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Monitoring the extinction of the Italian Monk Seals (Monachus monachus) with a indication of the possibilities for their survival.

In the past thirty years an increasing number of papers have been published on the general status of Monk Seal in the Mediterranean (King, 1956; Tortonese, 1958; Van Wijngaarden, 1962; Ronald, 1973; Ronald and Healey, 1974; Boulva, 1975; Sergeant and al., 1978). However, up to date there are no papers dealing with the special situation of the species in the Italian seas: informations were available only on the presence and status of Monk Seal in specific localities such as Sardinia (Lungo, 1935; Furreddu, 1972a, 1972b, 1972c, 1973a, 1973b; Reinhardt and Schenk 1969; Scott 1971; Bareham and Furreddu 1975), Sicily (Massa, 1972) and Puglia (Cornaglia, 1974). A recent paper by Bruno (1976) reviews the history of the species in the Adriatic; general informations on the Italian coasts were also given recently but without detailed data (Tortonese, 1957; Toschi, 1965; Pratesi, 1970).

Last century papers are relevant only for an historical review of the species status and will not be cited here.

In this paper the status of the *Monachus monachus* will be reported up to date (1980) and the conservation plan prepared by World Wildlife Fund will be discussed, in relation to the parallel programmes undertaken in the Mediterranean.

Project 1982 of World Wildlife Fund (1977-79) was set up to monitor the situation of Monk Seal in Italy, to develop and to implement the most suitable conservation program: this part of the project is still under way and it is expected to be adapted to the suggestions and results of the Rhodos Conference on Monk Seal (2-5 May, 1978).

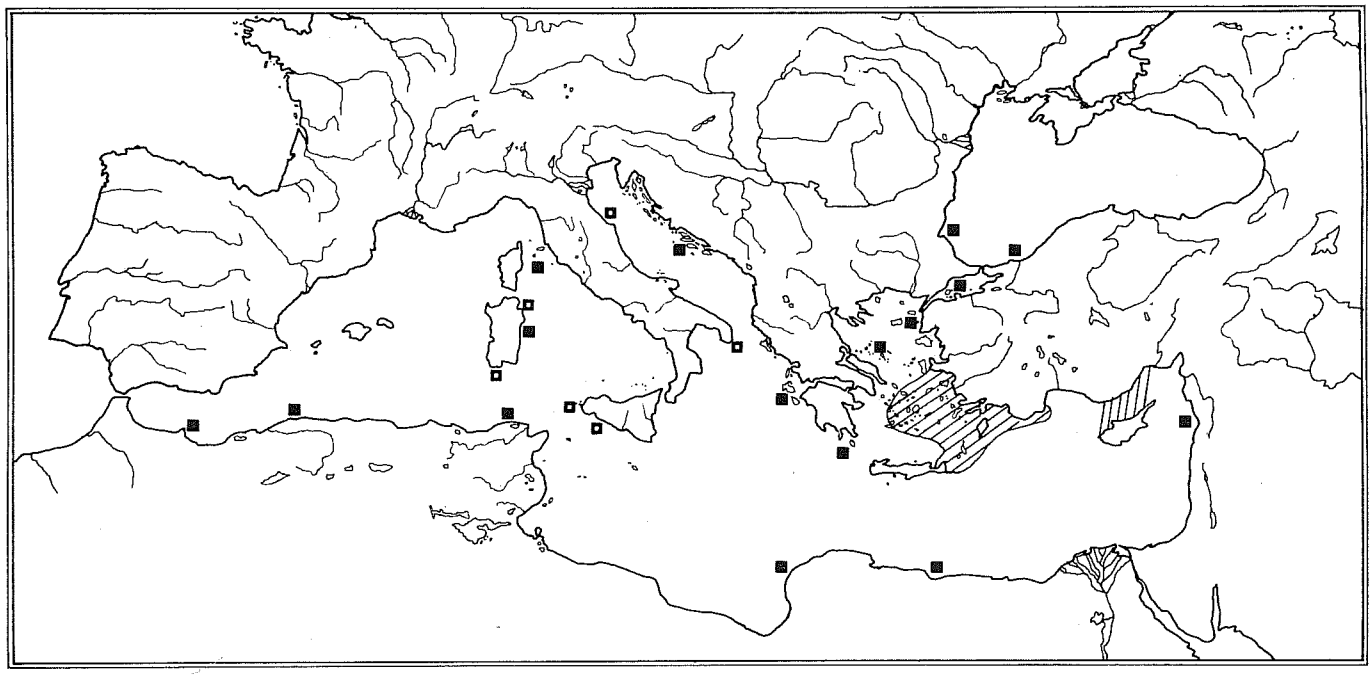

FIG. 1: ■ /// Areas of permanent presence

□ Relevant sightings in italian waters

Status of the species

Along the Italian coasts only three areas still support, or have supported until very recently a permanent, though small, population of Monk Seal (Fig. 1). Several sightings are also reported from other areas but the reliability of these reports is often rather low and little credit can be given to them with few clear exceptions.

The three areas are the Island of Montecristo (Tuscany), Sardinia and the Arcipelago delle Egadi (Sicily).

Montecristo

This little rocky island (10 Km2) is about half way between Corsica (60 Km) and the Italian coast of Tuscany (55 Km). It is inhabited only by the guardian and his family and its status as a natural reserve protects it from any kind of use other than scientific research. The first written record of Monk Seal in this island is by Toschi (1953): in the following years the presence of seals was often doubtful but no real good search has ever been made. Our information comes from the guardian who lives in the island all year round: the seal is sighted regularly few times a year, altough not continuously. It seems that the seal prefers the area near Cala Corfu where is a underwater grotto. A realistic estimate of the number of seal could not exceed 1-2 animals, possibly not present all year long.

Sardinia

The only area in Sardinia where Monk Seal is still permanently present is the Golfo di Orosei, a wild uninhabited gulf (30 Km of coast) on the eastern side of the island.

The coast is a high rocky cliff with few sandy beaches and many natural grottos: one of these, Grotta del Bue Marino, takes its name from the presence of the seal, which today has definitively abandoned the grotto, due to the disturbance of an intensive tourist exploitation. Still in 1967 at least one animal was living here and was approached and filmed without much problem.

Seals are now present permanently at Grotta del Fico, described by Furreddu (1972b), and this seems to be the very last refuge for the species.

The number of individuals also seems to be declining. In 1970 and again in 1971 Furreddu still could see 6 animals together and estimated the total number not to exceed 10. In December 77-January 78, during a 4 days control of the grotto, made by Furreddu and his equipe on request of WWF-Italy, only 2 seals could be found: one was sighted at sea and the sound of another was recorded in the grotto (Furreddu, in litteris).

The tecnique of recording sound by a tape-recorder activated by a radio-microphone (Furreddu, 1972c) is still the most suitable one to check the seal's presence avoiding any disturbance.

The number of 2 seals, in a 4 days check-up, does not allow to draw the conclusion that this little population is really declining: far more important is that the number of sightings along the coast has sharply declined. Nobody in the area seems to have sighted a seal in the years 76-77, 78 and 79, but in 1980 Schenk (pers. com.) watched a seal for about one hour swimming in the Golf's waters.

Also the increased pressure of tourism in summer months (camping, fishing, diving and motorboating all along the coast) may indicate an irreversible trend for the next years.

At least other two areas in Sardinia are relevant for the monk seal: the Island of Tavolara and the coast around Capo Teulada, both rocky and with many grottos. Both areas are closed to tourism and civil uses and are reserved to military activities. Seals are occasionally sighted here but, while Tavolara might indeed protect the seals, at Capo Teulada there is little hope for the future since the area is used for field exercises by NATO naval and air-forces.

The role of the seal population of the Golfo di Orosei might well be considered crucial, in view of the global situation of the species in Sardinia and perhaps all Central Mediterranean. Dispersal from this population can easily bring individuals all around Sardinia to other suitable areas, to Montecristo and Corsica again. Furthermore, connections between Golfo di Orosei and Sicily and to North Africa coast are certainly possible and a recurrent flow between the seals of Sardinia and those of La Galite in Tunisia

cannot be excluded; in this perspective the small Sardinian population can be considered the last chance for a gradual repopulation of Corsica and France coast in a natural process, provided that a suitable habitat it there preserved. The great importance of focusing all our efforts in saving the seals and their habitat in Golfo di Orosei is therefore justified, since it overcomes the mere, though important, survival of few individuals.

Sicily

At the western-most tip of Sicily, the Island of Marettimo (Arcipelago delle Egadi), was reported by Massa (1972) to support a small colony of 4-5 individuals. The island is inhabited by few fishermen living in a small village on the eastern coast; the western coast is a high rocky cliff accessible only by boat. Seals are no longer at the island in a permanent way: the last two animals were shot in 1975 by two local fishermen. Moreover illegal fishing by explosives and massive tourist presence in summer definitively compromised a situation already critical. Recently (December 1977) one seal has been sighted for few days at Levanzo,a small island few miles from Marettimo (Palombelli, 1978, Pers. Comm.).

The habitat of Marettimo is still suitable, if tourism and illegal fishing are controlled, and its geographical position, close to Tunisia (160 Km) and to Sardinia (240 Km), is favorable for a natural repopulation by dispersal. Therefore protection of this area is urgently sought, also because the seal is still very «present» in local people talks.

Seals are occasionally reported from other localities of Sicily, such as Mazara del Vallo and Gela, but there isn't any report from the islands of Pantelleria and Lampedusa where the species occurred in earlier times (Minà Palumbo, 1868).

The Adriatic Sea

In the closed Adriatic sea, Monk Seal certainly occurs, but not on the Italian coast where only sporadic sightings have recently been reported: S. Maria di Leuca in Puglia (Cornaglia, 1974, and Colacello, 1980 in litteris), Cesenatico, Emilia (WWF-Forlì, 1977, in litteris).

A recent work by Bruno (1976) is a thorough review of the literature on the history of the species in the Adriatic; unfortunately the informations on the number and status of the seals in Jugoslavia cannot be taken in serious consideration, because of the many «mistakes» which have been found by several different specialists in the literature produced by this author.

However Gammlin Brida (1978) reports the occurence of Monk Seal on the Jugoslavian coast for the islands of Miljet, Korcula, Svetac, Bisevo, Vis and Palagruza for an estimated total of about 20 animals: data on sightings are to be checked properly for a definitive distribution map.

The Italian Monk Seals as part of the Central Mediterranean seal population.

To consider the situation of Monk Seal in Italy implies the analysis of the relationships between all small seal populations of at least Central Mediterranean.

France and Corsica have no seal left (Duguy and Cheylan 1978). From Balearic Islands, as well as from all Spanish coasts, the seal has recently, but completely, disappeared (Avella 1978). The only surviving populations in central-western Mediterranean are in Algeria (about 100 seals) (Lloze 1978); in Tunisia (5 seals), at La Galite Island (Ktari, pers. comm.); at the Ionian islands of Greece, Ithaca, Cephalonia and Zacyntos (30-40 seals) (Marchessaux and Duguy 1977); and along the Jugoslavian coasts (20 seals) (Gammlin-Brida 1978).

If the Sardinian seal population is to be cut off from any connection with other populations its complete disappearence would be easily foreseeable; with its disappearance probably all possibilities to recolonize Corsica and the Northern Mediterranean coasts would also be extremely reduced. The Montecristo small group can only be considered an appendix to the Sardinian group and would follow its fate; on the other hand its role in a possible recolonization process should not be underestimated.

At the moment, dispersal toward the Sardinian coast can only come from Southern populations such as those of Algeria, Tunisia and Greece Ionian islands.

In this perspective the health of Algerian and Greek seals plays a crucial role for the dispersal and the connections that will reach Sardinia through La Galite and Marettimo islands. Greek seals are also extremely important for the Adriatic Sea but only for Jugoslavian seals, since not a single area along the Italian Adriatic coast could today be considered a suitable area, in terms of habitat preference as discussed by Sergeant et al. (1978).

However surveys of Cephalonia and Itaca (Ionian Sea - Greece) waters in summer 1978 and 1980 did not give a very optimistic picture of the seal population: during the surveys, done by myself personally along the coasts, and through several informal talks with local authorities, fishermen and seamen, I learned that no seal had been sighted recently although a check had been made on each cave and traditional location.

Marchessaux and Duguy (1977) assess the seal population of these two islands at about two dozens of animals in 3 small colonies. Unless these animals will be counted at the same time in the three locations, it is hard to believe that the same animals would not be counted in more than one colony, especially when the localities are only 15 Km apart (as in the case of Fiskardon and Myrto Gulf).

Our estimate is based mostly on informations collected by fishermen, matched with the judgement of the local ecological conditions (tourism, fishing activities etc.) and would not exceed for these two islands the number of 10 animals, considering the exchange with the other islands of the Ionian coasts.

Strong pressure by a developing tourist industry, fishing by illegal methods such as the use of dynamite, strong opposition by the local fishermen and perhaps a growing pollution rate, are clear indications that also these small colonies of Monk Seals have un uncertain future if nothing is done urgently.

The fate of these colonies will affect directly that of the Adriatic and Sicily seals: international coordination is clearly needed to protect this network of possible dispersal routes.

Such a scheme of connections between different areas is the necessary approach to support any conservation plan of the Monk Seal, particularly in Italy, especially when we consider the extreme vulnerability of each single small group, as the example of Marettimo or the other situations discussed by Boulva (1978).

Obviously this scheme would not have any sense without a sound conservation program that would eliminate the cause of decline and protect efficiently all the suitable areas of Central-Mediterranean. It is nevertheless the necessary background to inform and support the conservation plan.

The conservation program in Italy

Biological information on *Monachus monachus* is rather poor (Sergeant et al., 1978): a logic consequence would be to collect such information, before any conservation action be undertaken. Unfortunately the condition of the species in Italy, as well as in most of its range, does not allow even the minimum disturbance that a scientific research would cause: biological research in the field has then to be delayed, at least for the time being. On the other hand the critical condition forces us to take now any other possible step to prevent extinction.

Reintroductions and restocking of seal populations, as proposed by Furreddu (1973b) do not seem feasible, at least until the causes of decline are completely eliminated and a healthy population is found from which seals can be safely taken (Boitani, 1977). At the moment not one population in the whole monk seal range seems in condition to support safely the withdraw of even one single animal, beside all technical problems of catching, transporting and releasing seals that are still to be solved.

Therefore our conservation program (WWF Project N. 1482) is planned on the following three main points, within a strategy that is hoped will be applied in each Mediterranean country in a well coordinated plan:

Habitat preservation

Establishing a network of coastal reserves is among the first priority. On the basis of the informations we have on the dispersal capability of *Monachus monachus* and on the role of the Italian seal populations as a possible link between South and North Mediterranean, the conservation programme in Italy focuses on the establishing of at least 3 coastal reserves: along the Sardinian coast (Golfo di Orosei), the island of Montecristo and the island of Marettimo.

Although this last area does not seem to have seals permanently anymore, it is nevertheless an important suitable habitat that could be recolonized anytime, provided that the necessary protection of the species is enforced.

As for Montecristo, a marine reserve has been established by Ministreal Decree in 1981 (the island belongs to the State and it is already it self a land reserve); for Sardinia and Marettimo a long way of deals with the local administration is expected. A marine park would stop the tourist activity in its traditional development, and a new «ecological» approach is not yet understood as an equally productive system of natural resources use.

Coastal reserves for the three mentioned areas would also have the important side-effect of protecting habitats that are exceptionally rich of rare and/or endangered species of animal and plants.

But the mere declaration of protection «on paper» is meaningless without a parallel series of actions from the authorities and from general public levels. Therefore the following two fields of action must be implemented at a parallel level of efforts.

Legal status enforcement and refunding damages laws.

Monachus monachus is legally protected in Italy since 1939 and its full protection has been confirmed by the recent law (December 1977) approved by the Italian Parliament to rule hunting activities. Nevertheless Monk Seals have been killed illegally by dynamite or by shooting. Enforcement is pratically impossible, although it could be greatly improved. At the present time it seems that the only suitable approach to this problem is to have fishermen themselves involved in conservation activities: it is perhaps a longer process but certainly it is the one with the best chances of success, here as in other conservation project.

From the point of view of legislation this means to show that the whole country supports the effort of conservation and that all possible economic losses or damage will be taken over by the country as a whole and not by a minority like the few local fishermen. Therefore a law should be issued for complete refunding and compensation to all damages done by the seals to the fishing gear.

Public opinion management

An intense program of P.R. activities is probably the most important part of the conservation effort. Local people must be made responsible for the ultimate fate of the seals, given all the proper legislation tool. Moreover the general public of the whole country should be informed and called to participate to the project: their favour to conservation, easy to be obtained, will have its important pressure on the local people showing that the whole country is aware of what is happening in the areas of the seals. The principles of this programme are those underlined by Boitani and Zimen (1975), for other conservation project on endangered species. At the Rhodes conference it has been made clear that this issue is of primary importance for all countries wishing to conserve the seals; the goals is to spread through all possible channels and with all available tools the story, the ecology, the status, the role of the seals in their habitat and call, for the responsability in their fate, on general public to force authorities to take action.

The effort of conservation will be in vain as far as the great majority of the people does not even know of the existence of the Monk Seals.

In conclusion, international cooperation in this project will neverbe stressed enough as the fundamental approach to an effective conservation programme; in this sense the role of IUCN, UNEP, FAO and all other intergovernmental organizations is essential.

SUMMARY

The situation of the Monk Seal *(Monachus monachus)* in the italian seas is updated with the last sightings and is discussed within the status of the species throughout the Mediterranean. Key factors for the survival of the species are presented with the perspective of an integrated management plan to be implemented by all mediterranean countries.

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