

THE INTERTWINED FATES OF PRECIOUS CORALS AND MONK SEALS

BY LANCE E. MORGAN

SCIENTISTS EMPLOY A NUMBER OF HIGH-TECH TOOLS to explore the deep sea in search of corals, but none is more exotic than the Hawaiian monk seal! By placing satellite tags on monk seals (*Monachus schauinslandii*) Frank Parrish and colleagues studied the diving patterns of foraging seals from French Frigate Shoals (FFS) in the Northwestern Hawaiian Islands. Movement patterns of 30 seals identified only two locations where seals frequented deep depths (greater than 300 m). Using manned submersibles, the scientists surveyed these locations and precious coral beds were found at both. The success at locating coral beds by following the seals contrasts with 11 earlier submarine surveys done by Hawaii Undersea Research Laboratory in 1984 around FFS atoll, which did not find any coral beds. The conclusion was clear: monk seals specifically targeted deep-sea coral beds and led scientists to them.

This serendipitous discovery came as a result of efforts to understand and protect endangered monk seals. The Northwestern Hawaiian Island ecosystem is home to what some consider to be the last viable population of monk seals (Caribbean monk seals are extinct and Mediterranean monk seals are critically endangered, the population is probably less than 400 individuals), and this population has been declining since the 1950s. The Hawaiian monk seal was designated as endangered under the Endangered Species Act of 1976, and current monk seal numbers are only 60 percent of what they were in the late 1950s. There is no evidence to indicate that the population will begin growing in the near future, and plans for commercial harvest of precious coral (gorgonians that are polished into jewelry) near monk seal colonies have raised concern over impacts to seal populations.

These solitary animals may have been so named for their lonely "monk-like" existence, but the Hawaiian name "*ilio-holo-kai*," has a much more colorful translation: "the dog that runs in the sea." They are often found alone making it difficult for researchers to learn what they need to know about the seals' biology in order to enhance their recovery. At FFS, where the largest island population of monk seals is found, scientists have observed poor survivorship and emaciation of young and mature seals over the past decade, prompting the suggestion that prey availability at the atoll may have declined and seals are starving. Certainly, declines in key prey species such as lobster have occurred due to fishing.

Although the state of Hawaii and the National Oceanic and Atmospheric Administration (NOAA) Fisheries actively manage the harvest of several species of precious corals, including black corals (*Antipathes* spp.), red and pink corals (*Corallium* spp.), and gold corals (*Gerardia* spp.; see Figure 2 on page 11), the occurrence of precious coral beds is patchy and the distribution of the beds is poorly known. Fish are attracted to and shelter within the beds, including some species of eels that commonly associate with the largest deep-sea corals. Seals may be seeking out coral beds to feed on resident fish, thus improving their feeding success and justifying the energetic investment of deep foraging. With ages of corals ranging to potentially hundreds of years, harvest of large coral colonies could alter habitat for

decades and perhaps make prey less accessible to foraging seals. Managers and industry have worked together to amend harvest regulations to protect the seals' forage habitat. A ban on the use of nonselective harvest gear and the preservation of some identified coral stands were some of the regulations proposed to maintain the seal's access to its forage base. Thus, the fates of endangered monk seals and precious corals are intertwined, as there is hope that protecting the corals will benefit the seals and vice versa.

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FURTHER READING

Parrish F. A., K. Abernathy, G.J. Marshall and B.M. Buhleier (2002), "Hawaiian Monk Seals (*Monachus schauinslandii*) Foraging in Deep-Water Coral Beds." *Marine Mammal Science* 18(1):244-258.

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A monk seal pup in Hawaii.