

A plan for the Reintroduction of the Monk Seal (*Monachus monachus*) in the Archipelago of Cabrera (Balearic Islands, Spain)*

Francisco J. Avella

c/o Marineland S.A., Costa de'n Blanes, Palma Nova, Mallorca

Alors que la protection de la nature n'est le plus souvent que defense elastique, combat en retraite, la reintroduction d'une espece est un acte positif.

Robert Hainard

Abstract

A plan is exposed for the creation of a maritime reserve around the archipelago of Cabrera, followed by the eventual reintroduction of the Monk Seal.

The archipelago, with a total surface of 1836 hectares, if formed by about 21 islands, and is separated from southern Mallorca by a channel of 10 Kms. It is occupied by the Army, and important manoeuvres take place there yearly.

Cabrera holds important colonies of various sea birds. The Monk Seal lived there, in small numbers, until the late fifties of this century.

Two levels of protection are proposed: a strict reserve, covering the bay of Cala Santa Maria (in the island of Cabrera), where seals would be eventually released; and a much larger protected area, contouring the whole archipelago and with a width of 2 Km, where all kinds of fishing should be forbidden and navigation strictly controlled.

An international project for the breeding in captivity of the Mediterranean Monk Seal must be urgently organized, and it is suggested that this could be the source for the animals to be released in Cabrera.

Introduction

It is well known that present habitat of the Mediterranean Monk Seal is constituted basically by lonely islands (some examples are the Aegean and Adriatic archipelagos, the Desertas, Galite and the Habibas) and wild portions of the mainland coast (as in Turkey, Libya, Algeria, Morocco and the Sahara).

In Western Mediterranean, i.e., from Italy-Sicily-Tunisia in the East to Gibraltar in the West, suitable habitat for seals is mainly concentrated in the coast

*This paper was first presented in the Second International Conference on the Mediterranean Monk Seal, held at La Rochelle (France) in October 1984.

of North Africa, while European countries of the region (Italy, France and Spain) hardly offer any wild enough stretch of mainland coast where an eventual group of seals could settle. Possibly just Corsica, Sardinia (taking these two big islands as 'mainland') and the SE coast of Spain (in the area of Cabo de Gata) are the only places that may offer some hope.

As to wild islands and archipelagos, the western basin of the Mediterranean contains a relatively limited amount of them, mostly lying rather close to the mainland.

The adjoining table includes some relevant information about the islands we consider of greater interest in relation to the Monk Seal (always in Western Mediterranean).

We suggest that, among all these archipelagos, Cabrera (in the Balearic Islands, Spain) offers the best chance for an eventual project of reintroduction of the Monk Seal, provided that some conditions are fulfilled, and many difficulties overcome. Some discussion on this subject is presented in this preliminary paper.

General Description of Cabrera

The archipelago of Cabrera consists of the following islands: Cabrera ('the island of goats'), with an area of 1569 hectares, probably the bigger uncolonized island in the Western Mediterranean; Conillera ('the island of rabbits'), with 237 hectares; and about 19 smaller islets totalizing some 30 hectares. The total area of the archipelago is 1836 hectares.

The islands lie approximately in a row, with the biggest one in the South extreme. Foradada ('the holed island'), the northern-most of the group, is separated from Mallorca by a channel of 10 km. The island of Cabrera, 5 Km more to the South, is 250 Km distant from the North African coast, concretely in the region of Alger.

The archipelago of Cabrera is the prolongation to the South of the Eastern mountain range of Mallorca, reaching heights of over 500 m in this island but which in the archipelago offers just low hills, Picamosques (172 m, in the western portion of the island of Cabrera) being the highest one.

The geological history of the place has included many events, but we shall summarize saying that the

archipelago last emerged from the waters in the middle Miocene, about 20 million years ago.

The extremely irregular shape of the island of Cabrera gives it a coast length of over 22 Km, an exceptional figure for an island of its size. The coast of the archipelago is made of cliffs in most of its length, and there are just half a dozen small sand beaches, all but one in the island of Cabrera.

The sea bottom surrounding the archipelago is mostly rocky, with the exception of a sandy area in the eastern coast of Conillera. The climate of Cabrera is dry, with less than 500 litres of rain per square meter per year.

Some historic notes

The most important historic feature of Cabrera is to have been used in 1809 as a concentration camp for 9000 French soldiers, of which just 3600 survived 5 years of captivity.

The islands have never been truly colonized, although in 1891 an attempt was made to set up an agricultural village ('Villa Cristina' was the chosen name), but this was finally not carried out.

Two lighthouses were built between the end of the last century and the beginning of present one: at Punta Ensiola, the SW corner of Cabrera, and in Foradada, the closest island to Mallorca.

In 1916, the Spanish Army bought the archipelago from its former owner, and since then the islands have remained a military area, the only inhabitants being about 30 soldiers in the largest island.

Nevertheless, a serious ecological problem is posed by the yearly manoeuvres which gather over one thousand men during a week in Cabrera, with extensive use of artillery against some points of the coast of the archipelago.

While the negative effect of these manoeuvres on wildlife cannot be contested, it is also true that the fact that the archipelago was put away from private hands almost seventy years ago has prevented it from being spoiled by touristic business, responsible for the destruction of a good part of Mallorca's seashore.

Even so, in 1972 there were reports indicating that the Army was considering the possibility to sell almost one half of the island of Cabrera to real-estate agencies, which obviously would have caused irreversible alterations.

In the present situation, this danger does not exist at all, but on the other hand the Army shows no intention to leave the archipelago in the near future, and all the efforts made in the last fifteen years to get, for Cabrera, the declaration as a maritime-terrestrial National Park have not succeeded.

Wildlife of Cabrera

The vegetation of the archipelago is typically Mediterranean, adapted to a rather dry climate. The

list of vascular plants comprises over 350 species. Pine woods have spread considerably since feral goats (which once gave name to the largest island) were exterminated several decades ago.

There are important colonies of some Mediterranean sea birds, especially in the lesser islands: over 580 pairs of Herring Gulls (*Larus argentatus*), over 300 pairs of Cory's Shearwater (*Calonectris diomedea*), a similar figure of Shags (*Phalacrocorax aristotelis*), about 100 pairs of the endangered Audouin's Gull (*Larus audouinii*), more than 30 pairs of Storm Petrels (*Hydrobates pelagicus*), and a few Manx Shearwaters (*Puffinus puffinus*).

As to raptors, there are 17 pairs of the highly migratorial Eleanor's Falcon (*Falco eleonora*), a few of Kestrel (*F. tinnunculus*) and Peregrine (*F. peregrinus*), and finally one pair of Ospreys (*Pandion haliaetus*) which recolonized the archipelago in 1976 after years of absence and has since then yielded an average of two chicks every season. Breeding species of Passerines number just 10. There are Lizards in almost every island of the archipelago, all of them belonging to a species (*Podarcis lilfordi*) which is endemic from the Balearic islands, and each one having been described as a separate race.

There are no autochthonous terrestrial Mammals, although rabbits, hedgehogs and rats were introduced by man and are now common.

Underwater researcher J. M. Asensi (pers. comm.) has visited Cabrera recently and found it to hold a fine 'pre-coraline' ecosystem, though surprisingly poor in fish life, most probably as a result of intensive scuba diving.

The former status of the Monk Seal in the archipelago is discussed under another heading.

Reintroduction plan

Reintroduction of wild species in natural habitats from where they had been exterminated is a vital part of conservation policy which has yielded important successes when it has been wisely applied. Let's mention, as an example, the reintroduction of the Griffon Vulture (*Gyps fulvus*) in the French Massif Central.

There exist several conditions that must be fulfilled in order to carry out any project of reintroduction. These are basically the following:

1. The aim of protecting and recovering the species as a whole must prevail upon the wish of founding a new population. No reverse must be inflicted to any existing population in order to get animals for the new one.
2. The individuals used in the reintroduction must belong to the same species and, if possible, subspecies, than those which were exterminated in the place where the operation is carried out.
3. The place chosen must keep the original habitat and all the ecological conditions necessary for

the survival of the animals released. In other words, the cause of previous extinction of the species must have been direct destruction by man (hunting) rather than modification of the environment.

4. Preferably, the place must be a Reserve or other kind of protected area. In any case, the future of the newly founded population must be guaranteed, including the necessary restrictions to access to the place where it is settled, and the divulgation among human inhabitants of the region preventing the hunting or disturbing of any one of the animals.

We shall discuss all these subjects, in the case of our project to reintroduce the Monk Seal in the archipelago of Cabrera, under the following headings: former status of the species in Cabrera, creation of the reserve, origin of seals, control of released individuals, and divulgation.

Former status of the Monk Seal in Cabrera

An extensive inquiry among fishermen on the past status of the Monk Seal in the Balearic Islands (still unpublished) has shown us that the species was fairly common in the first decades of this century: we know of at least 38 different seals killed or caught in the nets since about 1910 and until 1958, when the last killing took place in northern Mallorca.

As to the archipelago of Cabrera, our information is too scarce as to get a good idea of the former status of the seal. We have got reports of just 3 individuals killed since 1910, including a pregnant female caught in a net at a place called L'Olla (eastern coast of Cabrera) in 1918. We don't know any ancient breeding or just haunting sea grotto in the archipelago, but this is obviously due to shortage of reporters about this lonely place. All the observations we have collected from fishermen refer to one or at most two individuals, and someone adventured us the hypothesis that there were (in the twenties) 2 pairs in the whole archipelago. The species was rare enough in 1913 so as not to be mentioned in a booklet accounting the result of a trip to Cabrera carried out in that date (instead, sharks, sea turtles and osprey are mentioned). Again in the forties, seals were also rare, because someone who lived in Cabrera until 1944 considered them to be extinct by that time, while we know of a seal killed in 1945 and another observed about 1947. The final extinction probably took place in the late fifties (there is a record by that time), as it was the case in Mallorca and Menorca.

Twenty years later, in July 1977, a seal was seen 30 m away from the boat, with rough sea, by German scientist Claus König (pers. comm.) in the channel between Mallorca and Cabrera; the observation was good enough so as to allow him stating that the animal was a true seal and not a seal lion (of which

there have been several escapes in the Mediterranean in recent years). Nevertheless, whatever the origin of this isolated individual, the species can be definitely considered to be extinct in Cabrera.

Previous to any attempt of reintroduction, an important question arises: can an archipelago like Cabrera hold an autochthonous, self-maintaining population of Monk Seals? In other words: what is the home range of an individual seal?

We cannot completely discard the possibility that all the seals seen in Cabrera along this century were mere wanderers from the neighbouring Mallorca, although we feel that this is highly improbable. There are other similar archipelagos in the Mediterranean in which there exists an apparently autochthonous and viable population of Monk Seals: let's mention the archipelago formed by Piperi, Gioura, Skantzoura and other small islands in the Northern Sporades, Aegean Sea, where 5 adults and 3 juveniles were identified and a total population estimated at 40 or 50 animals by Schultze-Westrum (1976); and Galite (Tunisia), where 5 adults and one juvenile were reported by the Cambridge University expedition of 1979 ('Newsletter of the L.C.M.S.', number 4, 1979). Previous estimations of the total population of this last archipelago have also reached figures over 30.

We suggest that more detailed information on the status of the seal in these two and other similar archipelagos would constitute a vital help in order to understand the former status of the species in Cabrera.

Creation of a reserve in Cabrera

We ask the Spanish Government the immediate creation of a strictly maritime protected area around the archipelago of Cabrera, aiming not only the eventual reintroduction of seals, but also the preservation of an underwater ecosystem of great value in western Mediterranean. International support is considered vital in order to get this measure.

Boundaries of the reserve

Two different levels of protection are foreseen:

A Protected area: A relatively large one, comprising a band of about 2000 m of width all around the whole archipelago. In it, all kinds of fishing should be forbidden, and a very strict control applicated to navigation, taking as a reference similar reserves like those of Port-Cros (France), Montecristo (Italy) or Zembra (Tunisia). Some controlled touristic visit could be allowed, making of the reserve a source of welfare for the inhabitants of Colònia de Sant Jordi.

It must be added that the southern tip of Mallorca, between Colònia de Sant Jordi (an

important touristic village) and Cala s'Almonia (with just a few houses of fishermen), offers 16 Km of completely wild and untouched coast, including stretches of high cliffs and others of sand beach. This area has a great ecological value and, if protected from touristic development, could provide additional habitat for the seals eventually released in Cabrera.

- B** Strict reserve: This category should be given to the bay of Cala Santa Maria, with a northern limit formed by a straight line joining the Cova Blava and Cap Xoriguer. This means an area of about 200 hectares, with depths of up to 60 m, 4 small sand beaches in the shore and at least one fine sea grotto, where all visits ought to be excluded and where initial adaptation of seals to their environment could take place.

Problems for the declaration of the reserve

A project aiming the settlement of a reserve in the archipelago of Cabrera may eventually have to face the opposition of the following bodies: the Army, fishermen, and yachtsmen and scuba divers.

- A** Army: As explained previously, the archipelago belongs to the Army and artillery manoeuvres are carried out there once a year. After many attempts made since fifteen years ago, we now consider that there is no possibility to declare the military area (i.e., the emerged lands of the archipelago) as a natural reserve, at least in the near future. As to the manoeuvres, there are suspicions that the Army is looking for some alternative place in Mallorca, because of economical reasons, but this requires confirmation.

In any case, we see no reason why the Army would put its veto on the creation of a strictly maritime reserve around the islands, that would give Cabrera a similar status to Zembra (Tunisia).

- B** Fishermen: As to fisheries in Cabrera waters, two categories must be distinguished: dragging nets and minor fishing appliances.

The nearest area of operation for dragging nets (being the hake, *Merluccius merluccius*, the most important prey) lies some 7 Km to the W of the archipelago of Cabrera, where the depth of the sea is about 140 m; the Spanish law forbids this kind of fishing in any area where the depth is under 50 m. In other words, dragging fishery seems to pose no problem to the creation of the reserve proposed here.

Minor fishing appliances (especially the most common kind of net, called here 'tresmall') are used in Cabrera waters by a part, not yet determined, of the 65 fishermen (distributed in 49 minor fishing boats) based at Colònia de Sant Jordi.

It is obvious that simultaneously to the creation of the reserve, a reasonable compensation ought to be given to all these people.

- C** Yachtsmen and scuba divers: Cabrera waters are very much haunted by yachts, especially in summer. Most frequented places are the harbour (a very well protected bay where dozens of ships may gather), Cova Blava (a sea grotto in the NE corner of Cala Santa Maria) and the beach of L'Olla. Besides, there is in summer a ship taking several times a week 200 tourists from Colònia de Sant Jordi to Cabrera.

The area seems to be intensely exploited by scuba divers, to the point that octopuses, groupers and other typical prey are rare in some places where the habitat stays nevertheless optimal. The adverse attitude of yachtsmen and scuba divers appears as the most serious problem for the creation of the maritime reserve of Cabrera.

Origin of seals

As previously explained, no viable population of the Mediterranean Monk Seal must be used as the source for the individuals to be released in Cabrera.

Previously to the carrying out of our reintroduction plan, an international programme of captive breeding of this species (probably the most endangered of European Vertebrates) should be established. Following the report of Peter Reijnders, it seems that the installations held by the Ryks Instituut voor Natuurbeheer at the island of Texel, in the Netherlands, where successful breeding of other seal species is carried out, would exactly fit in our needs. Encouragement should be sent to the responsables of that center in the sense of putting all modern techniques of breeding Mammals in captivity to the service of the Monk Seal programme.

The source of Mediterranean monk seals for this breeding scheme would be orphaned, injured or accidentally taken animals coming from the wild, or individuals presently kept in some unknown zoos (we are preparing an inquiry among zoos, aquariums and circus as to this point).

The feasibility of the reintroduction plan would depend on the possibility of obtaining a certain number of young and healthy Monk Seals from this captive breeding programme.

Control of animals released

As in many similar cases, it is possible that the best chances of success would be obtained if keeping the released animals under semi-domestic conditions for a certain period, until complete adaptation to the environment would have been performed.

Radio-tracking of each of the animals released would be vital, for as long a period as possible.

Table 1. Some traits of several wild islands and archipelagos in Western Mediterranean.

Name	Country	Nature	Approx. number of islands	Situation	Inhabited	Protected	Seals
Port-Cros	France	continental	3	7 Km S from cape Bénat (France)	Yes	Yes	No
Columbretes	Spain	volcanic	20	55 Km E from cape Orpesa (Spain)	No	No	No
Cabrera	Spain	continental	21	10 Km S from cape Salines (Mallorca)	Army	No	No
Alboran	Spain	volcanic	2	56 Km N from cape Tres Forcas (Morocco)	Army	No	No
Chafarinas	Spain	continental	3	4 Km N from Ras el Ma (Morocco)	Army	No	Yes
Habibas	Algeria	continental	3	10 Km NW from area of cape Sigale (Algeria)	No	No	Yes
Galite	Tunisia	volcanic	6	56 Km N from cape Serrat (Tunisia)	Yes	No	Yes
Zembra	Tunisia	continental	2	12 Km NW from cape Ahmar (Tunisia)	Army	Yes	?
Marettimo	Italy	continental	1	32 Km W from Sicily	Yes	No	?
Montecristo	Italy	continental	1	62 Km W from Monte Argentario	No	Yes	?
Ustica	Italy	volcanic	1	53 Km N from cape Gallo (Sicily)	Yes	No	?

Besides from the control of the maritime reserve itself, there ought to be several wardens exclusively dedicated to the seals.

It should be studied the necessity of 'educating' the seals released in Cabrera against the habit of touching human fishing appliances, placing if necessary several electrified nets, causing minor discharges, in the area of Cala Santa Maria, where first contact of seals with their new habitat would take place.

Divulgation

Both the creation of the maritime reserve of Cabrera and the reintroduction of a species that is still hated by many fishermen, who suffered in past decades the damage caused by seals to their fishing appliances,

are campaigns that need to be preceded by an important divulgation task.

This is presently being carried out by the regional association for the protection of nature, the Grup Balear d'Ornitologia i Defensa de la Naturalesa (GOB), founded in 1973 and with almost 2000 members. Its easy access to the local press and also to the Balearic Islands' regional TV, which produces a 60-minute daily programme on local news, offers great possibilities.

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