

A REVIEW OF THE STATUS OF THE HAWAIIAN MONK SEAL,
MONACHUS SCHAUINSLANDI, AND DESIGNATION OF CRITICAL HABITAT

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BACKGROUND

On 22 July 1976 the National Marine Fisheries Service, in concurrence with Marine Mammal Commission recommendations, designated the Hawaiian monk seal, Monachus schauinslandi, as a depleted species under the Marine Mammal Protection Act (Federal Register, Volume 41, No. 2). On 23 November 1976 the National Marine Fisheries Service, pursuant to Section 4 of the Endangered Species Act of 1973, listed the monk seal as an endangered species (Federal Register 41(227), 23 November 1976).

In December 1976, as provided for by Section 7 of the Endangered Species Act of 1973, the Marine Mammal Commission submitted to the National Marine Fisheries Service specific recommendations for the protection of the Hawaiian monk seal.

The present report (1) reviews the history of the monk seal, (2) details recent research efforts, (3) outlines recommendations made for designation of critical habitat, and (4) provides the current view of the Honolulu Laboratory on the subject of critical habitat.

HISTORY

The Hawaiian monk seal is endemic to the Hawaiian Archipelago. Only rarely are animals seen in the main high islands located south-east of Nihoa. To date, there have been no historical or archaeological evidence which indicates that the monk seal inhabited the main islands in significant numbers. All historical evidence indicates that in recent times the breeding populations of monk seal have been confined to six islands and atolls of the Northwestern Hawaiian Islands: Kure, Midway, Pearl and Hermes Reef, Lisianski, Laysan, and French Frigate Shoals. In 1976 breeding was reported for the first time at Necker Island; pups were observed on Necker during the 1976 and 1977 breeding seasons.

Nothing in the historical record indicates that the monk seal population in the Northwestern Hawaiian Islands was ever very large. There are relatively few references to the Monk seal but with one exception those who visited the islands during the 19th century reported that the animal was common but not numerous. An exception to the above was mentioned by Bryan (1915). Bryan noted that an expedition by the vessel Gambia was reported to have returned to Honolulu in 1859 with 1,500 seal skins and 240 barrels of seal oil. Based on this evidence, it would seem that seals must have been very numerous at that time. Since monk seals are easily approached by man, and are known to haul out at relatively few areas along the chain, it seems quite possible that the Gambia succeeded in exterminating a

large percentage of the total population during that single voyage. Even as early as 1824, a sealing expedition by the brig, Aiona, was thought to have taken the last seal. Thus, in accordance with the situation which prevailed with so many species during the 19th century and into the early 20th century, man's relationship with the Hawaiian monk seal does not seem to have been conducive to the well-being of the seal population. By the turn of the century the monk seal may have been very close to extinction and the species has possibly managed to survive only because of the isolation of its oceanic habitat and the cessation of sealing.

By 1912 the population had begun to recover; however, the seal was still reported to be very rare (Bailey 1952).

We have no information as to the degree of man's presence in the Northwestern Hawaiian Islands during the first half of this century. It was undoubtedly much greater than has been recorded; however, it probably is safe to say that there was relatively little deliberate killing of seals during this period. The seal population increased as reported by several expeditions which made counts on various islands. None of these expeditions, however, estimated the total Hawaiian population.

RECENT RESEARCH

When studies of seal populations were begun in 1957-58 (Kenyon and Rice 1959), breeding colonies were reported to be flourishing at four areas: Kure Island, Pearl and Hermes Reef, Lisianski, and Laysan Islands, and were also present at Midway Islands and French Frigate Shoals. Rice (1960) estimated the total Hawaiian population for the 1957-58 period at approximately 1,350 animals.

During the Kenyon and Rice survey, the U.S. Navy occupied Midway Islands and the U.S. Coast Guard occupied Tern Island in French Frigate Shoals. Human habitation in these areas continues to the present. In 1960 a U.S. Coast Guard loran station manned by about 20 men was established on Kure Island.

Kenyon (1972) made surveys of Kure and Midway Islands in 1968, 1969, and 1971 and found that where 68 seals were seen in 1957 and 1958 at Midway Islands, only 1, 4, and 6 were seen in 1968, 1969, and 1971. He observed that prior to Coast Guard occupation the majority of the monk seals used Green Island (site of the existing loran station) as pupping and hauling grounds. In 1968, few seals came ashore on Green Island; instead, they used isolated shifting sand spits which lacked sheltering vegetation. Kenyon's population surveys for Kure were limited, but the data indicated that the population may have suffered a considerable decline since 1957 and 1958. Kenyon concluded that intolerance of man induces changes in monk seal distribution and is

an important factor in reducing survival of young monk seals. Thus, according to Kenyon, population loss on these islands can be attributed to man. He observed that the amount of human disturbance that monk seals can tolerate without causing population damage is unknown but it appears that daily disturbance by man and dogs on small breeding islands is beyond the monk seal's critical threshold of tolerance.

Recent censuses conducted in cooperative efforts by the National Marine Fisheries Service and the Fish and Wildlife Service (DeLong et al. 1976; DeLong and Brownell 1977) and the Marine Mammal Commission confirms that there have been large population declines at Kure and Pearl and Hermes. At Midway Islands in 1976 a single adult was observed on the Spit Islands. In 1977, in apparent response to the closure of the Spit Islands by the U.S. Navy to all personnel, five seals were present, including an adult female with a pup. On the basis of 1976 and 1977 censuses, the populations on Lisianski and Laysan seem to have remained relatively stable. It is important to note, however, that the 1977 census estimated the population of Laysan at 178 animals, whereas a more reliable estimate by Brian and Patricia Johnson (National Marine Fisheries Service and Marine Mammal Commission researchers), who spent 7 months (February-September) during 1977 on Laysan, put the Laysan population at about 250 animals (pers. commun. with the Johnsons, September 1977). Whether this means that the population of Laysan was indeed much larger or that there is significant seal movement between islands or perhaps animals coming in from a pelagic existence remains to be determined by future research.

The results of recent research cruises indicate that the population on French Frigate Shoals may be increasing; 195 animals were sighted in 1976 and 223 in the 1977 survey.

Perhaps as dramatic as the decline of monk seals at Pearl and Hermes Reef is the increase of animals counted at Necker Island between 1976 (1 seal) and 1977 with a total of 46 seals (counts by the Fish and Wildlife Service between 1964 and 1969 ranged from 6 to 20). Even more significant are observations which confirm that pupping did occur at Necker during the 1977 season despite the limited and precarious haul-out areas. It is doubtful that Necker will ever become a major pupping area. The large 1977 count at Necker Island and the apparent increase at French Frigate Shoals does seem to furnish possible evidence of a shift of the center of population down the Hawaiian Archipelago.

The available information on the biology and stock assessment of the Hawaiian monk seal is inadequate to make more than generalized statements and to propose hypotheses about its population structure and its role in the ecosystem. A brief summary of our knowledge would include the following:

1. Population size.--There is general consensus that the present population of monk seals numbers less than 1,500 animals.
2. Population trends.--The sparse census data are inadequate to denote total population trends. While there has been a marked decline in numbers of animals on some islands (Midway Islands and Kure Islands) which are inhabited, a similarly marked decline has also been noted on Pearl and Hermes Reef, which is uninhabited. Thus, while human habitation may be a factor, the variation in animal counts throughout the chain suggests a more complex situation exists.
3. Productivity.--Little information exists on the reproductive rate, growth rate, longevity, or the natural mortality rate of monk seals. There is some evidence that sharks are one of the main predators of the seals, especially the young.
4. Migration.--Recent observations by Brian and Patricia Johnson give some information on the movements of monk seals on Laysan Island and its nearshore waters. Very little is known about the movement of monk seals beyond the outer reefs and in offshore waters. The observation of a seal tagged on Laysan Island and later reported on Johnston Island (547 nautical miles from Laysan) suggests that the monk seal is capable of relatively long-range movements (Schreiber and Kridler 1969).
5. Feeding habits.--A comprehensive study of the feeding habits of the monk seal has not been undertaken to date. Based on limited observations of material regurgitated by the monk seals and a reported visual underwater observation of a feeding monk seal, it appears that spiny lobsters represent one component in the diet of the monk seal. Other organisms identified from monk seal spewings include octopus, moray and conger eels, and other reef fishes.

CRITICAL HABITAT

There is general consensus that the Hawaiian monk seal needs some measure of protection. It is an endemic species with a very small current population size. Further, being on the endangered species list, it is mandatory that attention be directed to this animal in order to avoid man-induced extinction of the species. While mankind has been responsible for some species becoming extinct, e.g., the passenger pigeon, it should be recognized and emphasized here that in the natural course of evolution, organisms are continuously achieving species status or becoming extinct. In general the intent of society is that mankind does not unduly hasten the demise of a species.

In any consideration of critical habitat for the Hawaiian monk seal, the question arises: What is critical habitat according to the law? Then more specifically, what is the critical habitat for the

monk seal? The Federal Register, Volume 40, No. 78, 22 April 1975, defines critical habitat as: "For the continued viability of any species, suitable habitat is not only important but essential to life itself. The term 'habitat' could be considered to consist of a spatial environment in which a species lives and all elements of that environment including, but not limited to, land and water area, physical structure and topography, flora, fauna, climate, human activity, and the quality and chemical content of the soil, water, and air. Critical habitat for any endangered or threatened species could be the entire habitat, or any portion thereof, if, and only if, any constituent element is necessary to the normal needs or survival of that species. The following vital needs are relevant in determining 'critical habitat' for a given species:

- (1) Space for normal growth, movements, or territorial behavior;
- (2) Nutritional requirements, such as food, water, minerals;
- (3) Sites for breeding, reproduction, or rearing of offspring;
- (4) Cover or shelter; or,
- (5) Other biological, physical, or behavioral requirements.

"The primary intention of the Fish and Wildlife Service and the National Marine Fisheries Service under the Endangered Species Act of 1973 is to protect, maintain, and restore presently endangered and threatened species to a point at which they are no longer endangered or threatened.

"Application of the term 'critical habitat' may not be restricted to the habitat necessary for a minimum viable population. It is emphasized further that certain actions may not be detrimental to 'critical habitat.' There may be many kinds of actions which can be carried out within the 'critical habitat' of a species that would not be expected to result in such reduction in the numbers or distribution or otherwise adversely affect such species."

Mr. Keith M. Schreiber, Endangered Species Program Manager with the U.S. Fish and Wildlife Service (Endangered Species Technical Bulletin, date unknown), in response to queries relative to the meaning of critical habitat, and its potential effects stated: "The most important point I can make about critical habitat is that in no way does it place an iron curtain around a particular area; that is, it does not create a wilderness area, inviolable sanctuary, or a sealed off area."

In March 1977 the National Marine Fisheries Service generated a report (Nitta 1977) which evaluated and suggested modifications to

the Marine Mammal Commission's proposed designation of critical habitat for the Hawaiian monk seal. In essence the report by Nitta concurred that (1) all areas in the Northwestern Hawaiian Islands utilized by the Hawaiian monk seal as breeding and pupping grounds be designated critical habitat, to include coral and beaches and attendant vegetation and the waters of the inner reef areas; (2) except for authorized scientific use, the Hawaiian Islands National Wildlife Refuge (HINWR) remain closed to all human activity including, but not limited to, commercial and sport fishing operations with access and use of Tern Island in French Frigate Shoals controlled by existing Coast Guard and HINWR regulations specifically developed for that area; and commercial fisheries not be excluded from the rest of the Northwestern Hawaiian Islands because we have no indication that the development of offshore fisheries outside of the lagoon areas will compromise the protection and/or recovery of the monk seals. Since the State of Hawaii is responsible for regulating these fisheries, we recommend that they be consulted prior to implementing any proposed recommendations or regulations concerning the Northwestern Hawaiian Islands; (3) Tern Island, French Frigate Shoals, be included in any designation of critical habitat, and the Coast Guard regulations currently in effect there be continued.

In the interim period and up to the present, there has been a great deal of controversy regarding the designation of critical habitat for the monk seal. It is clear, however, that events have progressed to a stage where in spite of limitations in our knowledge of many aspects of the biology of monk seals, critical habitat for the monk seal will be designated.

HONOLULU LABORATORY VIEWPOINT ON CRITICAL HABITAT

We agree with the general view that the Hawaiian monk seal should be afforded adequate protection despite the lack of a substantive body of scientific information. The critical question that surfaces is, "How much is adequate?" In developing the framework of a critical habitat recommendation, it would be best to review the conditions under which the animals presently exist. These are:

1. Virtually all of the islands of the Northwestern Hawaiian Islands represent potential haul-out and pupping grounds for the monk seal.
2. Human habitation in the Northwestern Hawaiian Islands include 1,500 U.S. Navy personnel and families at Midway Islands, 20 Coast Guard personnel on Kure Island and 23 Coast Guard personnel on Tern Island (French Frigate Shoals). We understand that there soon will be a considerable reduction of personnel on Midway and that the Coast Guard plans to phase out the French Frigate Shoals loran station by 1979-80.

In reviewing the Marine Mammal Commission's recommendation, it appears that the Commission argues the point that mankind, by his presence on the islands, has been responsible for the decline in

population of monk seals and thus the Commission made the recommendation that emerged land areas and waters out to 3 miles seaward of the islands be closed to human use. Excluded, however, were Kure, which does not fall within the HINWR, and Midway Islands. It appears that the Commission decided a priori that military needs and navigational safety were considerations that superseded the welfare of the monk seal. While this may be a realistic trade off, if one believes man's mere presence in the area is detrimental to the well-being of the monk seal, the only recourse to a first line recommendation should have been total banning of human habitation on all of the islands of the Northwestern Hawaiian Islands. The assessment of trade offs should then be made by other bodies responsible for these high-level decisions.

While current available knowledge suggests that the Hawaiian monk seal utilizes the lagoons and nearshore waters of the Northwestern Hawaiian Islands extensively, the 3-mile boundary recommendation appears to be untenable when one examines this recommendation based on available scientific data. Further, a 3-mile boundary for areas whose selection appears to be based on current human habitation begs the issue of critical habitat.

Considering the legal definitions of critical habitat and the virtual lack of information on the time and space distribution of the monk seal and the utilization by monk seals of waters outside of the immediate vicinity of the islands, our recommendations are:

Critical habitat designation for the Hawaiian monk seal should include:

1. All of the emerged lands of the Northwestern Hawaiian Islands.
2. All of the lagoon waters and the nearshore waters extending seaward out to the 10-fathom depth contour line. Access and usage of marine resources within the lagoon waters and nearshore waters out to the 10-fathom contour should include:
 - (a) Continued commercial and recreational usage of Midway Islands, Kure Island, and Tern Island (French Frigate Shoals) under the rules presently established by the governing agencies.
 - (b) Non-human use of the waters and resources within the lagoons and nearby waters extending out to the 10-fathom depth contour line of all of the islands of the Northwestern Hawaiian Islands not listed under (a) above. Exceptions will only include duly authorized scientific activity.

While the 10-fathom boundary in the critical habitat is based more on judgment rather than solid scientific data, we believe it does provide a measure of safety for the monk seal without placing undue restriction upon man's use of the outlying waters.

Finally, the Honolulu Laboratory recommends continued research on the Hawaiian monk seal; research which will permit better definition of the parameters of the monk seal's critical habitat. Emphasis should be on stock assessment, time and space movements of the monk seal, behavior, food and energetic studies, and habitat requirements. The results should lead to a better definition of the critical habitat, thus permitting reassessment of the restrictions implemented to safeguard the well-being of the Hawaiian monk seal.

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