

Habitat of the endangered Mediterranean monk seal (*Monachus monachus*) at São Lourenço-Madeira

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Abstract

The Mediterranean monk seal (*Monachus monachus*) survives in small isolated subpopulations, some of which currently are facing extinction. In the Archipelago of Madeira, the species is found only at the Desertas Islands, where it is legally protected. The last place on the main island of Madeira where monk seals were sighted was the São Lourenço Peninsula, where a protected area was recently created. A habitat survey carried out in the area, and recent sporadic sightings, indicated the existence of suitable resting and pupping habitat. The enforcement of protection measures in the area is intended to promote the establishment of a resident colony and enhance the species' recovery chances.

Key words: *Monachus monachus*, pinniped, Madeira, habitat, wildlife management.

Introduction

The Mediterranean monk seal (*Monachus monachus*) experienced a dramatic population decline in the past century and is considered to be critically endangered (Hilton-Taylor, 2000). The species is found only in isolated subpopulations in the Black Sea, the northeastern and western Mediterranean Sea, and in the Cabo Blanco Peninsula and the Archipelago of Madeira in the Atlantic Ocean (Aguilar, 1999).

Mediterranean monk seals seek refuge in isolated coastal caves to rest and reproduce (Sergeant *et al.*, 1978). Suitable seal shelters generally have one entrance leading to a chamber with a surface above water level (Mursaloglu, 1986). To prevent habitat loss, which is considered to be one of the main threats to the species (Johnson & Lavigne, 1999), conservationists have suggested the creation of Marine Protected Areas (MPAs) that will allocate enough suitable habitat for the continued survival of the species (Johnson & Lavigne, 1998).

In the Archipelago of Madeira commercial exploitation, deliberate killings by fishermen and accidental deaths in fishing gear led the species to the brink of extinction in the 1980s (Neves & Pires, 1999). Mediterranean monk seals now are found only around the Desertas islands, 11 nautical miles southeast of Madeira (Neves & Pires, 1998). To protect the species, the Parque Natural da Madeira Service (PNMS) initiated a Monk Seal Conservation and Monitoring Project (MSCMP) in 1988. The Desertas islands were declared a Nature Reserve in 1990. Due to the protection measures implemented in the area, the monk seal population of the Desertas, which is currently estimated at 24 individuals (Pires & Neves, 2001), has experienced a remarkable recovery and monk seal sightings on open beaches at the Desertas Islands and around the main island of Madeira have been steadily increasing (Pires & Neves, 2000; Pires, 2001).

Suitable habitat for the species in the Desertas area is limited. In order to enhance the chances of recovery of the monk seal colony, the Parque Natural da Madeira Service promoted the creation of additional protected areas on the main island of Madeira. One of the most promising candidate areas is the São Lourenço Peninsula, which is located at the easternmost tip of Madeira and is the nearest point to the Desertas islands. It is the last place on Madeira where Mediterranean monk seals were regularly sighted (Machado, 1979). The entire Peninsula and the adjacent marine area up to a depth of 50 m have been included in the Natura 2000 Network as a Site of Community Importance (SIC).

In 2001, the Parque Natural da Madeira Service carried out a habitat survey in the protected area of São Lourenço to assess and confirm the location of potential monk seal shelters, which were previously identified during a preliminary survey in 1993 (Neves, 1994). The 2001 survey aimed also at verifying the presence of monk seal individuals in the area. This information will be used in evaluating the suitability of the Peninsula for the future survival of the species.

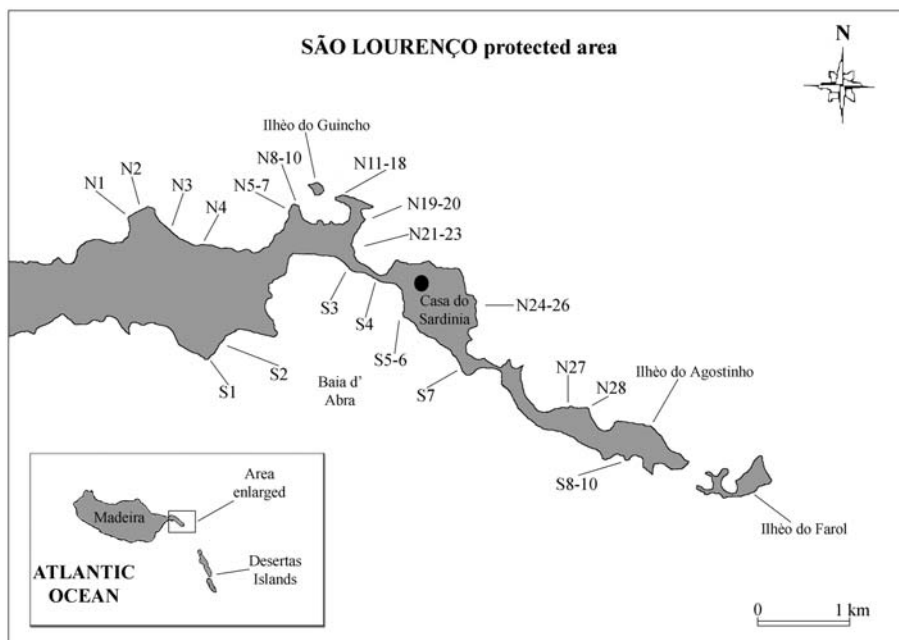


Figure 1. Mediterranean monk seal shelters located during the survey within the protected area of São Lourenço (N stands for caves located at the North of the peninsula; S for the ones located at the South).

Materials and Methods

The warden station 'Casa do Sardinia' of Parque Natural da Madeira was used as a base by the research team and a 4-m inflatable boat with a 25 hp outboard engine was used for the detailed examination of the coastline.

From April to May 2001, the entire coastline of the protected area was carefully examined and all suitable seal shelters identified and recorded. The methodology used during this project for approaching, examining, and recording the caves was based on the methodology applied in monk seal monitoring programmes in the eastern Mediterranean (Dendrinos & Demetropoulos, 2000), modified to suit the particular circumstances encountered in the Archipelago of Madeira (Silva, 1999). Caves were entered by dinghy or by snorkeling during low tide, after an initial inspection of the cave was carried out to ensure that no animal was present. Caves were checked for signs of previous seal presence, such as tracks or depressions from animals lying on the beach, odour, faecal matter, hair, blood, etc. The date, time of visit, location, state and features of the shelter were recorded. The entire process usually lasted less than 10 minutes. This methodology aims to minimise any disturbance to monk seals.

Past and present reports of the presence of the species in the area, made by the Park's personnel and in various bibliographic records, were collated.

Results

Thirty-eight different sea caves were identified, explored and mapped. Ten are located in the southern coast and 28 in the northern coast of the peninsula (Fig. 1).

Based on cave usage preferences of the species in the Desertas islands (Neves & Pires, 1999; Karamanlidis *et al.*, in prep.), four of the above caves were evaluated as being suitable for pupping and resting, while another 18 were considered to be suitable only for resting. Three of the caves located during the preliminary survey in 1993 were no longer suitable. One was filled with boulders, while the other two had collapsed.

All caves identified within the protected area were examined thoroughly for any evidence of recent use by animals. No evidence of seal use was found, perhaps because the adverse weather conditions during the survey had removed it. A few days after the end of the survey, however, park wardens observed a monk seal in the area of Ilhéu do Guincho. Furthermore, the occasional presence of the species in the area was verified by numerous

Table 1. Mediterranean monk seal sightings recorded at the São Lourenço Peninsula (1900–2001).

Date	Observation	Source
~1900	Monk seals could be observed at the eastern point of the Peninsula at the Islets Vermelho and Fora.	Machado (1979)
1934	Visconde do Porto da Cruz confirms the existence of the species in the area.	Reiner (1981)
1978	A mission of the Marine Museum of Cascais confirms the existence of a small colony – 4 adults and 2 juveniles – in the area.	Machado (1979)
1981	Two adult seals killed at the easternmost point of the peninsula.	Reiner (1981)
~1983	Sightings of monk seals reported from the Village of Caniçal, the lighthouse at São Lourenço and Quebole at the eastern side of the Peninsula.	Reiner & Dos Santos (1984)
July 1986	Two adults sighted at the São Lourenço Peninsula.	Biscoito, pers. comm. to Marchessaux (1989)
21 and 30 September 1986	One adult sighted at the São Lourenço Peninsula.	Biscoito, Pers. comm. to Marchessaux (1989)
21 and 22 November 1986	One adult sighted at the São Lourenço Peninsula.	Biscoito, Pers. comm. to Marchessaux (1989)
Dec. 1986	One adult sighted and one juvenile found dead at the São Lourenço Peninsula.	Biscoito, Pers. comm. to Marchessaux (1989)
30 June 1987	One adult sighted at the São Lourenço Peninsula.	Biscoito, Pers. comm. to Marchessaux (1989)
15 August 1987	One adult sighted at the São Lourenço Peninsula.	Biscoito, Pers. comm. to Marchessaux (1989)
1993–1994	Numerous reports of two monk seals – a big white one (approximately 3 m) and a smaller darker one (approximately 180–220) – feeding in the area of Ilhéu do Guincho.	Pires (1994)
1993–1994	The lighthouse keepers at São Lourenço report groups (2 to 3 individuals) of monk seals resting on the rocks at the east of the Peninsula.	Pires (1994)
May 1993	Three to 4 individuals observed in the area.	Pires (1994)
January 1994	One monk seal observed for a period of 2 days near the Bay of Abra.	Pires (1994)
1 October 1998	One adult observed swimming near Ponta das Cascitas.	PNM monk seal register
13 May 1999	One monk seal swimming half a mile from the Bay of Abra.	PNM monk seal register
13 January 2001	One adult observed close to Ilhéu do Farol.	PNM monk seal register
3 June 2001	One adult observed by the wardens of the protected area swimming near Ilhéu do Guincho.	PNM monk seal register

sightings, many of which occurred during the past two decades (Table 1).

Discussion

The Mediterranean monk seal disappeared from the island of Madeira during the 20th century. Sporadic sightings of monk seals at the São Lourenço Peninsula since the 1970s may indicate that the area has been home to a small, resident population of monk seals or that it is just sporadically visited by animals from the Desertas colony. The occasional presence of the species in the area, however, indicated the existence of suitable habitat. The results of the current survey confirmed this and are

consistent with the results of the preliminary survey carried out in 1993. The northern coast of the protected area, in particular the area around Ilhéu do Guincho (Fig. 1), harbours caves similar to those used by monk seals at the Desertas islands (Neves, 1994; Pires, 1994; Karamanlidis *et al.*, in prep.). Taking into account the results of this survey, the decision of Parque Natural da Madeira to set up three observation points within the protected area and initiate a monk seal monitoring programme similar to the one carried out at the Desertas Islands appears to be well justified.

Considering the fact that the Desertas islands monk seal population seems to be enlarging its distribution area from the Desertas islands towards

the island of Madeira (Pires, 2001), the presence of suitable habitat, and the recent establishment of a Site of Community Importance at the São Lourenço Peninsula, could promote the establishment of a resident colony on the main island of Madeira and greatly benefit the conservation of this endangered species.

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