2 year training of the future officers of the industrial fishing fleet, as well as shorter courses on different topics for artisanal fishermen.

Until now, responsible and sustainable fisheries, as well as other important aspects related to the impact of human activities on the marine ecosystem, had not been part of the School's Curriculum, which focused mainly on exploitation and operation techniques. This has now been remedied. Several outside experts, together with the staff of the School, designed and developed the contents of this Curriculum subject, including the following aspects: marine pollution, marine biology and ecology, and responsible and sustainable fisheries. Several educational tools were designed to support teachers in their task of transmitting this knowledge to their students. These included PowerPoint presentations, leaflets, brochures, posters, TV documentaries and also a 30-minute video on environmental awareness for the fisheries sector. Finally numerous sources and bibliographic references were provided to contribute to the Library of the School on these issues.



Teachers training at the ENEMP.

All these materials were introduced during the one week training period developed for the teachers of the ENEMP, so they could familiarise themselves with them and prepare for the new subject they will have to teach in the future. – Ana Maroto, Hamdi M'Barek and Pablo Fernández de Larrinoa, CBD-Habitat.

Further information

La mer n'est pas une poubelle! Poster (French and Arabic). [[PDF](#)  2 MB]

La mer n'est pas une poubelle! Pamphlet (French and Arabic). [[PDF](#)  6.2 MB]

Que pecherez-vous demain? Poster (French and Arabic). [[PDF](#)  430 KB]

Fishermen and students of Banc d'Arguin National Park trained in sustainable fisheries and environmental education

Under the collaboration agreement established between CBD-Habitat and the National Park of Banc D'Arguin, several courses on responsible fishing and marine pollution were conducted for the artisanal fishermen of the area. More than 300 fishermen benefited from these courses that generated intense debate about the role of marine reserves, minimum sizes, biological impacts, etc. Informative materials, edited in collaboration with the National School of Fisheries of Mauritania (ENEMP), were distributed to support the training courses.



Artisanal fishermen attending the course at the Banc d'Arguin National Park.



Children participated in environmental awareness activities in nearby schools.

At the same time, talks on the conservation of the marine environment were developed for the kids of the 3 Park schools.

Environmental awareness activities were conducted in each school, each featuring a storytelling performance, the screening of a documentary and the holding of a lecture and discussion on the environment. The course was designed this way to hold the attention of children and to allow them to reflect and give advice on preserving the environment. – Hamdi M'Barek and Ana Maroto, CBD-Habitat.

Further information

Code de bonnes pratiques pour une pêche responsable (in French): 1-36. [[PDF](#)] 7.6 MB]

Code de conduite pour une pêche responsable de la FAO (in French and Arabic): 1-12. [[PDF](#)] 7.2 MB]

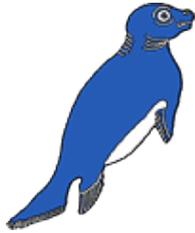
Fifth Working Group Meeting



On 18-20 November 2009, the fifth meeting of the Mediterranean Monk Seal Atlantic Action Plan working group took place in the village of Iwik, in the National Park of Banc d'Arguin (Mauritania). Representatives of the members of the range states, the

Convention on Migratory Species (CMS) and outside observers from the Regional Program for the Conservation of the Marine and Coastal Environment of Western Africa (PRCM) attended.

The status of the Action Plan in the four countries was updated, as well as information on the progressive recovery of the two remaining monk seal populations in the Atlantic, and the advances in the satellite monitoring project. Afterwards, the participants discussed such issues as governance of the Action Plan following the signature of the Memorandum of Understanding, as well as new short and medium term conservation priorities, mainly the reinforcement of the protected areas of the Atlantic range. – Pablo Fernández de Larrinoa, CBD-Habitat.



Mediterranean News

Vol. 13 (1): June 2010

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

Turkey

Monk seal deaths in the Turkish Aegean

Two monk seal deaths were reported in April and May 2010 via the AFBIKA information network of [SAD-AFAG](#).

In the first case on 21 April 2010, local residents in a summer house complex observed a dead seal floating in the sea in the Yalıkavak Kızılburun region of the Bodrum Peninsula and on their own initiative pulled the corpse to shore. They immediately contacted Yalıkavak Municipality and the SAD-AFAG representative veterinarian Dr. Fulya Massozi.

Following an initial examination on site by Dr. Massozi and municipality officials, the corpse was transported to the Yalıkavak veterinary clinic for further examination.

The resulting necropsy determined that the seal had been shot three times in the right shoulder; four ribs and the right shoulder blade had been broken, with a significant amount of blood accumulating in the chest cavity. Internal bleeding was found to be the cause of death. One rifle bullet and several small calibre pellets were discovered in internal organs.



The female Mediterranean monk seal was shot intentionally while in the sea – most probably from a boat; she was a sub-adult around 200cm in length, weighing 150 kg. The necropsy concluded that she had been in healthy condition when shot dead.

In the second case, May 2010, the Coast Guard informed SAD-AFAG that it had discovered a dead juvenile monk seal floating on the sea surface while patrolling the northern coasts of the Dilek Peninsula near Bayrak Island. The resulting necropsy by Dr. Fulya Massozi at Yalıkavak found two hooks in the stomach but no bullets in the

body. It was concluded that the cause of the death was probably due to complications from stomach wounds caused by the hooks. Based on the seal's overall length, it was judged to have been born in 2009.

According to national legislation, Mediterranean monk seals are among Turkey's strictly protected species; shooting a seal can incur a 10.000 TL fine (around €5000). However, SAD-AFAG, which has been carrying out studies on Mediterranean monk seals and their habitats on an ongoing basis since 1987, has yet to witness a single case of Mediterranean monk seal murderers being caught or punished for their actions in Turkey.

Although Mediterranean monk seals are protected under the Bern and Barcelona Conventions, with Turkey also a party to its protocols, no effective action has been taken to prevent such intentional killings taking place. The most promising means of reducing such killings – rather than searching out the perpetrators – is to develop sustainable fishery policies based on scientific studies, and to ensure enforcement of regulations against illegal trawlers, purse-seiners, speargun fishing, dynamite fishing and basket trap fishing. Deliberate killing of seals will only decrease when rivalry among coastal fishermen and monk seals diminishes as a result of an increase in fish stocks through better management practices. – Cem O. Kiraç, SAD-AFAG.

New population size assessment study in the NE Mediterranean

How many seals survive in the Mediterranean? How many were there a decade ago? Are their numbers increasing or decreasing? Are the various conservation measures applied to protect the species helpful? What is the demographic structure? What is their average home range? Are they sufficiently mobile that we can explain unusual sightings, such as in Israel or the north Adriatic?

These are just a few of the unknowns surrounding the Mediterranean monk seal that hinder the formulation of sound conservation strategies. On the other hand, these critical unknowns remain difficult to solve because the methodologies that can be applied to such a rare and widely dispersed marine mammal are very limited.

During its various research activities carried out in the northeast Mediterranean, [METU-IMS](#) has developed a methodology that may help in answering some of these unknowns. This methodology involves photo-trap deployment in caves and photo-identification of seals photographed by the traps. The numbers of identified seals captured by the periodically deployed photo-traps is used to estimate the size of the population using the Mark-Recapture technique.



A newborn seal photographed by the photo-traps.



First findings of the study: this female has been identified at two different caves 120 kilometers apart.

So far, the method has been tested on the west coast of Mersin [TMG 10(2):2007], Iskenderun [TMG 7(2):2004], Northern Cyprus [TMG 9(2):2006], and Antalya [TMG 11(2):2008], and the results have proven successful. These experimental attempts targeted small colonies inhabiting relatively small, geographically isolated regions. As such, the resulting assessments were far from reflecting the overall population size of the northeastern Mediterranean.



Position of the caves included in the study.

Recently, however, RAC/SPA has agreed to fund (for the Turkish coast section) a new study which covers all the small colonies discovered so far in the northeastern Mediterranean.

Deployment of the photo-trap cameras has been completed and 25 traps were placed in the caves indicated in the map above. The data collected will be retrieved in June and the photo-traps will then be re-deployed for the second phase of the assessment. The study is planned to last one complete year. - Ali Cemal Gücü, METU-IMS.

Harbour seal at the distant end of the Mediterranean Sea

On 4 April 2010, a dead seal washed ashore in Goksu Delta at the northeastern end of the Mediterranean ($36^{\circ} 18.0$ N - $34^{\circ} 01.8$ E). It was first found by a Dutch bird watcher, Vim Genzevles, who immediately contacted the local authorities based in Goksu Specially Protected Area.

The examination of the carcass by IMS-METU (Institute of Marine Sciences - Middle East Technical University) scientists revealed that the seal was a female Harbour seal (*Phoca vitulina*).

The stranding location is far beyond the distribution range of the species. In order to learn whether the seal might have been a show animal kept in captivity in one of the dolphinariums nearby, the responsible official for CITES at the Turkish Ministry of Agriculture and Rural Affairs was contacted. However, no record of a harbour seal was found among the marine mammals brought into the country within the last 5



Harbour seal, stranded in Goksu Delta.

years. No contact could be made with neighbouring countries except Israel. Dr. Aviad Scheinin of IMMRAC (Israeli Marine Mammal Research & Assistance Center) kindly replied that Israel does not have any dolphinariums apart from the Dolphin Reef in Eilat (Red Sea) which does not keep seals. – Ali Cemal Gücü, METU-IMS.

Badem takes Greek holiday, but is now penned for summer

Released in January from her temporary confinement in a specially-constructed pen in Gökova Bay, orphaned seal Badem wasted little time swimming off to Greece [[New cage built for Badem](#), TMG news blog]. [SAD-AFAG](#) staff caring for Turkey's most talked about pinniped had hoped that this, the latest in a string of captures and releases, would help the seal readapt to the wild, lose her interest in interacting with humans, and perhaps even find a mate. However, it was not to be.

Her first known port of call was the adjacent eastern Aegean island of Rhodes, and the popular port of Lindos.

Greek NGO [MOM](#) was alerted to the seal's presence on 21 January 2010 by the Hydrobiological Station of Rhodes. Observers reported the animal displaying a range of un-seal-like behaviours, including resting on small fishing boats in the harbour, and allowing people to pet it. The unusual behaviour proved, in fact, the giveaway clue that allowed identification of the seal as 'Badem'.

Following contact and information exchange with their Turkish counterparts SAD-AFAG, MOM dispatched its own rescue network personnel to Rhodes in order to assess the situation, liaise with local bodies, and formulate a range of possible actions to deal with the 'problem' seal.

Badem became imprinted on her human carers during her lengthy 5-month rehabilitation, a condition exacerbated following her release in April 2007 by swimmers' and beachgoers' demands to swim and play with her. Several people have been bitten or scratched as a result.



Badem in the popular port of Lindos, on Rhodes.

On 23 January, MOM reported sightings of Badem in the old trade port of the island, where she was reported resting on board a boat until sunset.

She reappeared at noon the following day at neighbouring Simi island, closer again to the Turkish mainland.

MOM continued to monitor the animal's movements through its rescue network (RINT), while drawing up a range of options to be considered by the authorities should the animal decide to remain in Greece during the busy summer tourist season.

By March, however, Badem had decided to return to her old haunts in Turkey, and was sighted near Marmaris sleeping onboard a dinghy.

SAD-AFAG's representative Zafer Kızılkaya was quoted by the Turkish daily *Hürriyet* as saying: "she was resting in a dinghy, but it seems some people took advantage of this, and we received reports that some people were kicking her and throwing stones at her. Unfortunately the attitude of many Turkish people is that, when they see an

animal like Badem, they want to play with her, but really it's more like torture. This is quite intolerable."

He went on: "This sort of abuse is unacceptable, but is hard to stop. A decision had already been made to take her to a secure, protected place once the season started, and this was planned for the end of May. While it is better for her to be free, it is imperative that she and her kind are safeguarded from danger and ignorant actions of people who don't know any better."

Badem was subsequently transferred to the newly-constructed 50m diameter sea pen in Gökova Bay, where she will spend a quiet if lonely summer away from beachgoers and swimmers. The pen, funded by wealthy Turkish businessman Mustafa Koç, was also conceived as a general rescue facility for marine animals in distress, and cost 75,000 Turkish Liras to construct (approximately €40,000).



Badem in the newly-constructed sea pen.

SAD-AFAG has expressed confidence that the enclosure will allow Badem to continue to feed on live fish.

Further information

Hürriyet Daily News. 2010. [New cage built for seal Badem](#), 3 January 2010.

Hürriyet Daily News. 2010. [Mediterranean seal Badem chooses to avoid tourist season](#), Jane Tuna Akatay, 12 April 2010.

Hürriyet. 2010. [Hürriyet Gallery](#): gallery of photos on Badem and her new enclosure.

SAD-AFAG. 2010. [Badem back home to spend summer](#), 16 April 2010.

TMG. 2010. [Badem escapes, then returns to summer confinement](#), TMG 12(2): November 2009.

TMG news blog. [Badem](#).

Field Studies in Gökova SEPA

Field studies on the Mediterranean monk seal and its habitats have been completed within Gökova Bay as part of the Gökova ICMM Project funded by BBI Matra.

Cem Orkun Kıraç, Nesimi Ozan Veryeri (Project Manager), Erkin Tonguc (SAD-AFAG research team) and Can Görgün (chairman of the Akyaka Fisheries Cooperative, who has wide experience of the area) participated in the surveys, which took place between 4-9 May 2010.

The studies began on the northern side of the Gökova Special Environmental Protection Area (SEPA), which has a 207km long coastline in total. The research team subsequently undertook coastal surveys and observations covering the entire Gökova SEPA region and the islands. Fieldwork was carried out using a 8.5m fishing boat navigating at low speed. Potential habitats of the Mediterranean monk seal were discovered while distinctive and impressive new information was gathered on coastal



Cave survey along the northern coasts of Gökova Bay. May 2010.

and marine habitats. Breeding habitats of the Mediterranean monk seal were identified and an adult female observed and photographed. The adult female, which was found in a cave along the northern coasts of Gökova Bay between Akyaka and Ören, was also filmed using a digital camera. The entire coastline was also photographed by digital camera and the caves / caverns mapped. Suitable caves were checked for the presence of seal(s) or traces. Survey results reveal that the northern coasts of Gökova SEPA have a significant number of caves and caverns, two of which bore monk seal traces.

Face to face interviews with the local artisanal fishermen, in order to gather firsthand monk seal observations and information on factors threatening the species and its habitats, will continue during the summer of 2010. The data derived from the survey will assist in developing the draft management plan to be prepared for the Gökova SEPA Region in association with SAD-AFAG, local NGOs, EPASA (Environment Protection Agency for Special Areas), MARA (Ministry of Agriculture and Rural Affairs) and other stakeholders, including artisanal fishermen. – Cem O. Kırac, N. Ozan Veryeri and H. Güçlüsoy, SAD-AFAG.

Habitat destruction along the Gökova Bay coastline

Habitat destruction was observed along the coastline of the Gökova SEPA during May 2010. Local people and NGOs, including Gökova Akyakayı Sevenler Dernegi (GAS Der), alerted SAD-AFAG to this unexpected development. Supported by photos and video evidence the initial report revealed that a 200-250m length of coastline, including coastal wetland with reed beds, had been filled with earth using heavy construction machinery and trucks, to a width of approximately 10m. Paradoxically, this destruction occurred in the middle of a coastal zone management planning project carried out by the NGOs in cooperation with EPASA and MARA. The Gökçe village elder is deemed responsible, having taking this action unilaterally, without the permission of the relevant authorities. Upon intervention by SAD-AFAG and GAS Der, the village elder agreed on 14 May to cease the construction immediately and to restore the area. Unfortunately, he had previously attempted to cover up the illegal work using wetland mud and soil, making things worse rather than better.



SAD-AFAG and GAS Der immediately reported the matter to EPASA, requesting that the organization take steps to halt the destruction and restore the area to its original condition. The protection of such unspoilt coasts have utmost importance for the conservation of endangered marine and coastal species such as the monk seal, Eurasian otters, osprey, terns, Audouin's gull, little egrets and other sea and shore birds. – N. Ozan Veryeri and Cem O. Kırac, SAD-AFAG and Bahar Suseven, GAS Der.

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Environmental impacts of Karaburun ferry boat terminal

In October 2009 SAD-AFAG was requested by the Ministry of Environment and Forestry to provide its opinion on the possible environmental impacts of a port construction project planned for Arslan Cape, Mimoza Bay, on the Karaburun Peninsula, by the DLH Izmir Transportation Regional Directorate.

The project envisages the construction of a 220m long jetty, an 80m long and 10m wide landing-stage, and a 51m long additional pier. Two 20m long slopes constructed on the edges of adjacent piers would serve as boat access for passengers and vehicles.



Artist's impression of the Arslan Cape construction, based on current plans.

Under the plan, ferryboats with the capacity of 20 vehicles and 250 passengers will sail the route between Izmir - Foça - Mordogan - Karaburun. Although dredging would not be performed, land filling would cover approximately 9.500m². Water depth is around 0-6 meters in the area. According to the calculations, approximately 47.500m³ coastal fill would be required.

In the event that the port construction comes to realisation, some species like the Mediterranean monk seal and sea grass (*Posidonia oceanica*) would in our view be seriously threatened and coastal and marine habitats suffer deterioration. While Arslan Cape does not hold a breeding cave, numerous seal sightings in the vicinity have been recorded by SAD-AFAG from 1991 - 2009 [See [Karaburun and the Mediterranean Monk Seal](#), below].

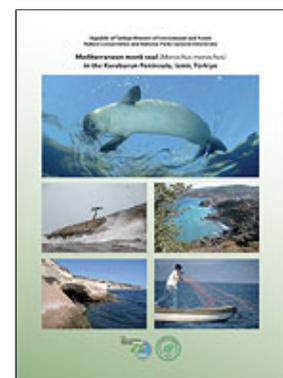
SAD-AFAG believes that an alternative investment could be realised by using the already existing Saipaltı Port area, approximately 700m south of Arslan Cape, or Karaburun Port, about 1km north, both of which offer similar opportunities for less cost and environmental impact. Recent rumours suggest that the investor is on the verge of giving up on the Arslan Cape project. However, if that does not transpire, SAD-AFAG is willing to take court action in an effort to prevent it going ahead.

- N. Ozan Veryeri and Cem O. Kırac, SAD-AFAG.

Karaburun and the Mediterranean Monk Seal

A new publication on Karaburun and the monk seal has been prepared by SAD-AFAG, and published by the Turkish Ministry of Environment and Forestry in December 2009.

This publication underlines the importance of Mediterranean monk seals as one of the rarest animals in the world, and as symbolising a need for protection of the marine and coastal ecosystems as a whole. The book presents a comprehensive assessment of the species, as well as its habitats and the threats it faces around the Karaburun Peninsula - one of the 5 high priority monk seal areas in Turkey. The publication also



compares the past and current status of monk seals and habitats on the Karaburun Peninsula, and presents an analysis of the threats and further measures to be taken for its protection. – Eren Özden, SAD-AFAG.

Further information

Kıraç, C.O. and N.O. Ververi. 2009. Mediterranean monk seal (*Monachus monachus*) in the Karaburun Peninsula, Izmir, Türkiye. Ministry of Environment and Forest. December 2009, Ankara: 1-40. [PDF  18.5MB]

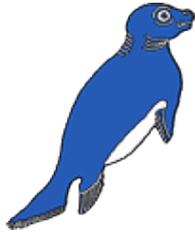
EndQuote

The boon of peace in military zones

The UN realized that biodiversity loss was a critical problem back in 1992 and has been working to halt the decline in numbers of species on the planet ever since. A major part of that effort involves preserving "biodiversity hot spots" - chunks of habitat where the broadest and most diverse array of species can be found. There are over 10 recognized biodiversity hot spots along the route of the former Iron Curtain, which has lead scientists to more closely evaluate the biodiversity of military border zones, such as the Demilitarized Zone in Korea and the Green Line in Cyprus. [...]

Fishermen in coastal villages bordering the Green Line have spotted Mediterranean Monk Seals, one of the most endangered mammals on the planet due to hunting and habitat loss. The seals have been hunted since the times of the Roman Empire and fishermen to this day view them as pesky competitors for fish. "Due to the shy nature of the Monk Seal these areas are ideal for them to rest and maybe even breed," says Wayne Fuller, a research scientist at the European University of Lefke in North Cyprus. Fuller added that it's unclear how many seals there are, but that this undisturbed coastline habitat could be critical to their continued existence. [...]

Source: [Military Zones Mean Boon For Biodiversity](#), Ashley Ahearn, Neon Tommy, November 2009.



Cover Story

Vol. 13 (1): June 2010

Markos's Case: Trauma, Treatment, and Reflections

Emily Joseph

MOM/Hellenic Society for the Study and Protection of the Monk Seal

Markos was found by the Hellenic Coast Guard on the evening of 26/4/2010. The animal was stranded on a beach in Madoudi, Evia having sustained substantial trauma to his head. The MOM Rescue Team was dispatched to the scene on the following day, finding the animal hauled out and unable to swim due to the severity of his wounds. It was clear to the Rescue Team that the injuries could only have been sustained by a gunshot and first aid was administered in the form of subcutaneous fluids and an antibiotic injection. Photos were taken and forwarded to the Veterinary School of the University of Thessaloniki for analysis and it was decided to transport the seal to the veterinary clinic in Thessaloniki for further examination on 28/4 after the animal's immediate stabilization *in situ*.



Markos, stranded on a beach in Evia.

Veterinary intervention

Upon arrival, Natassa Komninou, MOM's long-time veterinary advisor, closely examined Markos, the 4-month old male monk seal. It was confirmed that Markos had been shot by a gun at close range, with the bullet entering the left upper jaw (leaving a wound approximately 2cm in diameter), travelling directly through the skull, and exiting on the right side of the head, just below the right eye (and leaving a wound approximately 5.5cm in diameter). The right eye was visibly damaged beyond repair in addition to severe trauma to the nasal cavity. An x-ray taken the following day also confirmed a spherical fracture in the upper jaw. The injury was estimated to be 2-3 days old and the wounds were carefully cleaned and examined.



Veterinarian Natassa Komninou and Alexandros Karamanlidis of MOM examine 'Markos' at the Veterinary School of the University of Thessaloniki.

Despite the gruesomeness of the injuries, Markos remained remarkably stable: his blood work showed no remarkable abnormalities and he remained alert. This paradox, however, left many questions regarding his future. His left eye remained but it was swollen and the veterinarians were unable to determine if the seal would retain vision. In addition, the holes left by the bullet wound left his windpipe vulnerable to water entry and, combined with his fractured jaw, left veterinarians and MOm staff unable to assess whether the animal would be able to self-feed in the future. With at least some hope remaining that the animal could overcome his unimaginable obstacles, a unanimous decision was made to transport the animal to MOm's Rehabilitation Centre in Steni Vala, Alonnisos to provide the seal with a chance at survival.

Intensive care

Markos arrived for rehabilitation on 30/4/2010. He was started on a therapy regime of antibiotics for both aerobic and anaerobic bacteria and also for pain management in addition to the regular cleaning of his wounds. It was also decided that the best means of feeding would be the force-feeding of tuna (*Thunnus alalunga*) fillets and then whole fish (*Boops boops* and *Scomber scombrus*) as long as the animal remained unable to free feed. The severity of his wounds was shocking: one could literally see daylight from one side of the head to the other and the exit wound had left a large gaping section that drained constantly and required careful and regular cleaning. The palette of his mouth had been burned, several teeth were broken, and he held his lower jaw approximately 1cm off centre, though he continued to breathe largely through his mouth for the duration of his treatment.



Markos being force-fed at the MOm Rehabilitation Centre on Alonnisos.

In the days that followed, Markos received intensive care. He was very weak, sleeping and remaining largely motionless unless provoked. During feedings and treatments, however, he would vocalize and struggle as best he could, at times showing remarkably quick reflexes and strength. By his second day at the centre (2/5/2010), Markos began to show some classic seal behaviours: rolling over, vocalizing, and exhibiting some curiosity as to his handlers and environment. He responded best when the pool was filled to approximately 20cm—enough water for him to splash in, but also a small enough quantity to allow him to hold his head out of the water and to balance on his fore flippers.

Complications

Many problems remained, however. The staff began to notice that Markos remained unresponsive to noise – reacting instead to strong vibrations and/or touch. It was also noted that he consistently held his hind flippers slightly to the left (though it was impossible to know if this was a result of injuries sustained). On 6/5, tapeworms were found in his faeces and, after the administration of a dewormer, a large (1cm wide by 30 cm long) tapeworm was recovered. Weigh-ins every 3 days also showed that he had not begun gaining weight despite consistent fish feeds. A second veterinary examination on 7/5 held more bad news: after the administration of a topical

anesthetic, his left eye was opened to reveal a corneal edema and a prolapsed iris, limiting Markos's sight prognosis to the ability to distinguish shadows in the best possible outcome. After noting the seal's inability to hear, the veterinarians speculated that damage might also have been sustained in the inner ear and, when a test was performed by filling the pool just above the level where Markos could balance on his flippers, it soon became apparent that the force of the gunshot had also affected his balance.

So it seemed that after a week's stay in the centre, many questions still needed answering. Markos was for all intents unable to see, hear, or smell. His ability to swim (and thus to free feed) was limited by the extent of his inner ear damage and the state of his wounds; and his ability to dive would possibly be impaired by the sinus cavity left where his nasal passage would have been. The seal was certainly unreleasable in the immediate future and it was impossible to know how long he would need to remain in captivity for definite determinations as to his quality of life and future to be made.



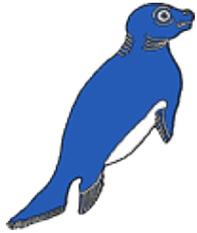
“The severity of his wounds was shocking.”

Death and implications

Unfortunately, those questions can only be left to speculation: on 10/5, the rehabilitation staff entered the unit to find the seal in distress and Markos passed away immediately following an epileptic fit. A necropsy was performed the following day and samples were dispatched to MOm's collaborators at the University of Erasmus in Holland for closer examination. Both histological and virological analyses of the samples are currently underway.

MOm would like to extend its gratitude to the Bodossaki Foundation for its partial sponsorship of the Monk Seal Rescue and Information Network and to the private donors whose financial contributions made this effort possible. We would also like to thank Natassa Komninou, DVM and Stephania Danika, DVM and the Veterinary School of the University of Thessaloniki for their expertise and guidance. In addition, many thanks to Dr. Frances Gulland, Director of Veterinary Science at the Marine Mammal Center in Sausalito, California, for her valuable advice to the rehabilitation programme. A special acknowledgement must also be made to Guy Routh, a MOm volunteer, for his dedication and assistance in the Monk Seal Rehabilitation Centre.

This latest incidence of brutality along with the rising number of seal deaths thus far in 2010 is deeply saddening and concerning. In 2008, MOm, in collaboration with the WWF Greece and the Fisheries Research Institute of Kavala, completed a 3-year, EU-funded research effort to investigate monk seal/fisheries interactions. In light of the data collected, the “National Strategy and Action Plan for the Conservation of the Mediterranean Monk Seal in Greece,” a report that includes specific and feasible institutional, technical, and financial measures to mitigate negative interactions, was formally presented to the Greek Ministries of Environment and Fisheries in July 2009. The Minister of Agriculture and Environment has also been informed of the recent cases of brutality towards monk seals and we are currently awaiting a response. We hope that Markos's case can serve as a rallying cry, focusing public awareness on the extent of the problems at hand and inspiring the urgent action necessary to protect this critically endangered species before it's too late.



In Focus

Vol. 13 (1): June 2010

Monk seal killed by dynamite blast in the Aegean

Anastasia Miliou

Archipelagos Institute of Marine Conservation

On 15 April 2010, team members of Archipelagos, Institute for Marine Conservation, were called out to a *Monachus monachus* stranding in the village of Perri, on the south coast of Samos. On arrival the seal, a young male measuring 1.7m, was pronounced dead and the body was moved to an area where an on-site necropsy could be carried out by both Archipelagos staff and the local vet. Samples were taken by Archipelagos for further analysis (fatty tissue, kidney, liver, heart, lungs and stomach contents).



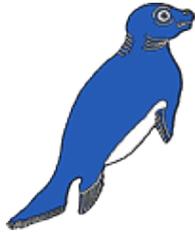
The initial thought was that a boat strike, inducing trauma, had been the cause of death. However with no visible external injuries and a closer inspection of the organs, it became apparent that the seal had died from internal haemorrhaging consistent with injuries caused by a dynamite blast; this was later found to have occurred in the nearby area.

Dynamite fishing, though illegal, is unfortunately still an ongoing problem in Greek seas. Archipelagos has been working at the EU, national and local levels to combat illegal and destructive fishing practices, which are destroying fish stocks, marine ecosystems and wildlife. With that aim in mind, Archipelagos implements an ongoing fisheries research programme in different areas of the Greek seas, recording among others illegal fishing practices and collecting related evidence and data.

Unfortunately this incident was not the only monk seal death this year. Since the beginning of 2010, the deaths of 12 seals have been recorded in the Aegean, (11 in Greece and 1 in Turkey) the majority deliberately killed [Editor's note: numbers have increased since this article was written. See [Alarming numbers of dead seals](#), this

issue]. However, it is impossible to estimate the actual number of deaths, since many of the strandings are never observed or reported. We therefore have to question whether conservation work for the monk seals carried out in the Greek seas can be considered effective in actually protecting this endangered species. Our view is that it has not succeeded in decreasing hostility or solving the problem between monk seals and fishermen. In fact, it seems that we have entered the process of a countdown towards the extinction of *Monachus monachus*.

Clearly, different approaches are urgently needed if the aim is to achieve actual protection of this critically endangered flagship species. It may be time to decide whether the survival of the largest remaining monk seal population in the Mediterranean, located in the Greek seas, should solely remain a national (Greek) matter or if it is time for the international community to take serious action before it is too late, by monitoring the implementation and effectiveness of the recommendations of regional and international Action Plans, workshops, meetings and Strategies that have been developed to protect this species.



In Focus

Vol. 13 (1): June 2010

Nefeli's Rehabilitation: Methods, Results, and Challenges

Emily Joseph

MOM/Hellenic Society for the Study and Protection of the Monk Seal

Rescue

Nefeli, the most recent orphan in MOM's Monk Seal Rehabilitation Centre in Alonnisos, Northern Sporades, was discovered by locals in Assos, Kefalonia, on 14 October 2009. The pup - weak, dehydrated, and having suffered superficial wounds mainly to her chin and flippers - had hauled up on a boat ramp while locals contacted MOM. Following established procedures, MOM's rescue team advised volunteers via telephone, asking them to maintain a watch for the possible return of the mother and, once hours had passed with no sign, the volunteers were asked to move the pup (whom they dubbed "Nefeli") to a safe location.



The rescue team was immediately dispatched to the island where they began a primary assessment of the animal and, in collaboration with the Veterinary School of Thessaloniki, began administering first aid. The pup was estimated to be 10 days old based on weight (15kg), standard length (100cm), the presence of 2 emerging canine teeth on the lower jaw, absence of the umbilical stump, and an intact lanugo (moulting had not yet begun). As the determination was made to transport the animal to MOM's rehabilitation centre for treatment, the pup, under the veterinary supervision of Dr. Natassa Komninou, was started on a broad-spectrum antibiotic as a precaution for any infection and to prepare the gut for the rigors of an early transition to a fish-based diet. A blood sample was also taken, revealing that the seal was in relatively good condition, though exhausted and underweight.

Treatment

Upon arrival at the rehabilitation centre in Alonnisos, the animal was again examined by the rehabilitation team. Lethargic after a long journey, only electrolyte fluids were administered for the first feedings, tuna-based "soup" being introduced slowly on the

second day. An anthelmintic was also prescribed until a fecal sample could be collected to confirm an absence of parasites.

Nefeli was slow to stabilize, and it was not until her third week in rehabilitation that she began to steadily gain weight. She did, however, become increasingly active as the days passed, and was especially energetic during her first swims, vocalizing almost incessantly and holding nearly half of her body out of the water as she swam in rapid circles.

After a few weeks in the centre, Nefeli began to show many positive signs for survival. The pup adjusted easily to her new tuna soup diet and the addition of salmon oil to her meals assisted in steady growth and regular bowel movements. By the end of her third week in rehab, all of her wounds had closed, and the seal began moulting.



Live fish were introduced to the pool on the fourth week, and Nefeli showed an incredible aptitude for hunting: she would remain submerged for minutes at a time, chasing and killing fish by her third encounter.

By her sixth week in the centre, the pup's diet began to include tuna fillets, while her intake of tuna soup was slowly decreased and finally stopped. It was around this time that Nefeli began to display her "wild side", indicating her preferences for individuals, handling, and feeding (and simultaneously demonstrating the effectiveness of her ever-incoming teeth). By week eleven of her stay, the seal ate from the edge of her platform, opening her mouth while staff members fed tuna fillets and, eventually, other fish species such as *Scomber scombus* and *Trachurus trachurus*.

As with other rehabilitation patients, it is at this point that seals are encouraged to begin feeding in the pool; and Nefeli started out as the others, accepting hand-fed fish in her pool. It was not long, however, before she discovered that her handlers' degree of control over a swimming seal was minimal. She began staging "swim-bys" where she would take fish in her mouth and then deposit them just out of staff reach; "grab and rolls" whereby she would wait until the staff attempted to push the fish into her mouth, secure both fish and hand in her teeth, and commence a log-roll; or the "cold shoulder" in which she would swim placidly around her pool, taking no notice of offered food. Though she continued to kill and play with the live fish, any consumption on her own accord remained minimal. If offered food from her preferred place at the edge of platform, however, Nefeli was generally easy to feed.

Release

As the weeks passed, the seal began to approach the 50 kilo goal-weight for release. Though the winter seas make such planning difficult, a date was set for 30 January. Beginning with Nefeli, each released seal will be flipper tagged (Nefeli is sporting light blue tags #003 and 004 on her hind flippers) and micro-chipped to ensure identification well into the future. In addition, the seal was outfitted with a satellite GPS transmitter to allow MOm staff to monitor her adjustment to the wild.

In the middle of 2010's horrendous winter, January 30th proved to be a beautiful, calm day. With the help of the Hellenic Port Police, a 54-kilo Nefeli was escorted to the heart of the National Marine Park of the Northern Sporades, Piperi Island. As soon as her transport cage was opened, Nefeli immediately headed for the beach and, it seems, immediately forgot about her time in captivity. She checked out her new surroundings, smelling the rocky beach, looking up at the cliffs around her, tasting a pile of seaweed, and finally heading into the surf.



Nefeli's stay was the shortest yet recorded in MOM's Monk Seal Rehabilitation Centre: in 16 weeks, the young pup transformed from a baby into a sleek and wild juvenile. Part of her success was the fact that, beyond her initial malnutrition, the pup had no medical issues holding back progress. Another major contribution is the addition of salmon oil to the monk seal diet which helps to add vital extra calories and facilitates a steady weight gain. The contribution of MOM's established and proven protocol, based on 20+ years of experience and research is yet another factor that cannot be overlooked, along with the expertise and guidance of the University of Thessaloniki's Veterinary School and particularly Dr. Natassa Komninou. In addition, the dedication of MOM's many volunteers who lend vital support to the programme and the financial support of Piraeus Bank and private donors must be mentioned with greatest gratitude.

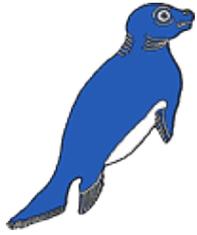
Tracking

Weeks later, the satellite tracking has proven that Nefeli was quick to adjust to her new life. She has travelled far and wide within the marine park, making journeys out to the neighbouring islands of Kyra Panagia and Gioura before returning exactly to her release beach, circumnavigating the island of Piperi, and finally heading out as far as Pelion and Skiathos.

She has also made repeated dives to depths of up to 120 metres in her first month and a half in the wild. The last transmission from the satellite monitor was received on 17 March 2010. While the reason for the subsequent lack of data is unknown, the most likely causes are either technical, or that the transmitter detached from the seal. Though it was hoped that the tracker would provide information for a longer duration, such technical difficulties remain a frustrating obstacle to the collection of much-desired data on the behaviour and habits of the *Monachus monachus* species. The 1.5 months' worth of signal that were received, however, provided ample data to indicate Nefeli's successful rehabilitation and reintroduction into the wild.



Here's hoping that the future will remain bright for MOM's latest graduate and that sightings of a blue-tagged seal will lighten our hearts for years to come.



Perspectives

Vol. 13 (1): June 2010

The world's two remaining monk seal species: how many different ways are there of being Critically Endangered?

Giuseppe Notarbartolo di Sciara

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“Critically endangered” is the IUCN Red List category reserved for species facing an extremely high risk of extinction in the wild: to be exact, a probability of extinction of at least 50% within three generations, if quantitative analysis is applicable. This definition fits well the two extant species of *Monachus*, the Mediterranean (*M. monachus*) and the Hawaiian (*M. schauinslandi*) monk seals, both of which are faced by quite grim survival expectations. However, similarities between the condition of the two species end here, because on the basis of habitat availability, amount of disturbance, and human hostility, amongst other things, threats confronting the Hawaiian pinniped could not differ more from those of its Mediterranean relative.

Recent estimates place the remaining Hawaiian monk seal population at approximately 1,100 individuals. The species' range spans an oceanic islands chain 2,400 km long, populated by humans only in its south-eastern corner, on the Main Hawaiian Islands. The rest of the archipelago is a 1,800 km-long garland of mostly uninhabited coral islands, reefs and atolls within the Papahānaumokuākea National Monument, where human disturbance is essentially absent, legal protection effectively enforced due to strong institutional commitment by the US – the species' sole range state – and mind-boggling funding is allocated by the federal government to promote monk seal science, conservation and recovery.



Far worse at first sight appears to be the condition of Mediterranean monk seals, which do not tally to even half of their Hawaiian cousins' numbers, and survive scattered in tiny groups over a much greater coastal area, under the jurisdiction of

about two dozen different countries, many of which are part of the developing world. Habitat protection is grossly insufficient over most of its range, with too few, and in large part poorly managed, protected areas established for them. In spite of official legal protection by all range states and the European Union, such protection is basically confined to paper: seals are routinely killed wherever they exist, a crime for which nobody has ever been convicted. Worse, human disturbance in the seals' breeding habitat continues unabated. Real commitment to the conservation of monk seals is for the most part relegated to a handful of underfunded NGOs; coherent collaboration amongst these NGOs and relevant government departments is totally lacking; and dedicated public funds remain like scattered raindrops over a parched landscape.

Based on this succinct if slightly hurried comparison between the two species, we might be tempted to presume that if there were room for only one on the Ark, our safest bet would be on the Hawaiian monk seal. Not so.

A closer look at the condition of the Hawaiian monk seal reveals that, in spite of all protection efforts, the population is decreasing at an annual rate of 4%. Very oddly, numbers seem to be growing where one would least expect it – on the densely inhabited and urbanised Main Hawaiian Islands. Although they numbered 83 individuals in a recent count, these odd apparitions on the popular beaches of the major islands can compensate only minimally for the substantive net decrease of the population. But what is threatening the survival of the Hawaiian monk seals? There is no shortage of pressure factors, either observed or presumed, affecting the species, including entanglement in discarded fishing gear and marine debris, predation by sharks on juveniles, female mortality caused by extreme male aggressiveness, and – quite surprisingly – food limitation possibly stemming from oceanographic change, competition with fisheries, competition with other predators, or all of the above. To all these one should arguably add ocean acidification and the potential loss of beach habitat due to rising sea level, both caused by global change. However, while the threats listed are real and occurring with variable intensity depending on their location within the species' range, the impression that all these impacting factors fall short of convincingly explaining such a steep declining rate, even if all summed together, is hard to dispel. The reality is, the species is disappearing between our fingers, and in spite of the most valiant attempts by an army of top-notch marine mammalogists, nobody really understands why.

Compare the condition of Hawaiian monk seals with the parallel situation in the Mediterranean and adjacent Atlantic waters. Because no robust information exists on Mediterranean monk seals' total numbers, it is much more difficult to detect population trends here than in Hawaii. One thing we know is that in specific areas where protection has been at least minimally effective for a while – as in Madeira, in a few areas of Greece and even in Mauritania after the big population crash of 1997 – Mediterranean monk seal numbers are demonstrating their ability to inch back upwards. As regards the remainder of their range, unfortunately not much can be said except that the bottom has already been reached; and in fact monk seals have been extirpated from much of their historical range. However, even there, it is impossible to be absolutely sure that they have disappeared entirely, or for good. Just as an example, during the last 12 months monk seals have been repeatedly sighted in areas where they were previously believed extinct, such as the northern Adriatic, and have albeit fleetingly reappeared in their old haunts in the Balearic Islands, in the Tuscan Archipelago, in Sardinia and in the Egadi Islands. It would be foolish to rest on the laurels of such timid signals, which only testify to a mere potential for recovery, rather than to recovery in its own right. But one thing is sure: although Mediterranean monk

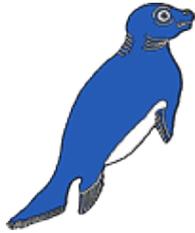
seals continue to be hanging by a thread, they are obviously willing to make a comeback if we only give them a chance; it actually looks like the species is fighting for life, tooth and nail. So it would be equally foolish to abandon our hopes now.

Furthermore, unlike the case of the Hawaiian monk seals, the two most powerful weapons in our fight to protect *Monachus monachus* are fully available to us; all we have to do is use them. The first is that we know beyond any possible doubt what factors are causing the seals' decline. The second is that we know perfectly well what needs to be done to address them.

First, therefore, we should resist the pedantic temptation of making long lists of pressure factors, real and hypothetical, which may or may not threaten monk seal survival; such exercises, while perhaps academically worthy, carry dubious value in real-world management because they distract us from concentrating on the heart of the matter. Basically, Mediterranean monk seals decline because: a) they continue to be deliberately killed by people, and b) because their critical habitat, particularly during the breeding season, is being encroached by highly disruptive human presence. End of story.

So, supposing that one day we succeed in stopping the killings and effectively protecting portions of the critical habitat of a few hundred individual Mediterranean monk seals: will we then see the species reverse its decline and start recovering? I firmly believe so. Implementing such straightforward management principles certainly doesn't require rocket scientists; more simply, it needs effective progress in public awareness combined with thorough societal involvement. With sufficient goodwill from all parties involved – politicians, bureaucrats, local authorities, fishermen, NGOs, scientists, and civil society at large – a concerted action to save the monk seal would prove successful.

The moral of this story is that it is impossible to tell as yet whether our grandchildren will still be able to enjoy the sight of either a monk seal in Hawaii or in the Mediterranean, or both, or neither. Of the two species, in spite of the present forbidding environmental conditions, I believe that the latter stands a greater chance of making it than the former. However, to achieve success in the Mediterranean we will need an act of faith in human behaviour, and here comes the tough part. As Albert Einstein once famously said, "Only two things are infinite, the universe and human stupidity, and I'm not sure about the former."



Research

Vol. 13 (1): June 2010

Mediterranean monk seal, *Monachus monachus*, re-sighted along the Israeli coastline after more than half a century

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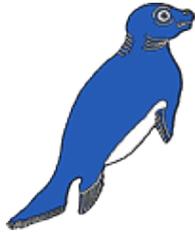
During the last 4 months, the IMMRAC team has received more than 40 reports, some of them with supporting video or photographs, of seal sightings in many locations along the entire Israeli coastline, from Ashqelon in the South, near the border to the Gaza Strip, to Rosh-HaNikra in the North, at the border with Lebanon. The first photographed report that allowed positive identification as a Mediterranean monk seal, *Monachus monachus*, was obtained on 7 January 2010. We consulted monk seal researchers from Turkey, Greece and the Netherlands on the photos and the consensus was that it is a relatively young female. The female has been seen swimming inside the Herzliya Marina, and was photographed sleeping in a small alcove on the sea side of its breakwater, until disturbed. Other images that we have obtained since this sighting were not clear enough to ascertain whether all sightings are of the same individual. However, the locations and the timings of some of the sightings suggest at least 2 animals.



Previously, the last authenticated reports of monk seals along the Israeli coastline were in 1953, of a single animal in a cave near the Lebanese border, and in 1958, of another single animal in the Dor/Tantura lagoon, located in the central part of the coast.

In the event that the most recent sightings represent re-colonization attempts, a shift in habitat may be indicated, with the closest known colony in the north (the Mediterranean coast of Turkey) acting as a nursery, as suggested by Ali Cemal Gucu from the Middle East Technical University Institute of Marine Sciences, Mersin, Turkey.

The latest reported sighting of a seal was made on the 14/03/2010 near Ashdod Port. We hope to report on further sightings in the next edition.



Recent Publications

Vol. 13 (1): June 2010

In Print

Fulton, T.L. and C. Strobeck. 2010. Multiple fossil calibrations, nuclear loci and mitochondrial genomes provide new insight into biogeography and divergence timing for true seals (Phocidae, Pinnipedia). *Journal of Biogeography* 37(5): 814-829. DOI: 10.1111/j.1365-2699.2010.02271.x [[Abstract](#)]

Johanos, T.C., B.L. Becker, J.D. Baker, T.J. Ragen, W.G. Gilmartin and T. Gerrodette. 2010. Impacts of sex ratio reduction on male aggression in the Critically Endangered Hawaiian monk seal *Monachus schauinslandi*. *Endangered Species Research* 11:123-132. DOI:10.3354/esr00259. [Open Access [PDF](#) 670 KB]

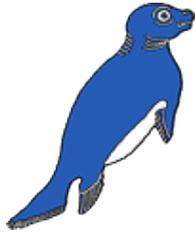
Karamanlidis, A.A., V. Paravas, F. Trillmich and P. Dendrinou. 2010. First observations of parturition and postpartum behavior in the Mediterranean monk seal (*Monachus monachus*) in the Eastern Mediterranean. *Aquatic Mammals* 36 (1): 27-32. DOI 10.1578/AM.36.1.2010.27 [[Abstract](#)]

Papadopoulos, E., P. Loukopoulos, A. Komnenou, E. Androukaki and A.A. Karamanlidis. 2010. First report of *Acanthocheilonema spirocauda* in the Mediterranean monk seal (*Monachus monachus*). *Journal of Wildlife Diseases* 46(2): 570-573. [[Abstract](#)]

Reports

Kıraç, C.O. and N.O. Veryeri. 2009. Mediterranean monk seal (*Monachus monachus*) in the Karaburun Peninsula, Izmir, Türkiye. The Republic of Türkiye Ministry of Environment and Forest publications. December 2009. Ankara: 1-40. [[PDF](#) 18.5MB]

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