The Monachus Guardian

monachus / schauinslandi / tropicalis

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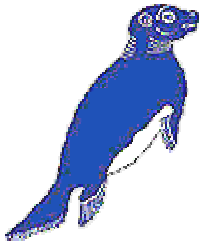
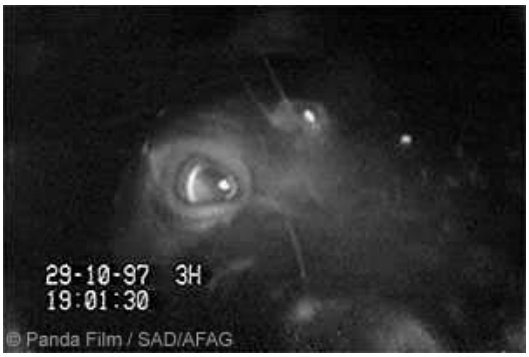


Cover Story: Will habitat protection encourage the monk seal to return to its former haunts in Italy?

Perspectives: As the Hawaiian monk seal continues to decline, will captive breeding become inevitable?



Monachus Science: Monitoring monk seal caves with infrared cameras.

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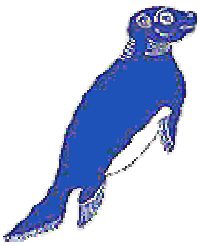

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Editorial

How Much is a Monk Seal Worth?

It may sound like a riddle, but judging the value of a Mediterranean or Hawaiian monk seal could well represent the difference between survival and extinction. Perhaps inescapably, human attitudes towards any wild animal and its habitat are governed by a comparative estimation of value, be that of an economic or more spiritual variety.

And like it or not, all other issues affecting *Monachus* are subsidiary to this one. That much is evident even in flicking casually through this issue of *The Monachus Guardian*. Consider, for example, the struggle between tourism and conservation interests in Turkey, or the Hawaiian fisheries policy that appears to be compromising the future survival of *Monachus schauinslandi*. Attempts to rationalise such issues often owe more to sophistry than to scientific fact. Turkish investors pretend that monk seals and beach crowds can peacefully coexist, while the NMFS turns a Nelsonian eye to the fisheries crisis in the Hawaiian Islands National Wildlife Refuge.

The results of such 'animal value' equations are unambiguous enough. The monk seal will come in a poor runner-up to fishing interests and property speculators.

It is beyond this point, however, that the waters become increasingly murky. Subjective attitudes and estimations of value colour the entire land and seascape of human interactions with monk seals. When scientific curiosity or career advancement are at stake, how does one weigh objectively the benefits of data collection versus the disturbance imposed upon target animals? When translocation or captive breeding becomes the name of the game, how can we be sure that selfish motives are not intruding upon the decision-making process? When certain official agencies are appointed to oversee international coordination and information exchange, how can we be sure that the vacuous bureaucracy is due to incompetence rather than some kind of institutionalised mechanism to slow the pace of change? And on far-flung Midway Atoll, how can we be convinced that ecotourism will benefit the monk seal rather than the commercial interests promoting the venture?

Thankfully, you may say, monk seals have at least escaped the attentions of the so-called 'wise users', who tend to portray animal and habitat exploitation as a kind of humanitarian venture. Their logic, of course (rather like the Pope's – allegedly infallible), is that conservation can only succeed if it appeals to human self-interest. Without doubt, there are certain Darwinian merits to that point of view, despite the tiresome role of greed as all-too-deadly sin. For evidence, look no further than the proponents of this self-styled philosophy, who tend to reserve subsistence sustainability for those less fortunate than themselves.

Not that monk seals paying for their own conservation is an entirely new idea.

In a 1962 report to IUCN (now also known by its alias, the World Conservation Union), Dr. A. van Wijngaarden recommended that the venerable institution: "point out to governments

that Monk Seals are an important but now only a potential natural resource. Managed properly the seal could become a permanent source of skins, meat and oil" (Wijngaarden 1962).

We have already seen how dead monk seals have become a thriving little business in sustainable exploitation for the inhabitants of Cala Gonone in Sardinia (see *Monk Seal Myths in Sardinia*, Vol.1:1). But is it possible that the 'wise use' of living seals has also crept in through the back door, wearing a disguise? True, there may not be monk seals enough to harvest for skins, meat an oil so that the species may at last fulfil its useful, IUCN-appointed destiny. There are, however, different forms of exploitation.

It is at this point that there is no alternative but to ask whether the beneficiaries of certain costly monk seal projects are really monk seals at all. If translocation experiments are not benefiting monk seals, for example, then who might we find on the receiving line? If the intergovernmental bureaucracy is not aiding the species, then who is it serving? If the multi-million dollar plan to establish Hawaiian monk seal captive breeding does nothing more than produce frozen sperm and a few psychotic zoo animals, who precisely is reaping the windfall?

All of which brings us back to priorities and the value that human society places on the survival of the monk seal. Funding agencies will place their bets on high-tech experiments like drunken punters at the Grand National, but will sober up in seconds when asked to fork out for guards and patrol boats. Money is showered on international conferences at the most exotic locations, but frontline projects continue to live from hand to mouth. Without blinking an eye, corporations in the mass tourism industry invest tens of millions of dollars on a single development, but when asked to donate funds towards the species they are chasing into oblivion, will offer little more than a pre-printed letter of apology, pleading hard times.

At which point, an old saying springs to mind. Something about people who know the cost of everything but the value of nothing.

William M. Johnson, 1 May 1999

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Wijngaarden, A. van. 1962. The Mediterranean monk seal. From a Report to the International Union for Conservation of Nature. Oryx. Fauna & Flora Preservation Society, London. No. 6. pp. 270-273.

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Obituary

Bahtiye Mursaloğlu

© Photo Cem O Kiraç

1918–1999

The Monk Seal Loses a Tireless Campaigner and an Influential Friend

Cem O. Kiraç and Ilksen D. Bas
SAD-AFAG, Turkey

Professor Bahtiye Mursaloglu, who pioneered scientific research and conservation studies on the endangered Mediterranean monk seal in Turkey, died on 8 February 1999 in Ankara.

Mursaloglu was born in 1918 in Bolu, Turkey, the fourth of five daughters of a farmer and hunter. Her father had always expected his wife to bear him a son, and after having three daughters in succession, he was sure his wish would finally be fulfilled. He therefore decided upon the boy's name 'Bahtiyar' which means 'happy' in Turkish, but after another daughter was delivered, her father, with some desperation, changed the name into 'Bahtiye', given to girls. As young Bahtiye grew, her father became increasingly proud of her, and of her accomplishments in life. After completing primary and high schools in Bolu and Istanbul respectively, where she consistently achieved high grades, Mursaloglu embarked upon a scientific career in agriculture. In 1935 she enrolled in the Ankara Advanced Agriculture Institute and graduated with honours in 1939. She continued her academic studies at the same Institute until 1942, and then embarked upon her first zoological research as an assistant in the Zoology Department, where she received her Ph.D. on mole rats (S*palax*) in 1947. Mursaloglu was then transferred to the newly established Zoology Department of the Science Faculty of Ankara University, where she was appointed as an Associate Professor in 1951. She continued her post-doctorate studies in Kansas University, USA with Prof. E.R. Hall for a period of 18 months in 1960-61. Meanwhile, in the early 1960s, she started her first studies of

the Mediterranean monk seal in Turkey, examining and taxonomically comparing, five dead and living specimens from Zonguldak (Black Sea), Canakkale (Aegean), Mersin (Mediterranean) and Ankara Zoo. Her conclusion that the species was *Monachus monachus* is considered the first scientific confirmation of the occurrence of Mediterranean monk seals on Turkish coasts.

Left: *Mursaloglu (left) as an assistant in Ankara University's Faculty of Agriculture in the early 1940's. (Archive: B.Erol)*
Right: *Mursaloglu and an AFAG member interviewing a local artisanal fisherman in Foça. (© PhotoCem O. Kiraç*)

In 1965, she achieved her professorship at Ankara University with her study of the Asia Minor souslik, *Citellus turcicus*. She continued her studies at Kansas University with a Fullbright Scholarship, and received her full professorship there in 1965-66. At the British Natural History Museum in London in 1974, she made comparative research studies on Rodentia that had been collected in Turkey. She retired from the Ankara University Science Faculty in 1989.

Mursaloglu relaunched her studies on Mediterranean monk seals in March 1979, and for 14 years – sometimes on her own and sometimes with the help of assistants – carried out field surveys and *in situ* research along Turkish coasts, ranging from in-cave behavioural observations to interviews in fishing communities. For most of her research she depended upon her own private funds and equipment, although she sometimes received the support of Turkish organizations – such as the Turkish Scientific and Technical Research Council (TUBITAK), Ankara University and the Society for Protection of Turkey's Nature (TTKD) – and also international bodies, such as WWF and IUCN. She always suffered from insufficient finance and equipment, as well as a lack of interested biologists to assist her in her field studies of Mediterranean monk seals. Mursaloglu's only daughter, Ms. Burcin Erol, acted as one of her assistants, and also helped her mother in organizing the Third International Monk Seal Conference.

During the second phase of her research, she became the first scientist to conduct systematic observations inside a monk seal cave, in the Izmir region. Between June 1980 and February 1981, this research was carried out day and night under arduous and dangerous conditions. The cave was inhabited regularly or at intervals by seven monk seals, allowing Mursaloglu to record her groundbreaking observations of mother-pup relations in a long-term study.

Her recording of a monk seal pup's interaction with its mother and environment – including its cave habitat, the sea, other seals and humans – provided, for the first time, valuable information on these issues to scientists and conservationists. More depressingly, Mursaloglu also had the opportunity to observe firsthand, the changing fortunes of the species along Turkish coasts. When she returned to the same cave in the early 1990s, for example, she could find only a single seal (Mursaloglu, *pers. comm.*, 1993), despite its remoteness from human activity. She had long realized, both as an academic and as a first-hand witness, how monk

seals were declining day by day along Turkish coasts. She put great effort into publicising the plight of the species and its importance to Turkey with articles and news reports based on her studies. She also convened the Third International Monk Seal Conference, held in Antalya in November 1987.

In September of the same year, Mursaloglu granted us our first interview, and at her office in Ankara University, she began to introduce us to her wide knowledge and field experience of monk seals. From that point up until her death, she became a trusted advisor of AFAG, and also provided expert advice during meetings of the Turkish National Monk Seal Committee. Our informal meetings mainly took place in the 'Monk's Vineyard', an old and small green park, located near her house in Ankara. During these long discussions over tea, she'd chat with us about her monk seal field work, providing detailed insights into her methods and findings, and the serious obstacles she had faced. She also reminisced about the early years of her life when the Turkish Republic was being born, and how Atatürk, the founder of modern Turkey, had impressed her and others among her generation, boosting their studies in science.

She tended to be rather selective in her scientific collaborations with others, and preferred to work with Turkish conservationists. In 1997, as her final contribution to such efforts, she acted as scientific advisor to AFAG's UNDP-GEF-funded project, *Status of the Mediterranean Monk Seal along the Central Black Sea Coasts of Turkey*.

Her concern and sensitivity towards monk seals, and especially pups, contrasted markedly with her dauntless reputation. A couple of times during our meetings at the Monk's Vineyard, she told us of an incident involving a seal pup and herself, that took place during her study into mother-pup relations on the Aegean coast. She saw the pup on a pebble beach in a remote corner of the cave, while its mother and other seals were absent. The pup, apparently hungry and wanting to suckle, started to cry, and Mursaloglu looked on with pity. Though successfully resisting the temptation to hold and touch the animal, the pup realized her presence in the cave and started to move towards her.

Reluctantly, she repelled the pup with a stick, trying to give the message that all young monk seals must learn if they are to survive: "baby, don't approach humans, you will be hurt or killed..." The pup kept its distance from Mursaloglu, at first crying but then falling asleep (Bahtiye Mursaloglu, *pers. comm.*, 1991). Her story was vivid and told with great emotion. It was almost as if we were in the cave together as she faced this dilemma with the pup.

To Mursaloglu, habitat protection was perhaps the greatest issue at stake in the survival of the Mediterranean monk seal. In her article, *How To Save the Monk Seal*, she wrote:

> *"Today, the enemy of monk seals is not only the fishermen, but all those who invade and ruin their habitats… Finally, I wonder where we should put the monk seals that have been removed from their natural habitat, and are being kept in some aquarium, if they happen to have success in reproduction – what shall we do with these poor creatures whose habitats have already been almost completely ruined? Why are we trying to breed them in captivity instead of trying to help them to breed in their own natural, undisturbed habitats, where they are still leading a natural life today?"*

Apart from her accomplishments in zoology, Mursaloglu was also a serious and successful sportswoman. During the 1942-1952 period, she won the Turkish shooting championship, and also became a national champion in skiing several times. As a national tennis champion, she also represented Turkey on more than 60 occasions in the international games. In 1951, she was invited to Paris for an international tennis tournament, where she was ranked third.

She spoke English, German and French. She was a member of the Mammalogy Society of the USA, the Society for the Protection of Turkey's Nature (TTKD), and the Turkish Society for Biology. She won the annual 'Researcher Performance Prize' in 1996, awarded by the Turkish Underwater Research Society (SAD).

Prof. Bahtiye Mursaloglu's advice, her field research, published papers and other conservation initiatives were an inspiration to us in forming AFAG in 1987. She will always be remembered in our minds as the perfect example of a dedicated scientist and monk seal conservationist.

Personal Views

My first meeting with Dr. Bayithe Mursaloglu was around a swimming pool in Istanbul, where we were discussing the pitiful status of *Monachus monachus*. I had just completed an intensive survey of all the Dodecanese and she had discovered some suitable caves on the Turkish coast. I was immediately impressed by her intense desire to "do something for the species" and her drive to achieve that end. We went swimming to cool off from the August heat, and in the water she had all the power and grace of a seal.

Later, we met in Rhodes at the First International Conference on *Monachus*. Her individual drive had led her to start a behavioural experiment that demanded intense physical activity and a dangerous trip along the sea cliffs. I joined her on one of these expeditions, and here again we were working above and in the water under difficult conditions.

Our third encounter was under very different circumstances. Although we again met at an Istanbul pool, we were planning to approach one of the city's most wealthy industrialists. Once again, the Mursaloglu drive was at full pitch, and we achieved the support she needed.

My memories of her are still clear. Professor Mursaloglu was totally committed to conserving the highly endangered Mediterranean monk seal. She, and a few others, formed the skeleton of what has grown into a much larger body dedicated to the seal's survival. It should also not be forgotten that the scientific backbone of Turkish conservation was initially hers.

She lived in a water-world. She will be missed, and yet her inspiration to other Turkish scientists will hopefully mean that her energy and accomplishments are not lost.

Professor Keith Ronald

Co-chairman, 1st & 2nd International Conference on the Mediterranean Monk Seal

Bahtiye Mursaloglu took a tough approach in tackling the sad plight of her beloved monk seals. Instead of only sympathising with their fate and studying them for the sake of science, she made herself one of them and became the speaker of their rights in the human world.

She was our natural role model. We, the younger generation, always admired her positive mind. She encouraged us to persevere, and most important of all, she inspired us, helping us to pull ourselves together when we were sad or demoralised.

We have lost a friend. But what reassures us is that, before she died, she knew that her ideals for a better world were in good hands. She believed in us as we believed in her. She will stay in our hearts forever, and we will keep carrying the light she started so long ago...

Cem O. Kiraç & Ilksen D. Bas

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Acknowledgements

The authors express their gratitude to Ms. Burcin Erol for providing valuable insights into Bahtiye Mursaloglu's life.

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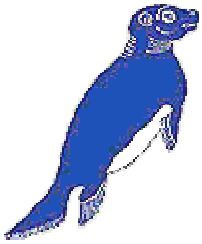

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International News

Changes at Home

Several changes and new features have been added to *The Monachus Guardian* and its parent site, www.monachus.org:

- Readers visiting the news area will be quick to realise that *Monachus schauinslandi* has deserted its temporary habitat under the International section to colonise its own Hawaiian News.
- Without the benefit of maps, compasses or GPS systems, some readers have complained about getting lost during our journeys through the monk seal's world. Wherever possible, maps have now been added for orientation purposes (rest assured that we will *not* identify cave locations or other potentially sensitive information).
- Due to increasing demand, fact sheets on the Mediterranean, Hawaiian and Caribbean monk seals will soon be posted under the new *Monachus Profiles* section.
- Readers of *The Monachus Guardian* will no doubt have realised that a new section, *Monachus Science*, was added to the journal in the last issue. Depending on contributions, this will now become a regular fixture.
- We are constantly adding new titles to the *Monachus Library*, allowing instant access through online browsing or downloading. However, we are all too well aware that numerous articles, papers and reports, focusing on monk seals, have yet to be lodged at the Library. If you wish to make your work available to a growing international readership, please contact the librarian@monachus.org.

Apology

In the December 98 issue of *The Monachus Guardian*, we promised to make the proceedings of the UNEP/MAP Arta conference available in the *Monachus Library* (or, to give it its full title, the *United Nations Environment Programme Mediterranean Action Plan Meeting of Experts on the Implementation of the Action Plans for Marine Mammals (Monk Seals and Cetaceans) Adopted Within the Mediterranean Action Plan*). UN institutions tend to move in slow and mysterious ways, however, and despite assurances, we have yet to receive the report in electronic format. Nevertheless, we hope to make it available in due course.

Monk Seal Classic Re-Issued

Due to increasing demand, *The Monk Seal Conspiracy* has been re-published in its entirety on the Internet by Iridescent Publishing.

The critically-acclaimed book, focusing on political intrigue and other obstacles affecting front-line conservation in the Eastern Aegean, can be found at http://www.iridescent-publishing.com.

'A passionately written and entertaining book...' according to John Harwood in *New Scientist*, '…we need books like this to remind us how easy it is to believe that complacency is really pragmatism.'

Quote of the Month: On How Conservation Projects are Won or Lost...

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Hawaiian News

'He didn't eat the seal, did he?'

No Justice Seen For Q39…
Outcome of Court Case Now Sparks Wider Debate

The trial of a Maui man on charges of harassing a Hawaiian monk seal (see *The Life & Times of Q39*, Vol. 1:2) has been characterised as a fiasco by conservationists.

The 59-year old hobby fisherman was arrested on the Keanae peninsula in rural east Maui on 12 August, 1998 after being videotaped throwing stones and a coconut at the animal. According to later reports, he told witnesses that he "didn't want the seal to eat his fish."

The victim of the attack was a 1-year-old female code-named 'Q39', the first-known pup to be born on Maui according to the National Marine Fisheries Service (NMFS).

Q39

According to David Jordan, the island resident whose video evidence of the crime prompted the prosecution, "The seal's day in court turned into a really bad joke."

During the 2 March court appearance, Harry Hueu pleaded no contest to the state harassment charges. As a result – and with the court clock ticking inexorably towards noon and the end of the session – the presiding judge declined to view the video evidence prior to sentencing.

An objection from the prosecution, that the video needed to be screened in order to put the incident into context, was overruled. Referring to the accused, District Judge Yoshio Shigezawa was reported as saying: "He didn't eat the seal, did he?"

That decision, say critics, allowed the defendant to stand before the court prior to sentencing and to plead extenuating circumstances. However, Hueu's claim that he "thought the seal was dead", say critics, is directly contradicted by the video evidence that the judge disallowed.

Quickly winding up the hearing, Judge Shigezawa fined Hueu $50 and required him to perform 100 hours of community service. Under state law, the maximum penalty for an offence of this kind is a one-year jail term and a $1,000 fine. The light sentence, coupled with the judge's refusal to allow an airing of the video evidence, has come under fire by

prosecutors, state and federal officials, and conservationists, for sending the wrong message to the public.

The Honolulu Star-Bulletin quoted Deputy Prosecutor Kim Fallone as saying she wanted to have Judge Shigezawa examine the videotape "because Hueu had shown no remorse for hitting the seal." Although critical of the judgement, Fallone conceded that a non-custodial sentence was fairly typical for a first-offence misdemeanour. She reported, however, that Judge Shigezawa had scolded Hueu, warning him that he would serve a jail term and face a higher fine if he harassed a monk seal again.

This, however, did not placate critics. David Jordan, the Keanae resident who videotaped the harassment, agreed with the prosecutor that Hueu should have been fined more money: "I hate to think that it would take a dead seal to make an impact, but if the video I shot of this life-threatening attack is insufficient to persuade a judge that this was a serious offence, then that is indeed the situation."

Harry Hueu, on the other hand, criticised the sentence as "too harsh". Defending his actions, he said that young children, including his nephews, were playing on the beach and that he "feared for their safety."

Privately, Hueu may have counted himself lucky in escaping a tougher sentence, but rather than subsiding into silence, the entire chain of events surrounding Q39 has sparked wider debate in Hawaii, focusing on public, governmental and judicial attitudes towards the Hawaiian monk seal.

An indication by NMFS last September that Federal authorities might step in if state officials 'dropped the ball' on the prosecution was quickly discounted by Paul Ortiz, Senior Enforcement Attorney of the National Oceanic & Atmospheric Administration: "Where a state has effectively pursued a prosecution under their Endangered Species Act, it would be very rare for the federal government to also pursue a prosecution. While no one is completely satisfied with the judge's decision, this situation is not one where the federal government would be inclined to pursue a parallel prosecution, and I will not recommend that we do so at this time. I do not believe that the state 'dropped the ball' in this case, and I continue to be pleased with the effort put forth by the State of Hawaii in such cases."

To critics, however, the federal bureaucracy and the judicial system has failed Hawaii's most endangered marine mammal. "Up to now," says David Jordan, "people have been led to believe that these animals are protected by both State *and* Federal law. The impression given is that there is a dual safety net for these animals, and if one should fail then the other is there as a failsafe mechanism. So far – with the exception of State DoCARE officers [Department of Conservation and Resources Enforcement], and the possible exception of the prosecutor's office – when it comes to any 'enforcement', Q39 has received nothing more than lip service."

Some state officials share that view. One, involved in the case since the arrest of Hueu, called the sentence "ludicrous". Referring to the disallowed video evidence, he said: "This was one of the few cases that we brought to prosecution that was solid as a rock. Even with the defendant pleading no contest to the charge, we still lose as his fine wouldn't cover two hours of [the] time involved to include the court appearance."

While Hueu and his supporters have reportedly attempted to influence public opinion by emphasising their native Hawaiian roots, criticism of the harassment has transcended racial boundaries. One of Maui's more prominent native Hawaiians, for example, has stated that: "Most of us consider this animal as sacred and [and that it] should not be touched or bothered… [The man responsible] was totally wrong and should have had a 'stiffer' sentence instead of a slap on the wrist. This person called me to ask if I would help him by testifying

that the monk seal was not a *aumakua* (guardian angel). I scolded him for harassing the seal and informed him that the animal represented *Kanaloa* (the Hawaiian god of the sea). He is a fishermen and complained that the seal takes all the fish. I told him that it was too bad, and hung up out of disgust. His actions do not represent how Hawaiians treat these animals from the sea."

Following the August attack, a Volunteer Monk Seal Watch program was launched on Maui by the Hawaii Wildlife Fund and the state Department of Land and Natural Resources. Recently, the Watch has been monitoring an untagged female (there is speculation that this may be Q39's mother) hauling out in the vicinity of a popular windsurfing beach at Paia on Maui's north shore. The volunteers have been advising the public that Hawaiian monk seals need their distance, and that it is actually a federal offence to approach closer than 100 feet.

Where it comes to education, however, the volunteers may be faced with more than they bargained for. A representative from Hawaii Wildlife Fund, Hannah Bernard, was recently quoted in the Maui News as saying: "A lot of people want to chase the monk seals back into the water because they think it's unnatural for them to be on the beach."

David Jordan dismisses the widespread praise he has received for his courage and persistence in exposing the attacks against Q39. He wishes instead that people would recognise the obvious dangers that still confront Q39, and all the other monk seals that might be tempted to visit or make their home on the main Hawaiian islands.

For all the words of encouragement he has received from the various branches of government, he is still waiting to hear what measures, if any, they intend to take to counter this threat.

Report to Congress

The U.S. Marine Mammal Commission's Annual Report to Congress for 1998 paints a mixed, and often gloomy, picture of efforts to promote the recovery of the Hawaiian monk seal. For the uninitiated, the report is also illuminating in its criticism of certain government agencies, particularly where the defense of commercial interests may be jeopardising the future survival of *Monachus schauinslandi*.

The species is almost exclusively confined to the uninhabited reefs and atolls of the Northwestern Hawaiian Islands, and continues to decline despite – some might say because of – management efforts. From the late 1950s to the mid-1970s, colonies in the western reaches of the archipelago (between Kure Atoll and Laysan Island) declined by at least 60 percent, and the colony at Midway Island all but disappeared. It is thought likely that the decline was largely due to human disturbance caused by military and coast guard installations. By the mid-1990s, total monk seal numbers had stabilised at about 1,300 to 1,400 individuals. However, a significant decline in the colony at French Frigate Shoals is expected to slash those numbers.

According to the MMC report, the species' decline can be attributed to "human disturbance, entanglement in derelict fishing gear, reduced prey availability, shark predation, natural environmental perturbations, attacks by aggressive adult male monk seals on females and immature seals of both sexes (called 'mobbing'), and possibly disease."

The following relevant publications are available online in the Monachus Library:

Marine Mammal Commission. 1999. Annual Report to Congress 1998. 31 January 1999. i-xvi, 1-236. Chapter II – Species of Special Concern. Hawaiian Monk Seal (*Monachus schauinslandi*) 47-56.

NMFS. 1997. Hawaiian Monk Seal (*Monachus schauinslandi*). Stock Definition and Geographic Range. Revised 1 August 1997. National Marine Fisheries Service. http://swfsc.ucsd.edu/sars/HI_Monk.htm

For additional comment and analysis, see this issue's Perspectives: The Old Woman Who Swallowed the Fly.

Vessel Spills Diesel Fuel Off Kauai

A fishing boat that ran aground off the Hawaiian island of Kauai on 10 April has broken up after being pounded by heavy seas. According to various press reports, the 95-foot Van Loi then proceeded to spill 16,000 gallons of diesel fuel into waters inhabited by endangered monk seals and marine turtles. The accident could not have come at a worse time for the NMFS, already at the brunt of criticism from the Marine Mammal Commission over its refusal to curb fishing activities at French Frigate Shoals.

Coast Guard crews were reportedly searching for thousands of hooked fishing lines laid by the Honolulu-based Van Loi before it ran onto a reef. A Coast Guard captain was quoted as saying that "There's a lot of hooks, a lot of monofilament line that poses a risk to the wildlife there."

Fishing debris is regarded as a severe threat to Hawaiian monk seals, and in the wake of the accident it was reported that various types of gear, including floats, insulating foam and fishing nets, had washed ashore, reeking of fuel. At nearby hotel resorts, some tourists complained of nausea from diesel fumes, and were warned away from beaches.

In a separate news release, Reuters reported that the curiosity of one Hawaiian monk seal was complicating the clean-up operation. The animal was sighted in the vicinity of the stricken vessel on several occasions.

Native Hawaiians Speak Out

Native Hawaiian fishermen have expressed concern over the plight of starving monk seals at French Frigate Shoals, and may soon decide not to exercise their right to fish in the area.

A two-year lobbying campaign by the Native and Indigenous Rights (NIR) Advisory Panel to the Western Pacific Regional Fishery Management Council (WPRFMC) resulted in two government permits being issued to fish the Mau Zone, in the Northwestern Hawaiian Islands. These were intended to aid native fishermen, considered the most economically disadvantaged in Hawaiian society, through Community Development Programs.

But now, according to a recent news release, the NIR panel is "recommending that the two permits not be used until they are certain it will not contribute to the extinction of a Hawaiian Endangered Species... Information has recently come to their attention that the Hawaiian Monk Seal population has declined by approximately sixty percent during the last forty years."

The Mau Zone includes an area which encompasses Nihoa and Necker Islands, but falls just short of French Frigate Shoals, where a declining monk seal colony appears to be suffering from malnutrition. As indicated in our *Perspectives* article (The Old Woman Who Swallowed the Fly), the Marine Mammal Commission (MMC), a Federal Agency, has long expressed concern that overfishing might be implicated in the decline.

According to the NIR, the Marine Mammal Commission has been requesting a shut down of commercial fishing operations around French Frigate Shoals for five years. "From November

30, 1994 through December 31, 1998," it claims, "the MMC has sent at least eight letters to Mr. Rolland Schmitten, Assistant Administrator for Fisheries, requesting the commercial fisheries around French Frigate Shoals be closed to protect the Endangered Seals."

Claiming that "nothing has been done to address this issue", the Hawaiian members of the NIR panel have now announced that they are making a symbolic gesture towards the conservation of the monk seal by "requesting that any Hawaiian Community Development Group wishing to apply for the two Mau Zone permits wait until it can be determined to be safe for the Native Seals."

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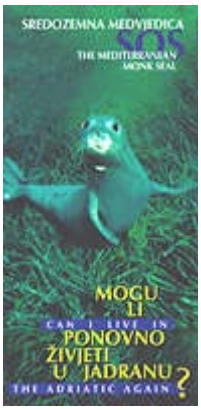
Albania

***See* Croatia.**

Croatia

The Mediterranean Monk Seal Group (MMSG) in Zagreb (Grupa Sredozemna Medvjedica), together with its partner NGO in Albania, Aquarius, has won its grant application to the Regional Environmental Center for Central and Eastern Europe in Budapest, Hungary.

Priorities of the joint project, entitled *Working for the Protection of the Mediterranean Monk Seal and its Habitats,* include education, public awareness and the drawing up of detailed plans for former and potential habitats to become legally protected areas.



MMSG public awareness leaflet

The MMSG has already conducted some provisional surveys in the Adriatic Sea, focusing on the former monk seal population of the Vis Archipelago (*Monachus Science*, Vol. 1:2). This research has suggested that habitats with low human disturbance (as seen on the islands of Palgruza, Svetac, Brusnik and Bisevo) are still suitable for potential repopulation.

In Albania, available data and information on potential habitats, indicates that the monk seal might still be present at some sites, but in very low numbers. Furthermore, surviving individuals in such areas face many risks. These habitats, similar to those found in Croatia, exist in the southern part of Albania (at Karaburuni and Reza e Kanalit). It is expected that the MMSG and Aquarius project will also be implemented in these areas.

The project's main objectives are to:

- Ensure bio-geographical continuity in the species' range, preserving or helping to restore connections between sub-populations and habitats at a national and international level.
- Determine the suitability and availability of monk seal habitats in the study area.
- Place under specific protection and management areas critical for the monk seal's survival, as determined by the species' ecological requirements and conservation needs.
- Contribute towards an improved understanding and technical knowledge of the biology and ecology of the species.
- Improve education, and increase public awareness.
- Create a permanent monitoring infrastructure for long-term follow up and management of Mediterranean monk seal populations and habitats within the project areas (with the possible adoption of such measures on a national scale).

The project, underway since April, is expected to last until the end of the summer in 2000. To date, conservation efforts have focused on education, particularly of children, with numerous lessons and workshops taking place on a kindergarten and elementary school level. From 21 January to 27 March, the MMSG also organised an exhibition on former and potential habitats of the Mediterranean monk seal in the Vis Archipelago, a display that also appeared in the 'Eco-Library' *Medvescak* in Zagreb.

Greece

Natura 2000 News

As noted in previous issues of *The Monachus Guardian*, MOm (the Hellenic Society for the Study & Protection of the Monk Seal) is pursuing its EU-funded *Conservation in Action* project to establish Natura 2000 reserve areas in Greece. Together with the National Marine Park of the Northern Sporades, these are seen as the building blocks of an eventual network of protected areas – a conservation priority since the Rhodes Conference in 1978. The project is being implemented in four key geographical areas, where research has demonstrated the presence of monk seal populations: the Eastern Aegean (the islands of Samos, Ikaria and

Fourni), the Dodecanese (the islands of Karpathos and Kassos) the Cyclades (the islands of Milos, Antimilos, and Polyaigos) and the Ionian islands (the northwestern coasts of Zakynthos).

These 'Special Conservation Areas' are designed to conserve coastal and marine habitat – ecosystems that contain numerous vulnerable, rare or endangered flora and fauna, including the monk seal. MOm's priorities within the project areas include scientific research, the formulation of management plans, public awareness, and the direct implementation of *in situ* conservation measures. Completing its second year in the project, the Athens-based organisation announced recently its 1998-1999 results and achievements:

Management Plans

- Based on the fieldwork and literature review conducted during the two-year operation of the project, a detailed description of the biotic, abiotic and human environment was completed for all four target areas. All data collected, as well as its subsequent analysis, were compiled into a report entitled *'A' Phase of the Management Plans.*
- The data collected was evaluated by a team of experts so as to determine the most important environmental and socio-economic factors that should be taken into account in the design of the zoning system and in the formulation of the management measures. These factors include:
    1. The significance of each area for the Mediterranean monk seal and the identification of critical habitats for the species.
    2. The significance of each area for other important species and habitats.
    3. The primary threats to the conservation of both species and habitats.
    4. The socio-economic trends most likely to affect the natural environment in the future.
- The synthesis of these activities led to the formulation of appropriate management proposals for each target area. The basic rational and the summary of these proposals were incorporated into a report entitled *'B' Phase of Management Plans.*
- These proposals were presented and discussed at length with the relevant local and national authorities, and overall agreement was reached on key issues.

The main aspects of the management proposals are summarized below for each area:

Milos-Kimolos-Polyaigos-Antimilos

Within this island complex, three sites are considered significant for Mediterranean monk seals: the island of Polyaigos (Gr 4220006), the island of Kimolos and the coast of SW Milos (Gr 4220005). Since all three sites were also found to be of importance for many endemic and rare species other than the monk seal, integrated planning was considered the best approach in achieving effective conservation and management.

Kimolos and Polyaigos

- Kimolos and Polyaigos were found to be monk seal breeding habitats of national importance, since a relatively large number of monk seal breeding shelters are located in the area. These shelters are used on year-round basis by the local monk seal population, which is estimated at between 19 and 40 seals.
- The main threat to the species in the wider area appears to be continuous habitat degradation. Deliberate killing by fishermen, though still representing a potential danger, is not considered a prominent threat in this area.
- The two islands, while holding all the important natural characteristics of the entire project area, are less affected by human activities and disturbance.
- Based on the unique characteristics of the area – distinctive at both a national and European level – it was concluded that the islands of Kimolos and Polyaigos should be declared a National Park.
- The proposed zoning scheme was based on Greek Law 1650/86. According to this Law, protected areas are established by Presidential Decree. In order for the legislative process to proceed, a Special Environmental Study (SES), must be submitted (following the requirements established by the Joint Ministerial Resolution 69269/90). Accordingly, MOm submitted a detailed index of the SES for evaluation by the relevant Ministries, to which approval was subsequently received.

SW Coast of Milos

- As indicated in previous issues of *The Monachus Guardian*, a number of suitable monk seal caves are also located on the southwest coast of Milos. However, during the project period, MOm researchers discovered that seal activity in these caves was comparatively low.

- Historical data indicates that the species used to breed in the area, and the apparent decline in more recent years has been attributed to increased human pressure. Due to its scenic beauty, the area is a well-known tourist attraction visited intensively during the high season summer period. Mining activities along the south coast represent another serious threat for the site.

- In consideration of the above, the management proposals provide for the declaration of a zone of 'Nature Protection' on SW Milos, in accordance with Law 1650/86.

Karpathos-Kasos-Kasonisia

In this island complex, the sites initially selected because of their importance for the Mediterranean monk seal were northern Karpathos and Saria (Gr 4210003), together with the islands of Kasos and Kasonisia (Gr 4210006). Following evaluation of collected data, however, it was concluded that the island of Kasos is no longer of major importance for the seal, since breeding no longer occurs there.

- Conservation efforts were mostly concentrated on northern Karpathos and Saria where, based on the evidence collected, a monk seal population is actively breeding. The present population is estimated to be between 10 and 20 monk seals.
- The main threats for the species in the wider area were found to be deliberate killing and continuous loss of habitat.
- In contrast, a strong historic tradition has resulted in some exceptional landmarks in the human environment that have been largely spared from development.
- In consideration of the above, it was concluded that the entire site should be declared an 'Eco-Development Area', in accordance with Law 1650/86. Management proposals provide for specific works and projects consistent with sustainable development of the site.
- As required by the legal process, MOm subsequently submitted its SES (in detailed index form) to the relevant Ministries, and received their approval to proceed.

Samos-Fourni-Ikaria

In the island complex of Samos-Fourni-Ikaria, two sites were considered as priorities for the Mediterranean monk seal and other rare and endemic species: the area of **Seitani** on Samos (Gr 4120003) and the **Fourni islands** (Gr 4120004).

Seitani area

- In order to propose a detailed zoning scheme for the site, the required SES was assigned to a private environmental consulting firm by the Prefecture of Samos. Collaborating on the study, MOm provided data on the occurrence of the monk seal at Seitani, and also participated in the formulation of management proposals for the area.

The Seitani area in 1979

Fourni Islands

- Following evaluation of collected data, it was concluded that the Fourni Islands are important for the seal, but mainly as a feeding ground. The area's rich fishing

grounds support the second-largest coastal fisheries fleet in Greece.

- As such, conservation measures aimed at benefiting both fish stocks and monk seals were submitted for consideration. The enactment of the proposed measures can be achieved through a Prefectural or Ministerial Resolution, a procedure less complicated than that required for a Presidential Decree.

Zakynthos

- The required SES for the Zakynthos site was also completed on schedule, and an executive summary submitted to the Ministry of Environment early in January 1999.
- During the last six months, the possible establishment of a conservation area, and the potential impact of future regulations on the local community, has been the focus of both organised and informal debate on Zakynthos. It is hoped that these activities will gradually increase public support for the protection of the northwestern coasts of the island.
- Following initial enquires, an investigation is now underway on possible legal avenues that would allow establishment of a management body for the area within the existing framework of Greek legislation.

Monitoring Monk Seal Populations and Habitat

MOm's research team has continued its fieldwork in all three-project areas in the Aegean, while WWF Greece and Archipelagos have pursued research priorities in Zakynthos. All seal shelters considered suitable for hauling out or breeding were monitored. From the data collected during this ongoing study (now in its third year), habitat quality and use were evaluated, and population parameters estimated. Additional information relevant to the species (seal sightings, seal-fisheries interactions *etc.*) were collected through the on site operation of an Information Network.

The results from each area can be summarised as follows:

Milos-Kimolos-Polyagos

This island complex – and particularly the areas of Kimolos and Polyaigos – constitute Mediterranean monk seal habitats of exceptional importance for the conservation of the species.

- Within a wider study area, 24 different seal shelters were identified, 8 of which have been used as breeding caves within the last two years.
- Based strictly on identified individuals, MOm estimates that, at an absolute minimum, 19 seals inhabit the area. The total population number, it believes, may vary between 25 and 40 individuals. Stressing the importance of such numbers, it points out that even the minimum estimate represents approximately 6% of the world population of the species and 8% of the population estimated to live in Greek waters.
- The significance of the population's numerical size also appears to be matched by reproductive ability. The birth of 12 pups has been recorded within the area, yielding an annual rate of 6 births per year.

Karpathos-Kasos-Kasonisia

Research indicates that northern Karpathos and Saria constitute the most valuable Mediterranean monk seal habitats of the area.

- 14 different seal shelters have been identified within the wider area, 2 of which have been used as breeding caves within the last two years.
- The absolute minimum number of seals using this area has been estimated at 5 individuals, while the total population number may vary between 10 and 20 animals.
- 3 births have been recorded within the area.

Fourni-Samos-Ikaria

This island complex – and particularly the fish-rich waters of Fourni – are believed to constitute an important Mediterranean monk seal habitat and feeding ground.

- In the areas of Fourni and of Seitani on Samos, research has identified a network of 24 different seal shelters. The use of these caves by seals has been verified both during this and previous projects. Such information led to the designation of Seitani as a 'Strictly Protected' area in 1980, a decision that was eventually confirmed by Presidential Decree in 1995.
- Identification of individuals suggests that at least 4 seals inhabit the area, while the total population number may vary between 5 and 10 individuals.
- A considerable number of seal sightings reported by local fishermen suggests extensive use of coastal waters by the species. This, in conjunction with the fact that the Fourni Islands are considered an important fishery, provides some evidence that the species may be using the area as a feeding ground.

Zakynthos

Research indicates that this conservation target area – particularly stretches of the southwest and northeast coasts – contains habitats of considerable importance for the survival of the Mediterranean monk seal.

- Identification of individuals has indicated that at least 13 seals of various ages inhabit the area, while the total population number may be as many as 16 animals.
- A birth rate of 2 pups per year has been recorded within the area during the operation of the project.

Other Research Priorities

In order to achieve the integrated reserve areas envisaged by the EU Habitat Directive and the Natura 2000 initiative, expeditions to the designated areas were also organised for experts in other fields. This allowed study and data collection of marine and terrestrial habitat types, and the flora, birds, reptiles, amphibians and marine biota existing within each area.

Aside from listing habitat types and species, the teams also identified the main threats confronting the fauna and flora of each area, and recommended protection measures in relation to their own particular field of expertise.

Assessing Human Activities

During the second year of the project, additional statistical data and information was collected in the following fields: seal-fisheries interactions, status of fisheries (fish stocks, fishing grounds, fisheries fleet, number of register and active fishermen, illegal fishing activities, problems of coastal fisheries), actual size and structure of the population (permanent and seasonal), social structure and economic activities, tourism development, agricultural

practices (grazing, crops, fertilisers), development trends, environmental problems, and local attitudes to conservation and development.

Analysis of these results enabled management proposals to be tailored to the conservation needs and priorities of each particular area.

Public Awareness

As a key component of the conservation process, education and public awareness activities have continued in each designated area. These include:

- **Printed Material.** A variety of educational material, aimed at the general public, the authorities or specific target groups (such as children, fishermen, local inhabitants and tourists) was distributed.
- **Mobile Exhibitions.** Nine mobile exhibitions focusing on the monk seal, its habitat, and the natural environment of each designated area, are currently circulating through the islands of Kimolos, Kasos, Ikaria, Samos and Zakynthos.
- **Information Centres.** MOm Information Centres continue to operate on the islands of Milos, Karpathos and Zakynthos. An information kiosk is to be opened in June 1999 in the port area of Fourni.
- **Environmental Education in Schools.** During the second year of the project, MOm's educational team visited both primary and secondary schools in Milos, Kimolos, Karpathos, Kasos, Fourni, Samos and Ikaria. In total, during both years, 180 presentations were conducted, in which 5558 pupils participated. Environmental education activities were also conducted in the schools of Zakynthos.

Italy

See:

Cover Story: Action and Action Plans
In Focus: The Historical Presence of Monk Seals in the Tuscan Archipelago
Letters to the Editor: Monk Seals in Pantelleria

Madeira

Breeding Season at the Desertas Islands

The Desertas Islands Nature Reserve was legally established in May 1990 by a Regional Decree issued by the Parliament of the Autonomous Region of Madeira, Portugal.

At that time, the monk seal colony at the Desertas had dwindled to 6-8 animals, mainly due to interaction with fishermen. Intensive use of gillnets had severely depleted fish stocks, and monk seals were drowning after becoming entangled in the nets.

Following the establishment of the Desertas Islands Reserve, conflicts between seal and fishermen declined significantly, and the protection of the species and its habitat was strictly enforced, enabling the population to gradually recover.

Female seals on the Desertas tend to give birth around October/November every year. In the 1997 season, three pups were born, two of them on a open beach at Deserta Grande – a phenomenon last recorded almost forty years ago. Since that time, monk seals have attempted to escape from human disturbance by resting and breeding inside deep sea caves.

During the most recent breeding season (1998), a newborn pup was observed in early December, and a few days later, after a week-long storm, a dead newborn pup was found floating in the bay of Callhau das Areias, in the southwest of Deserta Grande.

Research suggests that these were the only two pups born during the last breeding season, representing a reduction over the previous year.

However, the surviving pup (named Euro), is now described as 'a healthy, 1.50m long and plump juvenile seal', and Reserve officials and researchers are guardedly optimistic in their wait for this winter's breeding season.

With Euro's recruitment to the colony, the Desertas Islands is now believed to be home to at least 21 monk seals.

News from Madeira's Newest Reserves

As indicated in previous issues of *The Monachus Guardian*, two new protected areas for monk seals have been established on the main island of Madeira. One is at the Ponta de São Lourenço, the easternmost tip of Madeira, which for centuries has provided a habitat for the species. While the Ponta de São Lourenço has retained its wild and inaccessible character – there is no road into this remote area, where towering cliffs plunge into the Atlantic – during the last two decades, seal numbers fell dramatically, mainly due to dynamite fishing and the intensive use of gillnets.

A survey carried out by the Nature Park of Madeira in 1993 found that the north shore of the peninsula has a total of 55 caves, 17 of which were judged well-suited for monk seals despite the prevailing north/northeast trade winds and rough seas.

With the aim of achieving the protection and recovery of the São Lourenço monk seals, the Regional Government of Madeira acquired, under a EU-sponsored Life project, the entire land area of the peninsula. The only house existing on the peninsula was rebuilt to serve as a station for Park Wardens.

In the meantime, São Lourenço and its surrounding waters (up to a depth of 50 meters), have become a part of the Natura 2000 Network within the Macaronesian bio-geographic region (codes 1160, 1250, 5331, and 8330).

Legal protection two years ago brought fishing activities under strict control, and monk seal surveillance and monitoring is now carried out on a regular basis. Wardens are permanently based at the Casa do Sardinha station. Intermittent sightings of monk seals are being reported around the peninsula, encouraging the hope that the species will gradually recolonise its former habitat, most probably from the nearby Desertas Islands.

Not far from Ponta de São Lourenço, on the north coast of Madeira, is another former monk seal habitat – the Rocha do Navio (the Rock's Ship, where a Dutch galleon ran ashore in early 19th century). Monk seals have been reported in this remote and unspoilt area since the settlement of the island in the 15th century, and even today individuals are occasionally sighted during the summer months.

As in other parts of the archipelago, interaction with fishermen led to the virtual disappearance of monk seals from this area. Aiming for the species' recolonisation of the Rocha do Navio, two years ago the Parliament of the Autonomous Region of Madeira approved legislation creating a new marine reserve (Regional Decree, 11/97/M of 30th July). The area comprises a significant portion of the coast, from Ponta do Clérigo to Ponta de São Jorge, extending to a sea depth of 100 meters. Within the marine reserve, use of fishing nets and spearguns is prohibited.

The Nature Park of Madeira, in collaboration with the city council of Santana in the north of the island, is constructing a Warden Station in the reserve, which is also to incorporate a visitor and educational centre. This will be situated on an agricultural plateau bordering the sea to which access is only possible via a stone stairway carved into the 300 meter cliff face, or by a winch system. The station is expected to open during the summer.

The Reserva Natural da Rocha do Navio is also included in the Macaronesian Natura 2000 Network (codes 1250, 5331 and 8330).

Monk Seal Book to be Published

Henrique Costa Neves and Rosa Pires, who are leading the Nature Park of Madeira's conservation efforts, are currently putting the finishing touches to a book celebrating a decade of monk seal protection and recovery in the archipelago.

The 120-page, fully illustrated volume, entitled 'The Monk Seal (*Monachus monachus*) in Madeira Archipelago', includes sections on the history of the species in the Atlantic (from the 15th to the 20th century), on morphology and biology, and on the conservation activities implemented in Madeira during the last decade. Special attention is also paid to knowledge gathered during the non-invasive research that has characterised Madeiran conservation efforts, such us feeding, reproduction, thermo-regulation, habitat use and behaviour.

Other sections of the book are devoted to the new protected areas established for monk seals, the Ponta de São Lourenço Nature Reserve and the Rocha do Navio Nature Reserve.

A Portuguese version of the book will be available in July. Depending on budget constraints, an English version is also planned.

Mauritania & Western Sahara

Pup Disappears at Sea… News Disappears in Blackout

As indicated in our last issue (see *Mystery Surrounds 'Captive' Pup*, Vol. 1:2, Regional News), Spanish researchers have created a virtual news blackout on all information surrounding the rehabilitation of a monk seal pup in Mauritania.

Controversy has dogged various aspects of the initiative, including the exclusion of the Mauritanian government's CNROP (*Centre National de Recherches Oceanographiques et des Peches*), the location of the rehabilitation site, and what has been termed the 'mysteriously long' 9-month rehabilitation period.

According to informed sources, the pup was released at the beginning of January, together with a telemetric (satellite) tracking device. Despite this high-tech gadgetry, and more traditional post-release monitoring efforts, it is alleged that the pup disappeared in short order, leaving scientists to puzzle over the animal's whereabouts. Observers are finding it somewhat ironic that a previous rehabilitation and release effort organised by the Spanish team's 'rivals', the Seal Rehabilitation and Research Centre of the Netherlands, came under heavy and sustained fire for not utilising satellite tracking. The disappearance of one particular pup under their care was subsequently attributed to almost certain death and negligence. This time, academic debate and finger pointing has been somewhat muted.

At the same time, for reasons that have never been fully disclosed, the RSPCA's Norfolk Wildlife Hospital (NWH) appears to have gradually distanced itself from the rehabilitation effort.

The RSPCA has told *The Monachus Guardian* that 'NWH's role in the project was an advisory one to the Spanish vet who was in charge of the rearing and release of the pup. Our information is that the pup was successfully reared and released and that it was the intention that a satellite tag be deployed for purposes of post release monitoring. Unfortunately we have no first hand knowledge of the outcome of this part of the project.'

The organization has been assured that a full report will eventually be released by the Spanish team and its veterinarian.

National Strategy to be Launched

As indicated in our last issue (see *Laying Down the Law*, Vol. 1:2, Regional News), the Mauritanian government intends to avoid any repeat of the fierce controversy and internecine squabbling that may have jeopardised rescue efforts during the 1997 mass die-off of monk seals in the Western Sahara.

Emergency funding donated by GEF-UNEP in the wake of the crisis was eventually allocated to ongoing initiatives, rather than to reimburse various agencies for expenses incurred during the die-off. The two Mauritanian institutions responsible for monk seals, the Banc d'Arguin National Park (PNBA) and the CNROP, were provided with funds to draft a National Strategy for the Conservation of the Cap Blanc Monk Seal colony. A first draft of this Strategy, together with an Action Plan and an Emergency Plan was completed in December 1998, authored by Azza Jiddou (CNROP) and Jean Worms (PNBA), and is presently undergoing internal review. An external review is expected to commence in due course.

It is not known, at present, whether these plans will be affected by the recent departure of the director of the PNBA, Gabriel Hatti.

Corpse Discovered

The PNBA has announced that the corpse of a young seal (1.35 m) was recently discovered, stranded about 80 km north of Nouakchott. While an advanced state of decomposition provided researchers with few useful samples, it was noted that the animal's forehead was badly fractured, possibly suggesting collision with a boat. However, no trace of characteristic propeller wounds could be seen. Two skin samples were collected for eventual DNA analysis.

Turkey

AFAG On Line

The Mediterranean Seal Research Group (AFAG), involved in monk seal study and conservation in Turkey since 1987, published its own Internet web site in December 1998.

Currently available only in Turkish, the site offers an overview of the status of the Mediterranean monk seal both in Turkey and internationally, as well as information about the organisation and its projects, and membership details.

The site can be accessed at: http://www.mikrobeta.com.tr/afag

AFAG expects to launch an English version of the web page in May 1999. – Cem O. Kiraç, SAD-AFAG.

Küdür Peninsula Declared Protected Area

The Küdür Peninsula, a small, undisturbed and mostly uninhabited stretch of coast on the NW tip of the Bodrum Peninsula, SW Turkey, has been officially declared a First Degree Natural SIT Area. The announcement was made by the Cultural and Natural Assets Protection Council (Izmir division) attached to the Ministry of Culture, and follows an earlier application by AFAG to protect the vulnerable monk seals of the area. As a result of the order, existing tourism investment plans on the Küdür Peninsula and on K. Kiremit Island are to be cancelled.

Surrounded by small islets and reefs, the Küdür Peninsula incorporates some five nautical miles of coastline, characterised by remote rocky shores, some cliffs, and sea caves with

pebble beaches. A 1996 AFAG report focusing on Bodrum (Status Survey of the Mediterranean Monk Seal *Monachus monachus* around the Bodrum Peninsula, SW Turkey) recorded the highest incidence of monk seal sightings at Küdür and its off-lying islets.

The Küdür Peninsula (in background) as seen from the Bodrum Peninsula

Prior to the November 1998 decision, doubts remained over whether the Council would confer First, Second or Third Degree status upon the protected area, each of which held potentially serious repercussions for the survival of the monk seal around Küdür. While First Degree status strictly prohibits any kind of construction, Second and Third afford far less rigorous forms of protection against development. As one of the six parties requested to provide submissions to the Council for the degree decision, AFAG tabled 15 research reports on the Küdür Peninsula's importance to monk seals, avifauna and flora.

Reaching its decision on 27 November 1998, the Council declared most (96.5%) of the Küdür Peninsula a First Degree Natural SIT Area, effectively acknowledging the importance of Küdür as one of the last untouched points around the Bodrum Peninsula. The remaining portion, where some summer houses have already been constructed close to Yalikavak, was declared a Third Degree site.

The protection decision, which automatically cancels all tourism investment plans for the area, had previously been severely criticised by the Ministry of Tourism, Ministry of Transport, and the Society of Marinas and Yachters (MARYAT). However, a private investment plan to construct a marina, a yacht maintenance centre and a holiday village on the southern coasts of the Küdür Peninsula appears to have been scuttled by the Council's decision.

Perhaps realising the significance of the order, investors are now lobbying Turkey's National Monk Seal Committee to convince members that mass tourism and monk seals can coexist, ignoring more than twenty years of scientific evidence to the contrary. AFAG believes that such coexistence is possible "if and only if tourism investments remain well away from Turkey's important monk seal sites." **– Cem O. Kiraç & D. Selkan Polatkan, SAD-AFAG.**

Datça Peninsula Wins Reprieve

A plan to construct a road development on the largely undeveloped Datça Peninsula in southwestern Turkey has been foiled by environmentalists – for the time being. The Datça and Bozburun Peninsulas form one of 12 Specially Protected Areas in Turkey, and are noted for their rich biological diversity, long pristine coasts, secluded bays and capes. Much of this coastline has received added protection from development through a Ministry of Culture order proclaiming them First Degree Natural or Cultural SIT Areas.

In October 1998, local environmentalists warned AFAG that the District Chief of the Ministry of Forestry was planning a 15 kilometre road construction along Datça's virtually untouched northern coast, between Körmen port and Mersincik bay. Survey markers were reported to be already in place, suggesting that construction was imminent. Elsewhere on the Peninsula, a

number of illegally-constructed houses were reported on the remote and uninhabited Baglarözü and Kalamis bays on the south coast (between Knidos and Palamutbükü), and also a road-widening scheme involving tree felling from Cumali village to Mersincik.

AFAG then despatched one of its own researchers (N. Ozan Veryeri) to the area to investigate. A survey by land and boat, coupled with further enquiries among the local population, substantiated the allegation that a road construction was planned by the Datça Forestry Chief. Questioned over the issue, he claimed that his intention was to build a fire fighting road that would also shorten the journey for people travelling between Mersincik and Murdala bays in the north, to Datça town. While the explanation appeared somewhat implausible to AFAG, the Chief also confessed that he had no permission to build from the Authority for Specially Protected Areas.

Ozan Veryeri reported that the coastline, devoid of human disturbance, is characterised by steep cliffs with several caves and wild forest. Road construction here using bulldozers and dynamite, would, it was concluded, result in serious habitat loss for wildlife, leading to more forest fires due to human penetration in the area, coastal disturbance and excessive and illegal hunting.

AFAG expressed these concerns and reported its findings to various government departments, including the Authority for Specially Protected Areas and the Ministries of Culture, Forestry and Environment.

The Authority for SPAs reacted swiftly, declaring the various developments illegal and announcing court action against those responsible. The Governorship of Mugla Province explained that the road construction, planned only for fire fighting purposes, had been put out to tender, but that it had now been cancelled in accordance with the instructions of the Authority for SPAs.

As a result of additional measures, tree felling has now been halted along the village road of Mersincik, and one illegally-constructed house at Baglarozu bay has already been demolished by its owner in a bid to avoid harsher penalties meted out in court. AFAG intends to press the authorities to demolish another illegal building in the area. – Cem O. Kiraç and N. Ozan Veryeri, SAD-AFAG.

New Monk Seal Protection Areas Face Uncertain Future

The 13th meeting of the National Monk Seal Committee (NMSC), established under the coordination of Turkey's Environment Undersecretariat in January 1991, was held on 24 December 1998. This was followed by a NMSC Technical Sub-Committee session, held on 12 January 1999 at the Ministry of Environment, Ankara.

The main agenda items at both gatherings focused on the Monk Seal Protection Areas (MSPAs) to be declared by the NMSC. At a previous meeting held in Mersin in December 1997, the Technical Sub-Committee had been commissioned to prepare a list of Turkey's most important monk seal sites. Sub-Committee members SAD-AFAG, METU-IMS (Middle East Technical University, Institute of Marine Sciences) and TUDAV (Turkish Marine Research Foundation) subsequently prepared a draft report, based on the results of previous research, consisting of 17 high priority areas. The report, entitled *Important Monk Seal Sites of Turkey – Problems and Proposals for Solutions*, identified each site by its geographical coordinates, provided an estimate of the current status of the population at each location, listed threats facing those groups, and proposed conservation measures. The 17 sites identified in the report consist of 2 in the Black Sea, 2 in the Marmara, 7 in the Aegean and 6 in the Mediterranean.

Some NMSC members – most notably those involved in coastal investments, such as the Ministry of Tourism, the Ministry of Transportation, and the Society of Marinas and Yachters (an observer NGO) – claimed that more economic benefits should be obtained from touristic activities, and strongly objected to the idea of declaring all 17 sites as MSPAs.

During the heated discussions that followed, Hasan Örek, of AFAG's Cilician Project Office, demanded to know what value the survival of monk seal might have among such lucrative investments. Investors, on the other hand, claimed that co-existence of mass tourism and monk seals is possible, ignoring well-established evidence of the species' extreme sensitivity to human disturbance.

As a temporary compromise, the NMSC has recommended that, where the proposed sites are already incorporated into Specially Protected Areas, National Parks or First Degree Natural SIT areas, they may, in principle, be declared MSPAs. In practice, this would mainly occur on the Aegean and Mediterranean coasts.

Pending further details, the Ministry of Development has already stated its willingness to incorporate the MSPAs onto development charts.

Discussions over the fate of several important monk seal sites, however, remained deadlocked. Agreement could not be reached on MSPA status for sites 10 (Küdür Peninsula-Bodrum Peninsula), 15 (Olimpos National Park-Kemer) and 16 (Cilician region). At the subsequent 12 January Sub-Committee meeting, however, the Ministry of Tourism dropped its objections to Sites 15 and 16 but, bolstered by MARYAT and the Ministry of Transportation, insisted that tourism investments be permitted to continue on the Küdür Peninsula. It was claimed that monk seals could continue to survive on the western coasts of Küdür, and tourism thrive in other areas. AFAG members rejected this fragmentary approach to the conservation of the species (see Küdür Peninsula Declared Protected Area).

During the NMSC meeting, AFAG and METU-IMS also proposed that five coastal zones be closed to all commercial (non-artisanal) fisheries, particularly *trata* (a kind of coastal trawling severely destructive to coastal underwater ecosystems). The five were identified as: (1) Foça and Yeni Foça (Central Aegean), (2) Çesme and Doganbey Cape (Central Aegean), (3) Kizilliman and Sancak cape (Cilicia, Central Mediterranean), (4) Gökceada Island (Northern Aegean) and (5) the entire Bodrum Peninsula (Southern Aegean). Among these areas, zone (3) was later declared off-limits to commercial fishing by the Ministry of Agriculture (see *Wanted: Recovering Fish Stocks*, below).

In addition, AFAG proposed that two areas on the Karaburun Peninsula (adjacent to the Foça SPA), where AFAG researchers have identified important monk seal caves, be protected against human invasion in the summer months. – Cem O. Kiraç, SAD-AFAG.

Wanted: Recovering Fish Stocks

The Cilician Basin project, on Turkey's central Mediterranean coast, is focusing on two particular objectives in its drive to win conservation and recovery of the area's monk seals — food and habitat.

From an ecological point of view, these represent the two greatest limitations determining an ecosystem's carrying capacity for any organism, including the Mediterranean monk seal. The population size of the organism is then determined by the competition of other organisms at the same trophic level and predation by the higher trophic levels. While monk seals are an apex predator within the Mediterranean ecosystem, with no predator above them, they nevertheless compete with a most voracious counterpart – *homo sapiens*.

The monk seal feeds on fish, exploited heavily by fishermen. They also inhabit coastal zones, which are plundered by tourism investors and land speculators. The Cilician Basin project has set its sights on removing or mitigating these threats.

As noted in last December's issue of The Monachus Guardian (see *Reserve Areas Established in the Cilician Basin*, Vol. 1:2, Regional News), important seal habitats in the area have already been declared as First Degree Natural Sites by the Turkish Ministry of Culture, effectively prohibiting development.

Another important step has now been taken to reverse the plight of fish stocks. The Turkish Ministry of Agriculture and Rural Affairs (through the Aqua Products Circular dated 26 January 1999) has banned all types of trawl and purse seine fishing around seal habitats along the Cilician coast. The newly established protection zone covers almost 15 nautical miles. A relatively small area surrounding important seal breeding caves has also been established as a 'No-Fishing-Zone' by the same Ministry. It is hoped that vulnerable pups will now be safeguarded against entanglement and drowning. During the last 5 years, four pups were found entangled in fishing nets, three of them dead.

Fish stocks in the Cilician Basin have always been meagre compared to other basins where the continental shelf is wide and where the rivers nourish the ecosystem with nutrients. However, socio-economic deprivation in the area drove many inhabitants to fishing. Despite limited fish stocks, commercial demand has driven market prices higher and spurred growth in the industry. Small artisanal boats were then replaced by large trawlers and purse seiners, with the inevitable result that fish stocks outside the three mile fisheries zone were immediately depleted. Under existing law, this zone is reserved for small scale fisheries and banned to trawlers in order to protect Posidonia meadows and fish nursery grounds. However, with the trawlers suffering a drastic reduction in catch, their infraction of the coastal zone became inevitable.

Fisheries research in the region indicates an abrupt decline in the size of fish stocks, as well as in species diversity. It is hoped that the new prohibitions on fishing will result in a recovering ecosystem and fish stocks, but the success will obviously depend upon strict enforcement.

While patrolling has been intensified following the deployment of a Coast Guard vessel, doubts remain over its effectiveness in covering such a wide geographical area.

Until recently, close ties between small scale fishermen and trawler operators hampered Coast Guard activities. Despite the fact that industrial-scale fishing has been largely responsible for driving them into poverty, there were often family ties between the two groups, and artisanal fishers also depended upon the trawlers for small, cheap, fish bait.

As a result of a sustained education programme among local fishermen, those connections are now being dissolved. A significant portion of the fishermen are now ready to report illegal activities undermining the marine ecosystem. To encourage a reporting tradition among local fishermen, some selected individuals were supplied with mobile phones, thereby creating a discreet communications network linking the Coast Guard, the local governor, and the security forces.

A joint research program has been initiated by the Middle East Technical University, the Turkish Ministry of Agriculture and Rural Affairs and the Underwater Research Society - Mediterranean Seal Research Group (SAD-AFAG), to monitor the recovery of the marine ecosystem in the absence of large scale fisheries. Results of the research, if demonstrably successful, could act as a persuasive model in marine and fisheries conservation in many other critical monk seal areas. – Ali Cemal Gücü.

Dead Seal Found at Çesme

The discovery of an ailing seal at Çesme on 28 February was reported to SAD-AFAG's Foça-based Aegean Programme Office, by the city's Deputy Mayor, Mustafa Cenger.

Arriving at the scene to investigate, a SAD-AFAG team learned from local veterinarian Ismail Ekmekçioglu that the seal had shown no reaction to the people crowding around her, taking photographs. The animal displayed various symptoms of illness, including nasal discharge, bloodshot eyes and wounds that were attributed to mating scratches. Ekmekçioglu had applied tincture of iodine to the wounds and water had been poured over the seal's back "to make it feel better." Following this treatment, the seal was encouraged to return to the sea.

In the days that followed, attempts were made to monitor the animal by boat. On 1 March, following a tip-off by fishers, the seal was sighted around noon lying on a small pebble beach close to Aya Yorgi. She returned to the sea about 20 minutes later, and was observed in typical diving and feeding behaviour until sunset. After brief 1-2 minute dives initially, the animal's diving intervals increased to a typical 4.5 – 5 minutes' duration.

The animal was observed again the following day sleeping on a rocky platform at Çesme – Dalyanköy.

On 6 March, the SAD-AFAG team at Foça was alerted that the same seal had been sighted lying, apparently exhausted, on a beach along the Çesme coast. Upon arrival, the team discovered that the seal was unconscious, its head pointing towards land, but its tail still in the water. She was pulled clear of the sea and examined. Foça Municipality's Veterinarian, Mr. Avni Gök, noted nasal discharge and dimness in the right eye. Body temperature recorded from the rectum was below 32º C and the animal was shivering. Breathing was irregular. A blood sample was attempted, but failed. Antibiotics and vitamins were administered: 10 cc of Gentasol (gentamisin sulfate) and 10 cc Injacom -C (Vitamin C).

The following day, 7 March, the animal was observed sleeping until 14.00. Although she displayed vigorous activity for brief periods, in general she continued to lie on the shore in an exhausted state.

Reached by phone, Dr. Lies Vedder of the Seal Rehabilitation and Research Centre (SRRC), recommended administering additional vitamins and antibiotics. As a result, at 13.30, 10 cc of Primamicin -LA (oxytetracyclin HCl) and 5 cc of Yeldif (vitamin E + rebenium + vitamin B) were administered. The animal did not display any significant reaction during the two injections.

To compensate for water loss, 16.8 gr. of Orisol (ORS) and vidiaylin srp (a multivitamin) were force-fed to the animal. During this procedure, the seal appeared extremely weak, and showed very little reaction. Approximately half an hour later the animal vomited. Within a few seconds, breathing and heartbeat had ceased.

The corpse was transported to Foça for necropsy, which was performed in the municipal slaughterhouse by Avni Gök and Harun Güçlüsoy.

Samples were taken for virological, bacteriological, genetic, heavy metal and PCB analysis, and were subsequently dispatched to the Istanbul University's Aqua Products Department and Middle East Technical University in Ankara.

The interim results from bacteriological analysis of 3 swabs taken from the rectum and nostrils (while the seal was still alive) and the trachea, indicated the presence of *E.coli septicaemia*, but no evidence of entero-pathogenic bacteria. Although results of other analyses are still pending, it is believed that these were not the main causative agents responsible for the seal's death. A viral infection is currently suspected. – Harun Güçlüsoy and Yalçin Savas, SAD-AFAG.

Artisanal Fisheries Symposium Convened in Izmir

SAD-AFAG's Central Aegean Programme began its life in 1992 as the Foça Pilot Project, situated in the northwest corner of the Bay of Izmir. One of its chief aims since that time has been to encourage the active participation of local artisanal fishermen in the conservation process.

In order to achieve a clearer focus on this issue, a symposium was held in Izmir on 10 February 1999, organized by SAD-AFAG in cooperation with the Ozbek Fishing Cooperative and with the support of the Marine Sciences and Technologies Institute of 9 Eylul University. Artisanal fishermen, fisheries scientists, lawyers and conservationists participated in the symposium. The Deputy Governor of Izmir, coastguard officers, officials from the Ministries of Agriculture and Environment, and journalists attended as observers.

It has been a long-held view of SAD-AFAG that the fate of artisanal fishermen is inextricably tied to the monk seal's. Ecologically, both depend directly upon the health of the coastal ecosystem, which is threatened by industrial-scale fishing (trawls, purse-seines, coastal seines, *etc*), urbanization and pollution. Experience has demonstrated that the monk seal often becomes the scapegoat of artisanal fishermen in this battle over limited resources, even though they are aware that the real enemy is the mechanized, intensive fishing industry that exploits (either legally or illegally) shallow coastal waters.

Within the Foça SPA (where industrial-scale fishing is prohibited), fisheries management and law enforcement has allowed SAD-AFAG to provide artisanal fishermen with a practical demonstration of the benefits of protecting seals instead of killing or disturbing them.

In particular, SAD-AFAG objectives focus on developing relations with fishing organizations, encouraging artisanal fishermen to organize into cooperatives, and facilitating the formation of a pressure group in Turkey to combat the politically, financially and organizationally potent lobby of the industrial scale fisheries.

During the Izmir symposium, fishermen related their experiences and expressed their concern over the problems affecting the sea; scientists conveyed the results of their research (generally supporting the views of artisanal fishermen); conservationists identified problems and called for cooperative action, and lawyers outlined the ways in which citizens' rights could be exercised under existing laws. At the close of the symposium, the participants released the following official declaration:

- Fisheries regulations must be revised according to scientific data to protect coastal ecosystems, endangered marine species and the artisanal fishery, using the most selective fishing gear.
- Live catching of small fish for aquaculture installations must be prohibited.

- The depth limit for the purse-seine fishery must be increased to 40 meters from 18 meters; and any kind of coastal seines should be prohibited.
- The Lampara fishery [a form of night purse-seine fishing – girgir in Turkish; grigri in Greek – utilising powerful lights that legally should not exceed 4000 W and a single light-boat for each fishing vessel] should be forbidden between December-February in Izmir Bay.
- The effectiveness of marine law enforcement organizations must be improved; municipalities and local governorships should be active in controlling illegal fishing and marine pollution, taking Foça as an example.
- Relevant laws must immediately be applied by national and regional governments to stop pollution originating from the city of Izmir and the Gediz River.
- Coastal landfills must be avoided as they are destructive to coastal ecosystems and habitats.
- The relationship between artisanal fishermen's cooperatives, scientists, lawyers and conservationists should be strengthened. Artisanal fishermen should organize into fishing cooperatives, and the formation of an artisanal fishermen's lobby must be accomplished. – Harun Güçlüsoy and Yalçin Savas, SAD-AFAG.

Foça Patrol Boat in Action

Finally returned to the task for which it was intended – after months of being marooned on dry land with mechanical problems – the patrol boat *Cevre* is again scoring points in guarding the Foça Specially Protected Area (SPA).

Between December 1998 and May 1999, it patrolled the SPA and adjacent waters for a total of 53 days, or 147 hours. It was joined in its efforts by the Municipality of Foça's patrol boat, the Marine Police, Coast Guard, local fishers and SAD-AFAG staff.

During the same period, 11 calls were received informing the authorities of illegal acts being committed within the area. Of incidents occurring within the SPA, 2 cases of illegal diving, 2 cases of pollution caused by a purse seiner, and one case of illegal purse seine fishing were prosecuted in court. In the vicinity of Foça, 3 sets of illegal coastal trawling gear were seized at sea. One vessel was also caught in action and its skipper brought to court.

WWF Halts Funding of Monk Seal Conservation Projects in Turkey

SAD-AFAG projects based on Turkey's central Mediterranean and Aegean coasts face an imminent funding cut-off, it was recently announced. The NGO's current contract with the WWF Mediterranean Programme (MedPO) expires in June 1999, and WWF officials have let it be known that it will not be renewed. According to informed sources, the decision was taken reluctantly because of MedPO's own current financial constraints.

The cut-off will affect SAD-AFAG's Central Aegean project based in Foça, and the Central Mediterranean Project based in the Cilician Basin.

The first long term monk seal conservation effort in Turkey was initiated by AFAG in 1992 as the Foça Pilot Project, operated in association with the local community and the Ministry of the Environment. WWF International, which funded this initiative in 1993, also extended its financial support to the Cilician Basin project in 1995. Since then, SAD-AFAG has received increased funding commitments from a variety of WWF divisions, including WWF International, WWF MedPO, WWF Switzerland, WWF Germany and WWF Belgium.

SAD-AFAG is the leading monk seal and marine ecosystem conservation organization in Turkey, and it is feared that the WWF MedPO decision will greatly affect its ability to operate effectively. The organization, while expressing its thanks to WWF for its 6-year commitment, is now urgently searching for alternative sources of funding.

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Cover Story

ACTION & ACTION PLANS

Why Sporadic Sightings May Mean that Monk Seal Conservation in Italy is Not a Lost Cause...

Giulia Mo

Italian Central Institute for Applied Marine Research (ICRAM)

Figure 1. *A monk seal caught by local fishermen on the island of Tavolara, Sardinia, in 1953. Direct killing has been a predominant factor in the rapid decline of the species. Photo courtesy Egidio Trainito.*

The conservation of the Mediterranean monk seal has been the object of so many discussions, meetings and conferences over the last few decades that it is difficult to ignore a feeling of futility when attempting to write about the status of the species. Yet the difficulties faced in accomplishing this task and the obvious failure in most Mediterranean regions to safeguard the species and to promote the recovery of its remaining nuclei, are a clear indication that the problem remains unsolved. This should be a matter of concern for all citizens of the Mediterranean region.

Perhaps the most difficult, and therefore challenging, aspect of this species' conservation lies in the dismal reality it epitomises, reflecting as it does the threats faced by many other Mediterranean marine species. It would therefore seem unwise to consign the Mediterranean monk seal to the lists of species destined to disappear, since the failure to rescue the species today portends a more widespread extinction of other Mediterranean marine species in the future.

Closer scrutiny of historical trends highlights a series of actions (and inactions) that offer some explanation for the present day situation in Mediterranean monk seal conservation. These need to be considered in order to understand why the aim of rescuing the species has been so difficult, and to identify which areas still require attention.

International Protection and Legislation

The first international action plan formulated at the Rhodes International Conference in 1978 emphasised the need for a network of monk seal reserves, protection under national legislation, public awareness campaigns, reduction of pollution, studies on the biology of the species, and national conservation programmes incorporating relevant bilateral and multilateral agreements. A gradual shift in priorities in the 1980s instead advocated the importance of protecting the strongest and most concentrated surviving populations in the Aegean and Atlantic, probably because a drastic decline and lack of conservation measures in the western Mediterranean already appeared inevitable (Israëls, 1992). At this time, UNEP, acting through the implementation of the Protocol for Special Protected Areas (SPA) of the Barcelona Convention, called for the creation of protected coastal areas including monk seal habitats, and formulated a regional action plan to promote recovery of the species in the 20 Mediterranean countries adhering to the Convention. The plan encompassed many points envisaged in the first Rhodes conference.

The 1990s have offered the prospect of better environmental integration through efforts to coordinate the actions of EU countries in agreeing upon a common marine environmental policy. The resulting European Union Habitat Directive foresees legislative protection for the monk seal as well as designation of special areas of conservation for endangered species, often referred to as the Natura 2000 Network. However, there are several drawbacks to the Habitat Directive. Implementation is currently delayed, North African and southeast Mediterranean countries are excluded and, perhaps most important of all, it regards marine protection as strictly coastal.

The Barcelona Convention, conceived in the 1970s as a legal instrument against pollution of the Mediterranean sea, was revised in 1995 to incorporate the concept that the Mediterranean is a enclosed regional sea, whose delicate equilibrium requires restoration – through specific conservation measures for marine species – in order to ensure a sustainable environment for future generations. The revised SPA Protocol not only calls for the designation of protected coastal zones but also of open sea areas, crucial for species that cross national maritime boundaries such as marine mammals, sea turtles and sharks. Of most relevance to the fate of the monk seal is the obligation that the protocol and convention impose on all 20 countries to draw up national lists of protected species, and specific action plans for their recovery and conservation. To date, this is the most specific legal tool ever to affect the conservation of *Monachus monachus.* If interpreted, applied, and respected as the framers originally intended, it could guarantee a thorough and uniform implementation of monk seal conservation activities, and similarly benefit measures to preserve Mediterranean biodiversity as a whole. However, the Convention and its protocols in their revised version, still need to be accepted and ratified by most Mediterranean countries. Until this is achieved by a majority number of the twenty Mediterranean nation states, the convention and its innovative concepts will not enter into force. That such a powerful tool still waits to be accepted despite its formulation in 1995 is perhaps not surprising, considering the vast amount of work and coordination that is required in each sovereign country.

Apparently impervious to the above-related conservation efforts during the last twenty years, the monk seal in the Mediterranean basin has continued to decline. As in many other parts of the Mediterranean, the species began to dwindle in Italy in the early 1960s. In retrospect, it appears that legislative protection of the species and the establishment of monk seal reserves may have suffered from too many delays. Ratification of the Bern and Bonn Conventions in the 1980s provided legal measures against direct killing and disturbance, but little progress was made on the establishment of monk seal reserves.

Protected Areas in Italy

The Italian marine protected area that is often referred to in the relevant literature as a monk seal reserve, is that of the island of Montecristo. This was established in 1979 as a zone of biological protection "in order to save the monk seal from extinction and promote the reproduction and restocking of other species of economic importance". Unlike other zones of biological protection, which envisage restriction only on fishing activities, the Montecristo zone also prohibited navigation and bathing, which in 1988 was extended to the 1 km zone surrounding the island. In 1989 the island was incorporated into the National Park of the Tuscan Archipelago, and in 1996 a Park Authority and park boundaries were established. Marine protection in this area is now conferred upon selected stretches of water extending not more than 1 km around small parts of the islands of Capraia, Giannutri, Montecristo and Gorgona. Within these zones, human access, diving, fishing and navigation are not permitted. In 1997, the nearby island of Pianosa was incorporated into the National Park, with a special 1.8 km protection zone surrounding the island (Scovazzi, 1999). Historical observations of monk seals in this area were frequent, but the last sighting information dates back to 1984 (see figures 2a–d). If monk seal sightings were to still occur in this region, the recently established protected areas could guarantee some of the long-advocated requirements of monk seal reserves.

Figure 2a

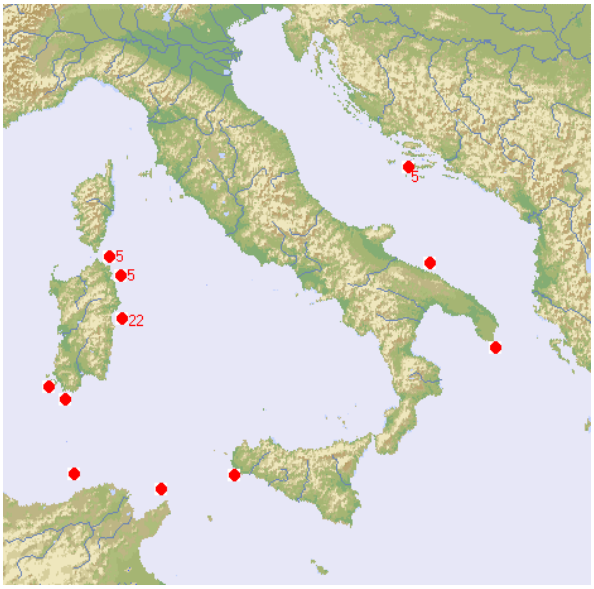

Figure 2b

Figure 2a. *Unconfirmed reported monk seal sightings in Italy and neighbouring countries between 1980-1984 (numbers next to dots indicate number of sightings at location during the 5 year period).*

Figure 2b. *Unconfirmed reported monk seal sightings in Italy and neighbouring countries between 1985-1989 (numbers next to dots indicate number of sightings at location during the 5 year period).*

Figure 2c. *Unconfirmed reported monk seal sightings in Italy and neighbouring countries between 1990-1994 (numbers next to dots indicate number of sightings at location during the 5 year period).*

Figure 2d. *Unconfirmed reported monk seal sightings in Italy and neighbouring countries between 1995-1998 (numbers next to dots indicate number of sightings at location during the 4 year period).*

Figure 2c

Figure 2d

The reduction of monk seal presence around the islands of Sardinia (see *Monk Seal Myths in Sardinia*, Vol. 1:1) and Sicily in the 80s warranted additional marine protected areas. Attempts to establish a 2 km marine protected area belt in the Gulf of Orosei in Sardinia in 1987 was subject to local opposition and the Region of Sardinia filed a lawsuit against the State, resulting in the abolishment of the reserve. The reduced sightings and the lack of a reproductively active monk seal population (the last reported reproductive activity in Sardinia was in 1984) drove academic and public opinion to the conclusion that the monk seal was already virtually absent in Italian waters in the mid-1980s. This attitude was probably enhanced by the apparent impossibility of establishing protected areas in order to safeguard the last remaining individuals, and by the lack of definitive information on the species' distribution and its capacity for movement and dispersal throughout the waters of Italy and of neighbouring countries. Much of the sighting information for the period 1985-1990 (see figure 2b) is drawn from a EU and government commissioned project, and highlights a consistent number of unverified reported sightings in the region of eastern Sardinia (Studiottanta, 1989). The reduction in reported sightings in subsequent years (figs. 2c-2d) must be attributed to a decrease in population as a result of mortality factors long implicated in the species' decline (direct killing, habitat loss, disturbance to resting and whelping sites). However, this latter decline in observations could also be influenced by the absence of sighting surveys of the kind conducted in earlier years. Unconfirmed sightings reported by fishermen and seafarers demonstrate that observations of monk seals have nevertheless occurred until recently (fig. 2d).

The capacity to establish functioning monk seal reserves in time for them to have a beneficial effect has hindered recovery of the species. This is partly due to the fact that the process of establishing marine protected areas is not an easy one, particularly as it entails a significant shift in Mediterranean environmental awareness, often requiring years of effort. In Italy, the first law on marine reserves was drawn up in 1982 and consisted of a list of 20 potential areas. A second law in 1991 defined three categories of marine special protected areas (State Parks, Regional nature parks, and Nature reserves) and added another 26 locations as potential marine reserves. The legal and bureaucratic process for any of these areas to become both protected and functional is lengthy, requiring a special government decree to define the aims of the area, the type of protection awarded, and the geographical limits involved. Before becoming operational, marine reserves require management bodies and management plans, involving design and research work, appointments and implementation.

To date, Italy has established 12 marine protected areas of relevance to the monk seal – either because of the species' historical presence, recent sightings, or because of the location's proximity to countries with surviving populations of seals (blue squares and green dots in fig. 3). Many of these areas still require decrees establishing definitive management systems (*i.e.* the appointment of a director and management body, and the implementation of the management plan). There are also other locations among the remaining list of potential areas which might be of interest for future monk seal conservation. However, in order for these to be established, they would require governmental decrees legally establishing management bodies (see fig. 3, yellow triangles).

National Action Plan

In Italy, the scientific consulting body to the Ministry of the Environment in matters of marine resources is represented by ICRAM, the Italian Central Institute for Applied Marine Research. As part of its objectives for 1999, ICRAM is involved in formulating national Action Plans for four groups of marine organisms: cetaceans, marine turtles, sharks and Mediterranean monk seals. These Action Plans or documents must furnish the public authorities, namely the Ministry of the Environment, with an appropriate resume of the conservation status and abundance of the species in national waters, of the ongoing threats that they face, of the necessary actions required to mitigate such threats, and the necessary research and protection measures that need to be undertaken. As with similar efforts in other countries, the Action Plans are an interpretative tool for identifying the actions of highest priority and require that recommendations, activities and results be verified and modified according to their effectiveness.

Although monk seal presence in Italy is limited to sporadic sightings gathered somewhat fortuitously, a minimal presence still takes place despite the lack of appropriate conservation measures over the last twenty years. While the lack of current information on the species' individual movements and habitat use prevents further detailed conclusions, it is crucial to recognise the dire urgency of safeguarding even the last surviving individual(s) and to abandon the long-held notion that seals belong to limited stretches of coastline. Despite the collective interest in discussing the species' status, very few activities in the original 1978 Rhodes Action Plan have been implemented – in Italy as well as in most other Mediterranean countries – resulting in a "too little, too late" conservation approach. Environmental awareness, necessary for deliberate killing to be deterred, for marine protected areas to be accepted and established, and for biological research and knowledge of the species to advance, have all been slow processes requiring more time than the recovery of the species can permit. With few clearly defined guidelines for countries having no stable reproductive populations of monk seals, the prevailing attitude is that the species is irretrievably lost. Instead, efforts should be exerted on a regional and national scale to identify what concrete actions must be carried out in these areas to encourage recolonisation and recovery.

Considering the proximity of certain portions of Italian coastline to areas having a recurring number of seals, it would hypothetically appear important to consider habitat viability surrounding these populations as an important long-term survival component. In the Ionian islands, a monk seal population has been studied for the last decade by WWF-Greece researchers. On the island of Zakynthos, the monk seal population is estimated to be around 10 individuals, with an annual reproduction rate of 2 pups per year (Zavras, 1998). Observations on photo-identified adult male and female seals in Greece indicate that they are able to move up to, and over, 100 km in a few days (Adamantopoulou *et al*., 1999). Research on monk seals in Mauritania shows that adult males move up to 40 miles from the coastline just to reach the 80m isobath region where these individuals are believed to be feeding (Gazo

et al., 1998). This very preliminary data on animal movements has only recently introduced the notion that some individuals are capable of moving greater distances than previously expected. Such information, coupled with recurrent observations that cave usage by animals in Greece and Turkey appears to be seasonal – as confirmed by the fact that for certain periods of the year seals are not seen along the studied areas of coast – leads to the inevitable hypothesis that monk seals might be moving in a wider distribution. Certain locations around Italy (such as the Tremiti islands, the southern coasts of Puglia, the south-western islands off Sicily and the coasts of Sardinia) are in close proximity respectively to the Croatian island of Pelagruza and the Vis Archipelago, the Ionian coasts, and the Tunisian coasts where some monk seals breed or may still be present. Indeed, these Italian coastal areas are sufficiently close to be utilised by any monk seal individual if we consider the capacity of an individual's movement and the distances involved (see figure 3).

This hypothesis appears to gain additional support from the sporadic annual sightings in south-western Sicily and Sardinia (figs. 2c-d), which in the last decade have been attributed to vagrant individuals belonging to neighbouring countries (RAC/SPA, 1994). Unfortunately, the conservation implications of the presence of these animals has been largely ignored.

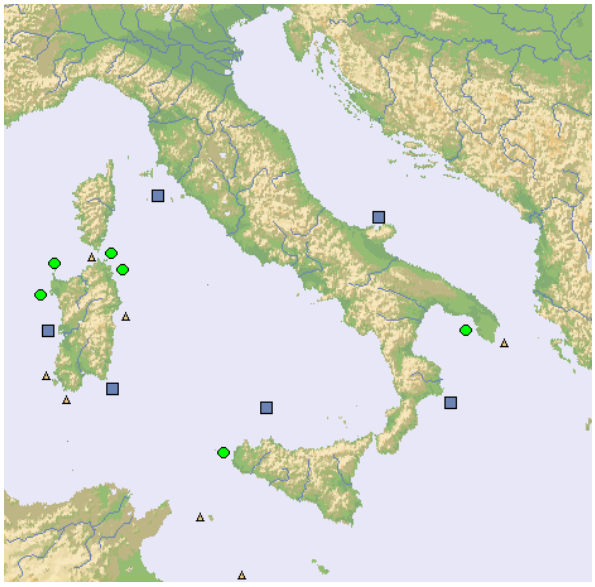

Figure 3. *Marine parks and protected areas in Italy of relevance to monk seals, due to historical distribution / recent sightings / proximity to foreign locations with known or hypothetical populations. (Blue squares = established protected areas. Green circles = established protected areas where the enactment of definitive management schemes is imminent. Yellow triangles = locations identified as suitable, potential marine protected areas according to national law).*

After two decades of discussion and observation of the species' decline, evidence suggests that the difficulty lies not so much in what needs to be done (since that is clear from the 1978 Rhodes Action Plan) but how to achieve it in each country. The hard part lies in moving from a regional (Mediterranean) recommendation to a national and local implementation, ensuring that monitoring activities are executed on a permanent basis, and that protection processes are hastened. Action plans discussed at a regional level must find fertile ground at a national level through the various public bodies and ministries concerned, and should be followed up irrespective of the number of seals present in that country's waters. All nations should be involved in monitoring the species' presence even if it involves only a few individuals. The approach of nations lying geographically close to those with known, reproductively active populations, needs to be one of active support; those that have stable groups of seals must

conserve their habitats; those that have lost them must work towards restoration. The Italian Action Plan for the monk seal will need to focus on cross-collaboration measures, exchange of information on monk seal presence in neighbouring countries, better systems of monitoring, and localised conservation strategies in those areas in proximity to foreign coasts, incorporating both long-term public awareness and monitoring activities. It is hoped that the imminent functional institution of those marine protected areas of geographical interest to the species, and the future addition of other potential locations, can represent an initial step towards monk seal recovery.

The new millennium should see Mediterranean countries adopting (much required) marine environmental policies stemming from EU directives and regional international conventions and protocols. The Mediterranean monk seal lies high on the list of priority species needing intervention. The outcome will depend on how effectively and how fast the adoption of these policies will take place. The answers to the Mediterranean monk seal's recovery and conservation do not lie very far away from each one of us – they are written in between the lines of a series of general action plans that every Mediterranean monk seal "activist" has had on his/her bookshelf for the last twenty years. The pivotal point lies in how well scientific knowledge will allow the national experts to describe the necessary actions to their respective governments and how much action will then be incorporated into the action plans to ensure that enough can be done in time.

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monachus / schauinslandi / tropicalis

In Focus

THE HISTORICAL PRESENCE OF MONK SEALS IN THE TUSCAN ARCHIPELAGO

Brief notes relating to a survey carried out between the 13th and the 25th of July 1998, around the islands of Montecristo, Pianosa and Gorgona (the National Park of the Tuscan archipelago) for the preliminary verification of the historic sites of the Mediterranean monk seal.

Luigi Guarrera

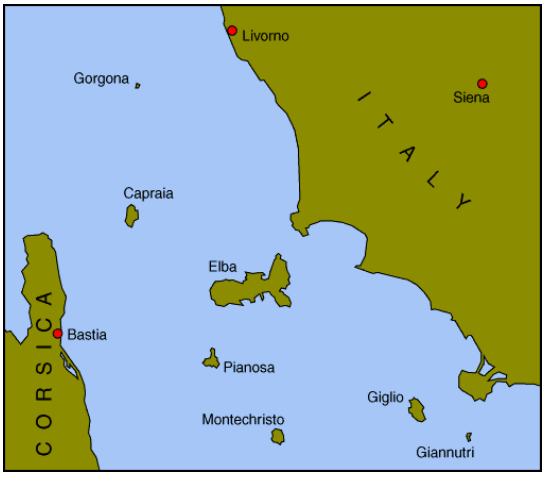
Gruppo Foca Monaca

Introduction

Within the framework of the activities of the Gruppo Foca Monaca of Italy, the author (a former coordinator of monk seal conservation projects in Turkey for WWF International's Mediterranean Programme) while making preparations for a holiday by sailing boat through the islands of the Tuscan archipelago, requested authorization from the competent authorities to conduct a rapid survey in areas where the presence of monk seals was historically indicated, in particular at Montecristo, Pianosa and Gorgona.

The investigation, despite its extreme superficiality, allowed contact to be made with the responsible officers of the National Park of the Tuscan archipelago, with the State Forestry Organization (CFS), the Coastguard and the Directorate of the penal colony of Gorgona: we would like to thank them all for their ready availability, for the interest they showed and courteous assistance they offered.

The cruise presupposed a passage to all the islands of the archipelago, starting from the south (Roma – Fiumicino) and aiming for Livorno as the final destination. These are the islands called at in succession: Giannutri, Giglio, Montecristo, Pianosa, Elba (Porto Azzurro), Capraia, Gorgona.



Methodology of the Investigation

Put simply, the surveys were carried out, in cases where sea conditions permitted, through inspection of predetermined sections of the coast (using 1:25,000 charts of the IIM), either by means of a service tender (belonging to the schooner *Serena*, 17.8 metres) or by dives without breathing equipment, researching or verifying caves suitable for the marine mammal and eventually utilisable for its recovery.

The underwater surveys were carried out by the author, by his son Filippo, and by Pekka Virtanen and Annika Eerola, Finnish guests on board the schooner, following a specific briefing on the modality and scope of the research. Sketches of the visited caves were not made; only their position on the nautical maps was indicated and photographs taken from the outside. Also, information was requested verbally from various people in the area of the investigation, including officers of the CFS, the Coastguard, the Penitentiary Police, the local population and fishermen.

Island of Giglio

At Giglio no survey was made along the coast since this was not envisaged for our cruise. Bad weather would anyhow have prevented it. Various locals were, however, interviewed who confirmed that seals could still be seen at the end of the 1950s near the Bay of Cannelle.

Island of Montecristo

16th July

The fine sea conditions allowed us to set to work in Maestra Bay. A meeting with Paolo del Lama (PdL), custodian of the Reserve, and with officers of the CFS, was arranged. The presence of the seal around the island has not been noted for many years. The zone where it was formerly possible to observe the animal was always Corfu Bay (cf. The testimony of Cecco Baschieri (CB), at the time director of Rome Zoo, who reported its presence in 1968).

Several fishers who frequently shelter for the night in Corfu Bay were interviewed, among them the owner of a small fishing boat LI 1, who has frequented the areas around the island for nearly 40 years. He stated that he had never seen one. The same person, however, states that a fisher nicknamed 'Topolino' (about whose testimony the custodian of the island expresses some reserve) mentioned many times that up to half way through the seventies it was possible to see some seals feeding around the 'Ants' (rocks peeping above the water before Grosseto). The same 'Topolino' maintained that he often threw fish he had caught to seals who came and circled around his boat.

There is also quoted a fisherman who saw one of them in 1981, at the entrance to Maestra Bay. From the indications of the custodian, who on various occasions has carried out dives in different areas around the island, there are no caves, and particularly none with subaquatic access, along the rocky coast of the island, except one in Corfu Bay.

17th July

A complete survey was made, first by the tender and then in the water, of the whole rocky cliff-face of Corfu Bay, also examining the granite cliffs below the surface of the water. The sea was not completely calm and visibility not ideal.

No subaquatic entrances were observed. All of the caves present in the Bay were devoid of even a minimal internal beach, including two caves which enter fairly deeply into the granite cliff. No. 1 has no internal beach. No. 2, further to the right, has two siphons with a subaquatic passage of about 4 metres in depth (cf. A further testimony of the Custodian of the Reserve, Paolo del Lama and of the already cited CB. The Custodian affirms that this is the entrance to the more extensive cave that contained a small beach of around 3 metres. In an excursion by PdL in 1997 diving with tanks, that beach turned out no longer to be present).

It was not possible for the team of researchers, who were not equipped with tanks, to verify PdL's observations. CB recently reported to the author how, during his last excursion to the island (around 1971), he scrambled up above cave No. 2 where there was an opening (not observed by the author), and through which it was possible to observe the interior of the cave. On that occasion he clearly heard from the inside two splashes, the characteristic sound that monk seals make when escaping into the water (although he did not observe any trace of a seal in the sea).

Comment – As regards the possible presence of caves suitable for monk seal habitation on the island of Montecristo, we refer to all that has been reported by the Custodian, PDL. It would, however, be necessary to conduct a long survey of the coast around the island (where sea conditions are often unfavourable) to verify the presence of other possible subaquatic caves. Nevertheless it remains a fact that in the past at Montecristo, monk seals have always been seen in Corfu Bay. It would be necessary to examine better that same bay using tanks and in particular reassess the state of the aforementioned cave. It is our opinion that the presence of seals at Montecristo did not, however, represent an important colony as at the other islands of the archipelago, but probably an intermittent one.

Pianosa (18th – 19th July)

The sea of Pianosa and its coasts, to which access was forbidden in practice until last year because of the presence of the penal colony (and the maximum security jail) represented for us a real discovery. The waters are transparent, clean, rich in fish, and the island presents

many features interesting for the purposes of our research. The sea around the island remains an intact Reserve but it is certain that the means that previously impeded the approach of unauthorized persons no longer exist, and the presence of the Coastguard, despite every good will, does not seem efficacious in succeeding to protect the island, as was done formerly, especially at night. A rumour circulates that one catch of fish at Pianosa might be worth 60-70 million Liras (about $33,000), from which we deduce that greed could be incited among many. One can only hope for an ever more efficient administration on the part of the PN, in particular the extent to which it will review the control of access to the marine environment, even though funds, as always, are scarce and the already high commitment of the Park personnel cannot succeed on its own in tackling such a vast territory.

The first hasty investigation carried out by us into the potential sites for the monk seal have indicated diverse places of interest that would have to be the object of a deeper investigation to achieve eventually a specific and reinforced protection. Also with regard to Pianosa we are truly grateful for the cordial welcome and support of the Coastguard and of those Penitentiary Police still present.

On the island we made contact with Roberto Traverso (RT), an ex-Carabiniere, married to a resident of the island. He has been present on the island for years and is deeply knowledgeable with regard to the sea, its depths and coastline. He is a passionate diver and a convinced supporter of the natural protection of these places. Thanks to RT we were able to detail the presence of sites potentially interesting for the purposes of our research and were able to develop in optimal conditions some on-the-spot investigations, both from the land and the sea, even though time was severely restricted. RT also expressed his interest in collaborating with the Gruppo Foca Monaca and in carrying out, if possible, coordinated and methodical verifications during possible research activities in the waters of the island.

Notwithstanding the predominantly level aspect of Pianosa, there are numerous caves at various locations along the coast, many of which (testimony of RT) have small beaches or internal reefs, some with underwater access and with various chambers linked by siphons. In particular, we point to the toponym ‘the Cave of Cows’ (Grotta di Vacche) a little after the Roman villa, a cave which has been reported to us as crumbling (a fact not confirmed by us), and then the presence of potentially interesting caves between Punta del Grottone and Punta del Marchese, near Porto Romano, in the Golfo della Botte, in the section of coast before Punta Libeccio, in the zone of Torre S. Marco, a little before Cala della Ruta, and in Cala del Bruciato. A conspicuous number of zones, therefore, are provided with crevices, all to be checked and classified.

With RT we carried out a preliminary inspection from the land of a cave near the ancient cemetery of the island. The cave is situated in a zone that was relatively well settled by humans, at least in the past. One part of it is crumbling. In its vicinity is the inlet from the sea of cooling water for the local power station. The cave has a modest internal beach.

We carried out a long examination in the water of a stretch of coast (about 1 km long) a little to the north of Punta del Grottone, which included the inspection of a vast cave: the cave was interesting, without a beach but with an internal reef and linked by a short siphon to another smaller cave also with an internal reef and an overhanging opening towards the land.

Comment – Despite our very brief visit, the situation of Pianosa, as already mentioned, shows itself to be very interesting. No specific facts revealed themselves on the possible recent presence of the pinniped which, however, certainly inhabited the waters of the island just as those of all the other islands until the end of the sixties. Pianosa is the oldest Italian penal colony (adapted to that function as early as 1856 under the Grand Dukes of Tuscany). Its sea was therefore for long under strict surveillance and consequently protected up to the present day, even though the families of the prison staff and the guards themselves had the

opportunity of visiting the beaches and coasts, and of fishing for their own sustenance.

We did not find, however, among the few persons present on the island, anyone who might have had recent sightings. It is also evident that, notwithstanding the sea patrols, no one has ever had the idea of investigating or verifying the presence of an animal unfamiliar to most. We would consider it important to implement an in-depth analysis of the coastal area mentioned, checking the caves and possibly putting before the Park authority the possibility of experimenting, in the most appropriate way, with the deployment of infrared cameras (as in the methodology applied by Emanuele Coppola for the GFM).

Island of Elba

On the island of Elba we did not carry out any specific research because that was not envisaged in our travel plan. We did, however, interview various local small-scale fishermen (all of them initially very aggressive because of the regulations of the PN, which was considered to be the cause of their misery). From one of them, present in Porto Azzurro, we received the report of a firsthand observation of a seal (seen to emerge several times) in front of the Grotta del Bue Marino – the Cave of the Sea Ox – (Capoliveri) in 1985.

Island of Capraia

The coastline of Capraia was also not among those islands for which we had proposed even a quick on-the-spot investigation. We did, however, circumnavigate it entirely, passing very close to the high cliffs and in front of the Grotta del Bue Marino. As at Giglio and Giannutri, around the island, which has practically no beaches, we confirmed the presence of many boats and launches. A local subaqua school carries out regular dives at various points around the island.

The owner of the school, interviewed by us, said he had never seen a seal during recent years, nor does he know of anyone or of any local fisherman (of which there are very few) who had seen one. From the sea this island also displays many clefts and probably has interesting caves.

Island of Gorgona (22–23 July)

Together with Pianosa, Gorgona was, without doubt, the most interesting with regard to our research. The island, the site of an active penal colony since 1860, is very well administered by an able and dynamic director, Carlo Mazzerbo, and is the latest island of the archipelago to enjoy an iron control thanks to the continuous patrols of the Penitentiary Police which head out to sea as soon as unregistered craft appear within the regulation distance and do not respond to radio calls by stopping and turning back. For this reason the depths continue to display a wealth of fish, and thanks too to the existing tranquillity, there are very often seen near the island cetaceans such as the spotted, the bottlenose and the common dolphin (an event also occurring during our visit in July, and even more recently during our other visit in November).

We are very grateful to the director Carlo Mazzerbo for the great courtesy of his welcome and for having put at our disposal a representative to see to our requirements.

From the sea a monitoring of the coast at the Grotta del Bue Marino was carried out, between Cala dello Scirocco and Punta della Tacca. Near to the cave there is another one which, like that of Bue Marino, enters fairly deeply into the rocky cliff but does not possess an internal beach. The Grotta de Bue Marino is, on the other hand, fully correspondent with the historical presence of seals.

Unfortunately the oldest fisherman on the island, to whom we wished to put some questions, recently died. His son, who was interviewed on our behalf by one of the prison guards, stated (with absolute certainty, it was reported to us) that various seals were present in the cave right up until the end of the eighties. Initially eight in number, these all died in the course of time, finding their end in the nets set by his father, a fisherman who supplied the Community of the island.

Unfortunately, as far as it is possible to ascertain, there is no confirmation of such a story. There was in the end no time to carry out further checks in other areas of the island as we would have wished.

Comments – Even more than Pianosa, Gorgona appears, thanks to its status, as an 'ideal' island, the most 'controlled' of all the Tuscan archipelago, the most tranquil and protected. It too is surrounded by a full marine reserve. We consider that, in agreement with the Park and the management of the penal institution, the Grotta del Bue Marino should also be able to be selected for the installation for experimental purposes of monitoring cameras. As mentioned, there is no evidence of the presence of seals in recent years, but that could be on account of the rare presence of human beings on the sea. The ready availability of the Director (and the Park authorities) should be able to permit in-depth studies along the whole of the perimeter of the island which, according to prison guards, has various clefts.

Finally, the guards Natale Ghisu and Giuseppe Manca, in service on the island, and being familiar with the purpose of our visit, told us of having observed two seals emerging from the water on several occasions in July 1993, when they spent several hours in a fishing boat not far from the cave of Bue Marino in Sardinia.

Translated from Italian by David J. L. Johnson

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Perspectives

THE OLD WOMAN WHO SWALLOWED THE FLY

William M. Johnson

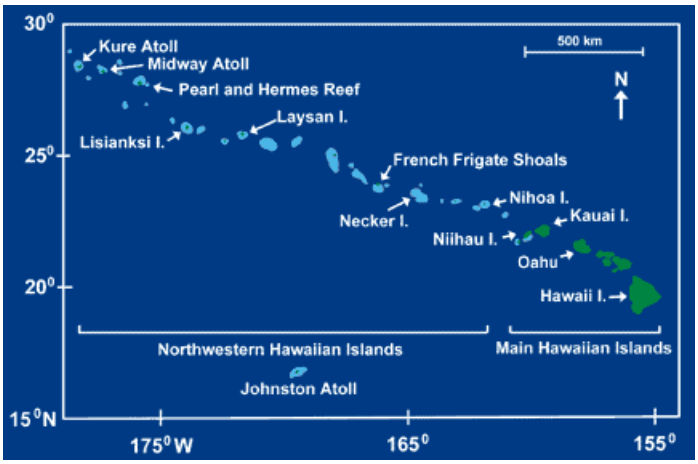
For those of you who are not already familiar with the English nursery rhyme, *The Old Woman Who Swallowed the Fly*…here are a few lines by way of explanation:

There was an old woman
Who swallowed a fly.
I don't know why
she swallowed that fly.
Perhaps she'll die.

She swallows the spider to catch the fly… swallows the bird to catch the spider… swallows the cat to catch the bird… swallows the dog to catch the cat… and so on…

Although there is a certain kind of bizarre logic to the old woman's efforts in catching that pesky fly, the chain of events is actually marked by one error driving another, and increasing desperation. Most important of all, as soon as the bird and the cat are gobbled up, one is struck by the total loss of proportion to the original, fly-sized problem.

At this point, it might be useful to consider how this particular strategy might also apply to the science of nature management at the dawn of the 21st century. While it may be true that the moral of this story can be detected in numerous walks of life, and in nature management virtually everywhere, consider its impact upon the conservation of one of America's most endangered marine mammals, the Hawaiian monk seal.



This species is almost exclusively confined to the uninhabited reefs and atolls of the Northwestern Hawaiian Islands, and continues to decline despite – perhaps because of – management efforts. From the late 1950s to the mid-1970s, colonies in the western reaches of the archipelago (between Kure Atoll and Laysan Island) shrank by at least 60 percent, and the

colony at Midway Island all but disappeared, largely due to human disturbance. By the mid-1990s, total monk seal numbers had stabilised at about 1,300 to 1,400 individuals. However, a significant decline in the species' largest colony at French Frigate Shoals has been responsible for an overall decline in population numbers.

According to the U.S. Marine Mammal Commission's Annual Report to Congress for 1998, that decline can be attributed to "human disturbance, entanglement in derelict fishing gear, reduced prey availability, shark predation, natural environmental perturbations, attacks by aggressive adult male monk seals on females and immature seals of both sexes (called 'mobbing'), and possibly disease."

Faced with such threats, conservation of the species, the report concludes, "continues to be a daunting task." Yet according to a book chapter to be published later this year (Lavigne 1999), Hawaiian monk seal conservation may only be as daunting as the "ponderous, Byzantine bureaucracy" that infests it.

Rather than being a single, easily definable entity, the administrative structure responsible for the "recovery" and "management" of the species is actually composed of a plethora of government agencies, government-affiliated organizations and NGOs, often with agendas and priorities that are inherently conflicting. Interests represented in the decision-making process include the military, fisheries, tourism, scientific research and conservation. While some might portray this as a pragmatic attempt to create equilibrium between divergent interests, it might also be seen as an improbable balancing act fraught with risks, not least of all because the precautionary approach is rarely applied (Lavigne 1999).

Under the terms of both the Endangered Species Act and the Marine Mammal Protection Act, the National Marine Fisheries Service (NMFS) leads the Hawaiian monk seal recovery effort. The U.S. Fish and Wildlife Service also claims a major share in responsibility, not least because part of its mandate lies in managing the Hawaiian Islands National Wildlife Refuge and the Midway Atoll National Wildlife Refuge. Other "key agencies" include the Army Corps of Engineers, the Coast Guard, the Navy, the State of Hawaii, the Western Pacific Regional Fishery Management Council, the University of Hawaii, the Hawaii Wildlife Fund, and the Center for Marine Conservation. Additional interests include the Marine Mammal Commission, the NMFS's Hawaiian Monk Seal Recovery Team, lobster fishers intent on exploiting the Northwestern Hawaiian islands, dive and sports fishing concessions on Midway Atoll, island residents and, last but not least, Midway Phoenix Corporation, Midway's corporate operating contractor.

As if tacitly acknowledging the controversies contained in Lavigne's aforementioned chapter, the latest MMC report to Congress highlights some of the management schisms that afflict Hawaiian monk seal conservation, and the fragmented initiatives that – perhaps inevitably – grow on such fractured ground.

More to the point, it is precisely the way in which these multiple, conflicting interests drive conservation strategy, that is so reminiscent of 'The Old Woman Who Swallowed the Fly'.

Consider the following:

When monk seals are starving to death… continue fishing…

According to the MMC report, "the poor juvenile survival rate at French Frigate Shoals does not appear to be due to direct human disturbance. Rather, evidence indicates that limited prey availability may be a factor." Lest anyone jump to the conclusion that 'Acts of God' alone are therefore to blame for the plummeting fortunes of the colony at French Frigate Shoals, it might be prudent to examine the facts in more detail.

The MMC report goes on to point out that:

- The reefs and banks of the Northwestern Hawaiian Islands are particularly susceptible to overfishing because of their relatively small size and isolation.
- Monk seals feed on reef fish, octopuses, crabs, moray eels and lobsters.
- According to a 1998 report published by the Western Pacific Regional Fishery Management Council, the lobster fishery bycatch in the Northwestern Hawaiian Islands is composed of reef fish (25%) crabs (23%), moray eels (11%), and other, non-target, lobster species (4%).

The MMC minces few words in its criticism of the authorities in handling this fisheries controversy. It notes that it has repeatedly recommended that the NMFS close French Frigate Shoals to lobster fishing as a precautionary measure pending further scientific study – but to no avail. It has also requested that the NMFS expedite research into the dietary needs of monk seals, but notes that funding "has not been provided." The MMC goes on to report that, as a result of these and subsequent communications to the NMFS, it either received no reply at all, or responses that were deemed unsatisfactory.

In one reply, coincidentally dated April Fool's day 1998, NMFS advised the Commission that it had no plans to close French Frigate Shoals to lobster fishing, apparently on the grounds that little, if any, fishing activity was taking place there.

The MMC report declares: "The Service's response failed to address Commission concerns about the impact that lobster fishing at French Frigate Shoals could have on the availability of monk seal prey… Therefore, the Commission wrote to the Service on 17 July 1998 again recommending that French Frigate Shoals be closed to lobster fishing and that, if the Service again declined to do so, it provide the Commission with a detailed description of the criteria it would use to determine the point at which lobster fishing at French Frigate Shoals might have an adverse effect on Hawaiian monk seal survival."

Over a month later, a NMFS reply requested more time to comply with the request, but the Commission notes that it was still awaiting a tangible response by the end of 1998.

As the year drew to a close, the Commission also learned that, as a result of NMFS management decisions, fishing activities (exploiting a total quota of 186,000 lobsters) were shifting towards the western reaches of the island chain, including reefs and atolls directly supporting major monk seal breeding colonies.

Acting on this new information, the Commission again recommended that, pending the results of long-delayed scientific research, NMFS immediately close French Frigate Shoals to lobster fishing, and prohibit similar activities at Kure Atoll, Pearl and Hermes Reef, and Lisianski Island.

On past performance it may seem unlikely that the NMFS will comply. While a response was expected from the Service early in the new year, the MMC recently informed *The Monachus Guardian* that it is still waiting.

Now Catch the Net…

Adding to possible overfishing woes is the enduring problem of entanglement in lost or discarded fishing gear. The MMC report notes that inquisitive Hawaiian monks, particularly pups and juveniles, are attracted by the nets and lines and thus risk injury or drowning. During the 1998 field season, it reports, 18 seals were found entangled in such debris. Of these, 5 were able to free themselves, 12 were disentangled by field crews and 1 was found dead.

***Left**: Adult male Hawaiian monk seal found entangled in derelict trawl net on Laysan Island, 23 July 1998. Service personnel removed the netting and the seal was released with no apparent injuries. Photograph courtesy of Dorothy Dick.*
***Right**: Debris collected around Midway atoll.*

A multi-agency cleanup effort coordinated by NMFS in 1998 discovered that 94 pieces of netting per square kilometre foul the reef surrounding French Frigate Shoals. At Pearl and Hermes Reef, the estimate was 64 pieces per square kilometre. With the cleanup only succeeding in removing a fraction of this debris, NMFS estimates that 38,000 pieces of netting remain at each of these reefs.

As reported in the December issue of *The Monachus Guardian* (Mysterious 'Marine Debris' Discovered at French Frigate Shoals), at the time of the cleanup, the Associated Press quoted NMFS as saying that it would "work to identify the sources of net debris." Although there appears to be no firm developments on that front, the fate of the vessel *Paradise Queen II* might give some food for thought. This lobster fishing boat ran aground on reefs at Kure Atoll on 16 October 1998. More than 15,000 litres (4,000 gallons) of fuel were spilled, though no ill effects were observed among the atoll's monk seals. The wrecked vessel, however, has also dumped about 3.2 km (2 miles) of line and 500 lobster traps on the reef, and this is considered a serious threat to the colony. The vessel's insurance policy will not cover the required salvage operation and, so far, requested assistance from the Navy has not been forthcoming. The Commission regards the removal of the wreck and its associated debris as "an urgent matter."

Forget About Overfishing, Catch the Seal…

Readers of *The Monachus Guardian* may well recall passing references to Hawaiian monk seal translocation experiments that, for one reason or another, went disastrously wrong. The latest MMC report helps to put this issue into some perspective, not least of all because the accumulated facts tend to reveal the clarity of cause and effect:

1. These translocation efforts recruited (to use contemporary management jargon) underweight animals from the dwindling colony at French Frigate Shoals where, if existing evidence is to be taken into consideration, seals have been starving to death, possibly because of overfishing pressures.
2. Following the successful translocation of female yearlings to the depleted colony at Kure Atoll, the NMFS decided to repeat the experiment at Midway in 1992. These releases "experienced poor survival" according to the MMC report (in fact, all 18 translocated animals either died or disappeared in short order – Johnson & Lavigne 1998) and, as a result, "further translocations were suspended pending a thorough review…"
3. On the basis of that review, the MMC recommended that translocations to Midway be resumed. As a result, in 1995, the NMFS captured 12 underweight female pups at French Frigate Shoals and transported them to the NMFS's Kewalo Research Facility in Honolulu

(where, incidentally, two adult male seals were killed in the summer of 1995 by electro-ejaculation experiments).

4. While in captivity, the pups contracted "an undiagnosed eye problem." Euphemisms aside, the pups were, in fact, blinded by an ocular disease, effectively preventing their translocation or release.
5. In 1997, yet another review panel recommended that translocation efforts to Midway be re-resumed, though without a needless excursion to Honolulu.
6. Preparing for translocation in 1999, the NMFS conducted a health and disease assessment among seals at French Frigate Shoals, Pearl and Hermes Reef, and Midway Island. Preliminary results indicated that seals at French Frigate Shoals may have been exposed to a morbillivirus, while monk seals at the other sites had not. Fearing a potential mass die-off, the MMC subsequently recommended a postponement until the risks can be thoroughly assessed by experts.
7. At this point, it might be instructive to remember how this chain of events – our nature management version of the Old Woman Who Swallowed the Fly – all started: monk seals dying of starvation at French Frigate Shoals. It would obviously be impolite to remind anyone that, even by the known figures reproduced here, NMFS policy has been implicated in the deaths or blinding of 32 Hawaiian monk seals, 30 of them females. One wonders whether those in charge have heard of cost/benefit ratios.

Nine Blind Seals…

The nine blind survivors of the Midway translocation experiment (two of the original females died in captivity, and one remains unaffected by the mystery illness) have evidently lost their appeal to the NMFS. According to the MMC, the cost of maintaining these animals in captivity "has been a significant financial burden on the Service." Fears that the undiagnosed eye disease may be contagious have effectively ruled out any return to the wild. It was also recognised that, after years in captivity, they might be unable to re-adapt to their natural habitat and evade sharks. This must surely rank as one of the most significant arguments of all, given current proposals for captive breeding of the species.

By November 1998, it was announced that the NMFS had reached an agreement with Sea World of Texas, San Antonio for the permanent care and maintenance of the surviving captives (yes, Sea World of Anheuser-Busch, Bud Lite and *Shamu* fame, touted as "the world's largest marine life adventure park…"). Here, according to the MMC, "monk seals will be kept together as a group and will be available for approved research projects" – a comforting thought given the results of previous approved research projects.

The transfer of the animals was expected in February 1999, although no announcement could be found on Sea World's web site "Press Room" or "Environmental News". Understandably, these pages were concerned with more pressing issues, such as Sea World's new 'steel eel' hypercoaster and its Beluga swim-with program… Not that we should forget to mention the 1999 SeaWorld Environmental Excellence Awards, for outstanding achievements in conservation. Perhaps someone would care to nominate the NMFS…

Two Seals with One Stone…

Reacting to repeated mobbing of females and immature seals by adult males on French Frigate Shoals, NMFS researchers had two of the worst offenders removed from the colony in 1998. Although this operation – however well-intentioned – was characterised as a translocation, it appears that its implementation may have had more to do with desperation

than logical strategy. Thus, rather than being moved to anywhere within the monk seal's current range, or even to a captive facility (bearing in mind, perhaps, those recent impassioned speeches in favour of captive breeding or the oft-repeated maxim that 'every individual counts'…), the two male mobsters were actually "translocated" to Johnston Atoll, the former nuclear test site and chemical weapons repository, located about 1,125 km (700 miles) south of French Frigate Shoals.

Rumours currently doing the rounds on Midway suggest that this was, in fact, merely a humane alternative to a bullet in the head – an act that presumably would have broken several U.S. laws.

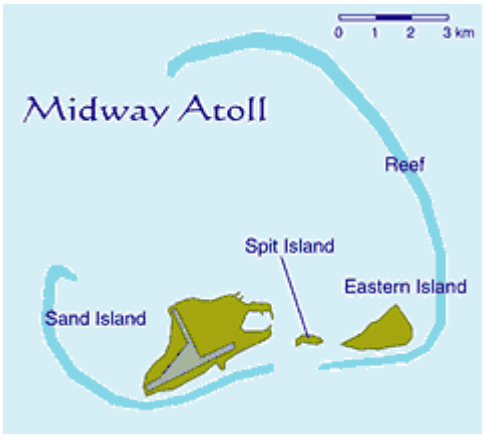
By the end of 1998, the MMC reveals, neither animal had been resighted at French Frigate Shoals (significantly, no mention is made of any monitoring attempt at Johnston atoll). Meanwhile, injuries and deaths caused by aggressive behaviour had, it claimed, "declined dramatically" at the capture site.

Where monk seals are beginning to benefit from reduced disturbance, increase tourism…

In recent years, Hawaiian monk seals appear to have taken advantage of the military's departure from Midway Atoll. Beach counts in 1998 registered 24 individuals – "far higher than that of any year since 1960" according to the MMC. The eleven pups born at the atoll in both 1997 and 1998, the Commission concludes, "are encouraging signs of the possible reestablishment of the Midway Islands as a major monk seal breeding site."

The question is, for how much longer?

Although an important military outpost since 1940, the Navy transferred ownership of Midway to the U.S. Fish and Wildlife Service (FWS) in 1996, apparently content that the atoll become a National Wildlife Refuge. One condition of the hand over, however, was that Midway's new custodians maintain the runway and associated equipment for emergency landings and refuelling.



Lacking sufficient expertise or funding to fulfil its obligation, the FWS sought bids from the private sector, eventually contracting Midway Phoenix Corporation to maintain and operate the airfield and manage public access. A Public Use Plan devised by the FWS was tilted heavily towards ecotourism, offering public participation in onsite research projects, wildlife observation and photography, guided historical tours, diving and snorkelling, and recreational fishing. As revealed in our last issue (*Midway's Monk Seals*), there is much on and around Midway to draw the ecotourist. Aside from the monk seal, the atoll is also home to the

endangered green turtle, 14 species of migratory seabirds, including the world's largest colony of Laysan albatrosses, and four migratory shorebird species.

Judging by its meat-heavy menus and its prolific use of plastics (a ruthless killer of the Laysan albatross and other wildlife, according to FWS guides on Midway), ecotourism may be a new departure for Phoenix. Its corporate experience, in fact, appears to lie well off the ecotourism compass – in airfield management and in shipping toxic waste. As a commercial enterprise, it also requires profits to survive, a fact of life that the FWS may have tended to gloss over in the first blush of Midway wedlock.

Under the current Public Use Plan, Midway's visitor numbers are restricted to 100 in order to mitigate disturbance to wildlife. However, it now transpires that the 100-visitor ceiling is no longer regarded as economically viable by Midway Phoenix Corporation.

The MMC report states: "An overriding concern is that ecotourism and other activities need to provide enough revenue for the contractor to continue to maintain the facilities at Midway Island. Discussions are ongoing about increasing the visitor cap (currently 100 people at a time), possible tour boat visits, and sportfishing opportunities."

Although visitor movements are reasonably restricted at present (only one beach is open to public access, for example – even if it is frequented by seals), it appears that these limitations may now be open for re-negotiation – including such sensitive issues as reef and shoreline access, swim platform installation, lobster and sports fishing, and the policing of tourists.

Will the monk seal become a victim of increased tourism on Midway?

Midway Phoenix's proposals for a revised visitor ceiling have not as yet been publicly aired, though researchers on Midway have privately voiced their misgivings, pointing out that the monk seal is only just beginning to re-establish itself on the atoll after years of human disturbance.

Where monk seals are declining, consider installing missile launch pads…

Finally, we cannot entirely ignore Ronald Reagan's old 'Star Wars' dream that, until recently, looked all set to intrude upon beach-dozing seals at French Frigate Shoals.

Under 1995 orders from Congress, the U.S. Navy is to develop a 'Theater Missile Defense Program' on the Hawaiian island of Kauai. The plan calls for interceptor missiles, capable of destroying enemy target missiles, to be tested "at various distances and locations around Kauai" – *i.e.* in the monk seal's backyard. A draft environmental impact statement indicated that target missiles might be launched from (among other candidates) Tern Island at French Frigate Shoals.

Although this site was later rejected (in favour of air-launched missiles), students of monk seal history may care to note that it was not until September 1998 that the Department of

Defense eliminated the location of the species' largest colony as a missile launch pad…

Neighbouring seals, on the other hand, may not be quite so fortunate. According to U.S. government sources, the Navy has finally acknowledged that deployment of the missiles may increase disturbance to Hawaiian monk seals at Niihau and the small island of Kaula, to the southwest. As a gesture towards the species (precisely what kind of gesture, we cannot say), Navy personnel will be required to check beaches for basking seals before pushing the button (U.S. Federal Register).

But, you ask, if efforts to save the Hawaiian monk seal are so reminiscent of an English nursery rhyme, what happened to *The Old Woman Who Swallowed the Fly*? Well, rather like the way monk seal conservation strategy is about to swallow captive breeding to catch all of the other errors it has already gobbled down, the Old Woman eventually swallows a horse... She dies, of course.

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monachus / schauinslandi / tropicalis

Monachus Science

MONK SEALS IN ANTIQUITY

The Mediterranean Monk Seal (*Monachus monachus*)
in Ancient History and Literature

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ABSTRACT

The role of the Mediterranean monk seal (*Monachus monachus*) in the history and culture of ancient Greece and Rome is poorly documented in contemporary literature and generally misunderstood by many modern scholars. A comprehensive search was initiated therefore to locate all surviving references to the species in the classical literature of the Mediterranean region. The search yielded over 200 references authored by some 60 writers from the Greek, Roman and Byzantine periods. Examination of these texts, together with information derived from numerous secondary sources, provides new insights into the monk seal's distribution and abundance in antiquity. It also reveals ancient human attitudes toward the monk seal that resulted in its exploitation for fur, oil and meat, its use in medicines and entertainment, and its role in mythology and superstition. The accumulated evidence now suggests that many of the large monk seal herds that existed in early antiquity were either dramatically reduced or extirpated by intensive exploitation during the Roman era. Throughout much of its historical range, human persecution and progressive habitat deterioration also appear largely responsible for changing a naturally gregarious beach dweller into a less social and reclusive inhabiter of caves.

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FEASIBILITY STUDY FOR DAILY MONITORING OF A POTENTIAL BREEDING CAVE FOR THE MEDITERRANEAN MONK SEAL, *MONACHUS MONACHUS*

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INTRODUCTION

As one of the most endangered pinnipeds of the world, the Mediterranean monk seal (*Monachus monachus)* is also one of the most difficultly managed from a conservation point of view, partially because of the unknown aspects of much of its biology (IUCN/UNEP, 1988). Unlike its congener, the Hawaiian monk seal (*M. schauinslandi)*, which breeds on open sandy beaches (King, 1964), the Mediterranean monk seal's use of terrestrial habitat for breeding, moulting and resting activities mostly occurs in coastal caves with sufficient haul-out areas (IUCN/UNEP, 1988). Although this choice of breeding area has provided some degree of protection to the seals, it has hindered acquisition of basic information that in other species is well known and statistically confirmed. Information such as animal identity and coastal presence must therefore be limited to sightings while at sea, which requires good sighting probability and visibility (Gücü, 1999). Cave checks also provide useful information, but they are limited by sea conditions, and can constitute disturbance to delicate breeding and resting sites (Savas, 1999).

Over the last several decades, general conservation action plans and directives issued by the European scientific community for the conservation of the monk seal have partly advocated that efforts be undertaken in researching basic aspects of the biology of the species and in developing non-invasive techniques of monitoring the existing population without threatening the survival of the individuals under study (Johnson & Lavigne, 1998).

Closed circuit surveillance video systems were experimented with in the past in Madeira (Parque Natural da Madeira) and in the Western Sahara (Spanish Monk Seal Project, Cap Blanc) to monitor the monk seal's behaviour while on land. Surveillance in the Western Sahara did not involve use of infrared light sensitive equipment but yielded substantial information on animal identity, lactation length, mother-pup interactions, pup and adult moulting (Badosa *et al.*, 1998, Gazo *et al.*, 1999, Pastor *et al.*, 1999). In contrast, the surveillance unit used in Madeira was equipped with an infrared sensitive monochrome CCD camera in a waterproof housing, infrared lights, a video and a 12V 40A battery. The system was used for 12 days but seal presence in the cave could not be recorded (Freitas, 1994).

A cross collaboration scheme was developed between the Turkish research group, SAD-AFAG, and Gruppo Foca Monaca, a WWF-Italy associated volunteer group, to develop and test a non-invasive method that would allow 24 hour surveillance of a monk seal cave. The methodology was designed so as to gain information on cave use, individual identity, sexual gender, moulting activities and, if applicable, crucial information on reproductive aspects such as birthing details, mother-pup interactions, lactation duration and frequency, pup independence, and vocalisations.

DESCRIPTION OF THE STUDY AREA

The site chosen was a frequently used monk seal cave situated on the island of Orak, in the Foça Specially Protected Area, approximately 70 km north of Izmir on the Central Aegean Coast of Turkey (Fig.1) (Güçlüsoy & Theunissen, 1997). Turkey's first seal conservation

project, the Foça Pilot Project, was initiated in this region in 1992 by a Turkish NGO, SAD-AFAG, in association with the local Monk Seal Committee, and with the financial support of WWF (Cirik & Güçlüsoy, 1995). Large scale fisheries are prohibited in the area since 1992, and human activity is restricted since it is one of the most important monk seal habitats in Turkey.

Fig.1. *Map of the Study Area*

The monk seal cave chosen for this study was the second-highest recorded breeding site of a group of approximately 9 photo-identified monk seals studied since 1994 (Güçlüsoy & Theunissen, 1997). The cave is situated in a small bay. The rock formation is of volcanic origin and is called "tuff". Its entrance faces north-west and is characterised by a long water corridor of approximately 14 meters in length whose vault has an open access to the sky, of approximately 1.0m x .75 at midpoint of the corridor. The beach is characterised by small pebbles and is triangular in shape, the width being 2 meters and the depth 3 meters. The height of the vault in the beach area is at its most 1.5 meters and slopes down to the end of the beach area to .5 m except for a narrow crevice in the top of the vault, which extends approximately 3 meters to what is the top of the ceiling of the cave.

MATERIALS AND METHODS

The system used in Foça was based on an in-cave unit containing a monochrome CCD, an infrared sensitive board level camera (with a lens having an angle of view equivalent to a 15mm lens of a 35mm photo camera), two units containing LEDs (30 + 50 each of 20mamp) producing infrared light, and a microphone. Both the camera and the light sources were placed in watertight housings and the microphone was wrapped by fine latex material. One group of LEDs (30 units) was placed in the same housing and surrounding the camera, while the other group (50 units) was placed 30 cm above the camera in a separate housing. The housings were cylindrical in shape and made of Perspex and reinforced with aluminium. The video camera housing was 70mm in diameter, 50mm in height and weighed 300 grams. All the technical material was provided, designed and assembled by Pandafilm, Rome (pandaflm@tin.it). The total price of the technical equipment was approximately $6,800 (CCD unit = $250.00; assemblage and material of 1st and 2nd Perspex housing inclusive of connections and LEDs = $1,100.00; video tape recorder and b/w monitor = $2,200.00; microphone, cables, watertight submersible connections and accessories = $3,300.00).

A small tube fixed to the top of the Perspex camera casing allowed the front of the camera-containing unit to be rinsed in case a foreign object accidentally obstructed vision (*i.e.* Sea grass leaf, *etc*). The tube extended out to the top of the cave and 20 meters away from it, allowing freshwater to be flushed down by gravity over the Perspex housing any time the Perspex appeared soiled and vision was impaired. The in-cave unit was mounted on a

stainless steel bracket, which was fixed into the cave wall with special rock bolts.

The monitoring unit containing a B&W monitor, a VHS video and a control panel was placed approximately 100m away from the in-cave unit, in a camp tent. The system operated under 12V DC and was fed by two 6V serial connected batteries. Six solar panels were used to recharge the batteries. The batteries, once charged, guaranteed power supply in case of solar panel failure for at least 3-4 days.

The interior of the cave was monitored through the surveillance system for 21 days on a 24 hour basis by a group of 4 people working 3-4 hour shifts (Fig. 2). If the monitor could not be supervised directly by the observers, the video recorder was turned on, allowing the tapes to be viewed at a later date. Any event deemed of relevance was recorded on VHS tapes. In case of seal presence, video recording was accompanied by the filling out of specially prepared data sheets.

Installation of the unit was conducted during midday hours as it is generally believed that there is a lower chance that seals may be present on land at this time of day. During the duration of the project, the research team members paid particular attention to avoid being present on the cliffs above, and in the area around, the cave.

RESULTS AND DISCUSSION

During the 21-day period of the study, two different individual female seals were observed using the cave, and their behaviour was recorded on VHS tapes and on special printed forms designed for this study (Fig. 3).

Of the two seals observed in the cave, the first entered the cave and scanned its head in side to side movements, while hauling out and approaching the camera until nasal contact was made. This has led to the belief that the seal may have perceived the unit, possibly by olfaction. The second seal, on the other hand, did not demonstrate any similar behaviour and did not approach the unit.

Fig. 2. *Seal appearance within the cave was observed on a b/w monitor, stationed approximately 100m away from the in-cave unit.*
Fig. 3. *Two different individual female seals were observed using the cave, and their behaviour was recorded on VHS tapes.*

Although the in-cave unit was subjected to heavy seas washing through the entire cave during storms, the camera housing and the infrared LEDs were not affected at all. On the other hand, the microphone protected with fine latex was broken during the first ten days of use and required maintenance and replacement. The new microphone functioned properly until the end of the study.

During the day, light filtering through the corridor of the cave allowed the camera to function in normal mode although the light reached it directly and caused any object to appear silhouetted. Nocturnal use of LED illuminators allowed vision of the beach but with gradual

loss of detail with increasing distance from the camera. A seal at the edge of the beach could just be discerned.

The present study has demonstrated that non-invasive monitoring techniques can be developed and applied to allow detailed information on daily cave use and monk seal individual identification. The study represents an indication of the potential available in the application of instruments that are nowadays commercially available in most Mediterranean countries and applied to a variety of other domestic and commercial circumstances.

The application of these instruments could provide useful tools to Mediterranean researchers as to the daily, seasonal and permanent use and choice of caves by monk seals, as well as detailed identification of physical traits that help in differentiating one seal from another. The system can also allow individual growth and age class estimates, which are sometimes difficult to obtain from observations at sea, as well as providing information on biological aspects of the species that are still questionable (*e.g.* moulting: seasonality, trend with age-classes and sex, duration, amount time spent on land). The technique could further provide better insight on fundamental aspects of mother-pup interactions. At the same time, application of cameras to more than one cave in a given area can allow an accurate determination of preferential and selective cave use by individuals over time.

Modifications to the system, such as application of more powerful infrared illumination and placement of multiple cameras and infrared light sources, are feasible with minor adjustments to the system.

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monachus / schauinslandi / tropicalis

Letters to the Editor

Monk Seals in Pantelleria…

First of all, thanks for putting up such an organized and info-packed website – makes my life as a journalist much easier.

I just wanted to check out whether you know anything about the monk seal which was allegedly seen three times this summer in Pantelleria, Italy. A lady I know quite well, who has a small dive centre on the island, says her boatman saw it very well, resting on the rocks in Cala Gadir (I think), then diving in the sea. The seal showed its head again before disappearing. Apparently two other people claimed to have seen a seal sometime before and after this sighting, and it made the headlines (small ones!) in the papers this summer. Do you know anything about it at all?

Eleonora de Sabata, Rome, Italy

✓ Giulia Mo of ICRAM (Istituto Centrale per la Ricerca Applicata al Mare), replies:

The monk seal sighting to which you refer was reported to Gruppo Foca Monaca and was followed up by an on-site investigation carried out by E. Coppola, who interviewed the Pantelleria residents that reported the event. The sighting occurred during the third week of July 1998 along the coast of Mursia, the northwestern region of Pantelleria. The individuals who reported the observation were at sea during the early evening and were intent on retrieving buoys that had been set up for a sailing race. They then noticed the animal stationing at the water surface and observed it for some minutes while approaching it. They identified the round head and large ocular orbits, and also reported that upon diving they were struck by the shape of the rear flippers, which in their opinion were 'bilobed and almost heart-shaped'. When swimming, phocids tend to keep their hind flippers with the plane lying vertical with respect to the lateral view of their body, and the digits of the flippers are extended and retracted according to the lateral movement of the rear body as they swim. This could give the flippers a somewhat 'bilobed and heart-shaped' appearance. Upon further investigation the locals said that other islanders had observed a seal in this location during the previous days. Monk seal presence has not been reported recently in Pantelleria, though the seals were historically present here and around the other Pelagian islands until the 1960s. The island is of volcanic origin and many parts of its coast are characterized by rocky areas with underwater caves. Also testifying to the seal's historical presence are coastal names, such as *Punta del Bue Marino* on the northeastern side of the island, as well as a shoal called *Secca del Bue marino*.

Interestingly enough, two other sightings were reported in this geographical area during the summer (*see* Figure 2d in Action & Action Plans). The first

dates to June 15, 1998 and was carried out by an Italian Coast Guard officer who was conducting standard boat operations 12 miles southwest of Malta. With the aid of binoculars he observed a monk seal stationing on the water surface. He clearly saw a round head and very obvious whiskers or vibrissae. The animal was alone, not more than 1.5 meters in length and dark. He observed it for some minutes and claims that it was hovering at the water's surface, arching its body and splashing its flippers which were clearly out of the water as the observer could see them clearly. A second sighting was reported by two local fishermen along the southwestern coast of Sicily and occurred in August 1998. The sighting information was kindly reported in great detail by the curator of the Natural History Museum of Comiso in Sicily and the coordinator of the *Fondo Siciliano per la Natura* (Sicilian Fund for Nature) regional office, who knows the two fishermen and took the responsibility of interviewing and verifying the credibility of the event.

The sighting occurred during mid-afternoon and the locals were able to approach the animal up to a distance of 10 meters. It was also lingering on the surface with its head out of the water. The animal was aware of their presence and remained still while observing them approach. According to the fishermen, the most striking feature were the obvious vibrissae and the fact that it did not appear fearful of their presence. They threw some sardines at it thinking that this would entice the animal to catch the fish. At this point, the animal dove, and they watched its body disappear underwater.

Although none of the reports are photographically documented, the details of parts of these accounts leads us to believe that they are credible. Unfortunately, such information reaches us much later than the sightings take place, making it difficult to track down the people who have witnessed the events. Consequently, ICRAM and Gruppo Foca Monaca (WWF-Italy) have set up a collaboration for gathering information on monk seal sightings in national waters for the approaching summer season. The collaboration involves the assistance of the NOE (Nucleo Operativo Ecologico dei Carabinieri) which is the Italian Ministry of the Environment's military taskforce involved in environmental monitoring activities. The NOE will provide a toll free number for reported sightings and has agreed to provide ICRAM with logistical support on site in case of sightings. It is hoped, in this way, that all sighting information will arrive in a centralized office, thus avoiding dispersal of important information.

Editor's Note: Despite being virtually extinct in Italian waters, the Mediterranean monk seal continues to be an infrequent visitor and possibly, even a shy resident here and there.

In this issue of *The Monachus Guardian*, we are presenting two articles on the monk seal in Italy. One, Action & Action Plans, discusses sightings of *Monachus* – including those around the above-mentioned island of Pantelleria – and calls for the implementation of a meaningful conservation strategy that might eventually encourage the species to recolonise its former habitat. The other article (The Historical Presence of Monk Seals in the Tuscan Archipelago) explores an area that was once an important haunt of the monk seal. For further information, turn to *The Monachus Guardian* 1:1, *Monk Seal Myths in Sardinia.*

The Monk Seal Conspiracy

Recently I saw the book *The Monk Seal Conspiracy* mentioned on your site. Can you please provide me with any information that may help me in acquiring this book?

Theodore Alevrontas, via email

✓ **Editor's Note:** Limited numbers of the paperback version of *The Monk Seal Conspiracy* are still available from the U.K. distributors, Central Books Limited. Ordering information (including postal, telephone, fax and email sales) can be found at the following page at Iridescent-Publishing: http://www.iridescent-publishing.com/mscorder.htm

As reported in this issue's International News section, the Internet-based Iridescent-Publishing has recently reissued *The Monk Seal Conspiracy* in its full, unabridged form. It can be found at http://www.iridescent-publishing.com

Freedom of Information

In the previous issue of *The Monachus Guardian*, Alexandros Karamanlidis ('Publish or Perish…') emphasised a very important point. It appears that the low chance of encountering seals in the wild is only matched by the difficulty in accessing reliable information on the species through journal publications (the least-used means for publishing information on *Monachus*), the proceedings of symposiums, conferences, workshops *etc*., project progress reports, and other grey publications. Many of these are very difficult to obtain for other scientists, conservationists, and officials.

It was with this problem in mind that the Turkish Monk Seal League, an alliance of two Turkish NGOs and one Turkish Institute, decided to prepare a bibliography listing all monk seal publications authored by Turkish scientists. This bibliography, which we aim to distribute to all concerned parties, is already rapidly accessible at the Monachus Library at www.monachus.org.

As a second step, we are preparing to submit the full texts of as many of these publications as possible to the *Monachus Library*, in order to make them available to all having Internet access.

With the Internet's international reach, and its ability to deliver documents in a matter of a few seconds or minutes, we think this is an important beginning. We would like to see other countries, organisations and individuals take similar steps, since knowledge is fundamental to our collective efforts to prevent the extinction of the species. The role of the *Monachus Library* may be particularly important since there has never been any convincing sign that the Regional Activity Center for Specially Protected Areas in Tunis (RAC/SPA) has any intention of fulfilling its mandate in information exchange and international coordination, as required in the UNEP Action Plan.

In view of our information needs, perhaps we should even consider going one step further. Both the Mediterranean and Hawaiian monk seals are critically endangered, and as such, new discoveries, new techniques, news on epidemics *etc*. could be vital to our conservation efforts. Perhaps IMMA or monachus.org should consider establishing a discussion group or news group to further promote information exchange within the monk seal conservation community?

We look forward to hearing the views of other readers to these proposals in the next issue.

Harun Güçlüsoy, SAD-AFAG, Foça, Turkey

✓ **Editor's Note:** *The Monachus Guardian* would also be keen to hear readers' views on the issues raised in this letter. As usual, contact us at editor@monachus.org

Decline and Fall

What is the cause of the monk seal's decline? I cannot find any answers anywhere on the Internet. The research that I have been undertaking calls for this information, which I thought would be easy to find. Can you help?

Lola, Chattanooga TN, USA

I am an 8th grader and I am doing a project on the Mediterranean monk seal. I have looked through your website and have found a lot of information, but I need answers to other questions: What are the natural predators of the species, and how does it fit in the food web? What does it eat? What is being done to help it survive? Is its survival important to humans? How has the animal been affected by humans? I would also like more information on its habitat.

D. North, USA.

✓ **Editor's Note:** *The Monachus Guardian* continues to receive numerous requests for general information on monk seals from students, journalists and other interested parties. Regrettably, we are unable to provide detailed, individual answers to readers' enquiries unless they pose specific questions that can be answered either by the editorial team or by outside experts, and unless they are chosen for publication in this section of *The Monachus Guardian*.

However, recognising the demand for accurate, general information on the Mediterranean, Hawaiian and Caribbean monk seals, in the very near future we expect to publish 'vital statistics' fact sheets under the new, *Monachus Profiles* section of www.monachus.org.

Where Are We?

Please spare a thought for those of us who rarely get to go anywhere as exotic as the Mediterranean, or even Hawaii for that matter… The names of the places don't mean all that much, I'm afraid, and I can't search through an atlas while I'm online. So how about publishing some maps to accompany your fine articles? At least I'd know where I am.

Melina, via email

✓ **Editor's Note:** Several readers have made similar requests, and it is a point well taken. Starting with this issue, orientation maps will become a regular feature of both articles and news items.

In Defense of RAC/SPA

We refer to your Editorial (*Navigating the Monk Seal Maze – A Guide for the Layperson*, Vol. 1:2) relating to the activities of the Centre for the conservation of biodiversity in the Mediterranean region, and mainly the results of the meeting of experts which was held in Arta about the conservation of three threatened species of fauna: marine turtles, monk seals and the cetaceans.

Your reaction to the activities of the Mediterranean Centre is a sign of interest to the Mediterranean region, and also an initiative which is developing to safeguard the ecosystems and natural resources which become all the more fragile. This interest urges the Centre as well as the staff members to carry on their efforts which are still limited in this region.

To organize a meeting of scientists of high level to bring into focus the outcome of research about the safeguard of endangered species of fauna and their habitat constitutes a necessary activity for the Centre for the implementation of its programs. Some may consider this kind of meeting a waste of time or inaction!! This doesn't confirm a rational and objective attitude which is necessary to deal with matters on biodiversity in a region where biodiversity is highly threatened by economic and social development activities.

Your organisation, since it is a non-governmental one, and therefore less responsible with respect to the political and scientific authorities, may express what they want to say on whatever matter without having to provide outcomes of the activities that are carried out within the framework of their programs about the conservation of the species.

The Centre for the conservation of the Mediterranean biodiversity, whose main objective is to maintain activity in the region for a sustainable management of biodiversity and safeguard of the threatened species, is looking forward for a cooperation with active organisations in these fields. Will your organisation be among these?

Mohamed Adel Hentati, Director, RAC/SPA, Tunis

Yes… and No…

I found your Editorial on the RAC/SPA meeting in Greece a hoot. At least, it *would* be hilarious if it weren't quite so tragic for the monk seal. As someone who's kept an occasional, if amateur, watch over the state of play in monk seal conservation since Rhodes in 1978, I really have to wonder about the purpose of this RAC/SPA. Correct me if I'm wrong, but as far as I understand it, the Barcelona Convention specifically mandated this organisation to act as a focal point in international coordination and distribution of information in matters relating to *Monachus*?

A. Spencer, U.K., via email.

✓ **Editor's Note:** You are right… and wrong. Actually, under the terms of the Barcelona Convention (or, more specifically, the UNEP Action Plan for the Management of the Mediterranean Monk Seal) it was the UNEP/MEDU office in Athens that was supposed to shoulder responsibility for creating an information network, and for other important coordinating functions. For one reason or another, this hot potato was pitched over to the Regional Activity

Centre for Specially Protected Areas in Tunis. Aside from occasional meetings, it was never heard of again.

Thirty Years Ago

My school (Marco Forester Middle School) is doing a planet Earth Day project, and my partner and I chose to do ours on monk seals. However, we need to know the status of monk seals thirty years ago because it is our school's 30th anniversary.

John McCarty, via email

✓ **Editor's Note:** With continued killing by fishers, and mass tourism snatching once-secluded habitats, Mediterranean monk seals have suffered a precipitous decline in the last 30-50 years.

Population numbers were estimated at around 5000 individuals in 1967 (Maxwell 1967). Although that figure may have been somewhat excessive, current estimates place the surviving population of *Monachus monachus* at around 300-400 individuals (Brasseur *et al.* 1997). Given the difficulty in mounting a reliable census of this reclusive species, however, and the tendency, during the last two decades, to underestimate numbers, that particular figure may be too *pessimistic*.

Nevertheless, the species has also suffered a severe contraction in range. Nations and island groups where the monk seal has been extirpated during the last 30 years include Corsica, Sicily and the Tuscan archipelago, Lebanon, and most of Cyprus and Tunisia (UNEP/MAP 1994, Brasseur *et al.* 1997). The species is also virtually extinct now in the Marmara and Black Seas (Kiraç & Savas 1996) and the Adriatic coasts and islands of Croatia (Draganovic 1991 & 1994; Antalovic 1998). Despite sporadic sightings, the monk seal also appears to be effectively extinct in Sardinia (Johnson 1998).

As for the Hawaiian monk seal, confined to the Leeward Chain of atolls extending northwest from the main Hawaiian islands, surveys continue to show an overall decline in numbers (See The Old Woman Who Swallowed the Fly, this issue). Between 1958 and 1996, the total of mean beach counts at the main reproductive populations declined by 60% (NMFS 1997).

For further information, consult the following sources, some of which are available in back issues or in the *Monachus Library*…

Antalovic, Jasna. 1998. Mediterranean Monk Seal (*Monachus monachus*) Habitat in Vis Archipelago, the Adriatic Sea. *The Monachus Guardian*. 1:2 December 1998

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

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monachus / schauinslandi / tropicalis

Recent Publications

Langford, I.H., A. Kontogianni, M.S. Skourtos, S. Georgiou, and I.J. Bateman. 1998. Multivariate mixed models for open-ended contingent valuation data: willingness to pay for conservation of monk seals. Environmental & Resource Economics 12: 443-456.

Marine Mammal Commission. 1999. Annual Report to Congress 1998. 31 January 1999. i-xvi, 1-236. Chapter II – Species of Special Concern. Hawaiian Monk Seal (*Monachus schauinslandi*) 47-56.

SAD-AFAG. Akdeniz Foku *Monachus monachus*. Önemi ve Türkiye'de Korunmasi. [Seal Info (in Turkish). An information handbook aimed at local authorities, detailing the status and biology of Mediterranean monk seals and the legislation affecting the survival of the species. With colour photos, maps and other illustrations.] SAD-AFAG, Ankara, Turkey. 22p.

In Press…

Johnson, William M. & David M. Lavigne. 1999. Monk Seals in Antiquity. The Mediterranean Monk Seal (*Monachus monachus*) in Ancient History and Literature. Mededelingen. No. 35. The Netherlands Commission for International Nature Protection. *In Press.*
See Monachus Science.

Johnson, William M. (Ed.) The Monachus Guardian. 1999. Vol. 1. Issues 1 & 2, May/December 1998. International Marine Mammal Association Inc., International Fund for Animal Welfare and the Humane Society of Canada. *In Press.*

[Although published in its primary form on the Internet, *The Monachus Guardian* is now also being made available as a hardcopy publication. With the generous financial support of the Humane Society of Canada (HSC), each volume will incorporate the publishing year's May and December issues. While most readers will prefer to access *The Monachus Guardian* via the Internet (not least because of the unavoidable delays associated with traditional ink and paper publishing) this additional hardcopy version is intended to fill important gaps in our readership, and will be distributed to libraries, decision makers, and readers unable to access the journal by electronic means.]

Lavigne, D. M. 1999. The Hawaiian Monk Seal: Management of an endangered species. *In* J. R. Twiss Jr. and R. R. Reeves (eds.) Marine Mammals, Vol. II. Smithsonian Institution Press. *In Press.*

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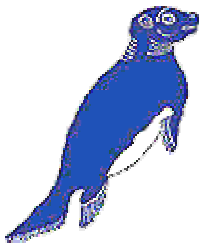

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