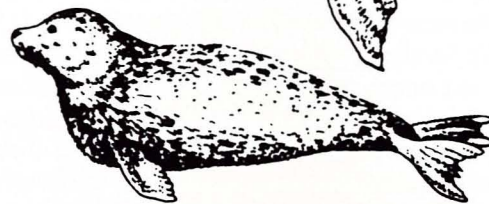
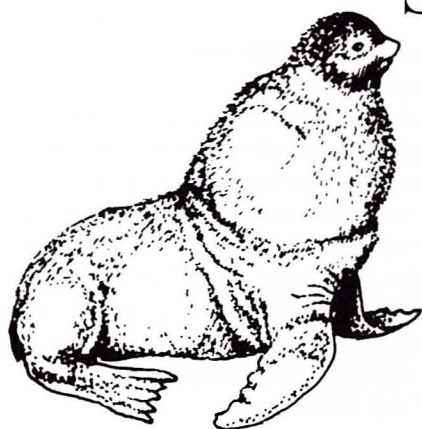


Alaska's Seals and Sea Lions: Where Are They Going?

by Lloyd F. Lowry



Things are always changing in Alaska. If it's not the weather, it's the price of oil or the size of the salmon runs. Those who have lived in Alaska for a few years recognize and accept these changes as a regular and in many cases normal part of the environment. For scientists, trying to explain the causes of fluctuations or cycles in physical and biological systems is a favorite topic. As interesting and valuable as such studies may be, it's an exceptional case when a clear explanation surfaces.

In historical times, there have been a number of major changes in the abundance of Alaska's marine mammals. Perhaps the most striking example of this is the complete disappearance of the Steller sea cow, a manatee-like animal that once occurred throughout the Aleutian Islands. First described in 1741 by the survivors of Vitus Bering's expedition, the species was completely exterminated by hunters in less than 30 years. Reports from Bering's crew and other Russian explorers brought waves of explorers, settlers, and fur hunters to Alaska. It was not long before the principal objects of their quest, the sea otter and fur seal, began to rapidly decline in numbers. Had it not been for the remote areas inhabited by sea otters, and the occasional government protection afforded to fur seals on the Pribilofs, both species might have followed in the wake of the sea cow.

It's not hard to explain the drastic reduction in the numbers of sea otters and fur seals that occurred in the 1800s. The number of fur seals killed for their pelts totaled in the millions. The number of sea otters killed is less well documented, but it is clear that hunters virtually eliminated them in California, Oregon, Washington, British Columbia, and much of Alaska. Biologists watched with satisfaction as populations increased after protection was afforded by the Fur Seal Treaty Act in 1911. It was understandable and expected that populations should recover their former abundance and range since Alaska's marine habitats were still relatively pristine and lightly exploited.

When Alaska became a state in 1959, populations of coastal marine mammals, with the exception of sea otters which were still recovering, were all large and healthy. The Alaska Depart-

ment of Fish and Game (ADF&G) developed programs to monitor the status of certain species, and to allow controlled human utilization where appropriate. Populations were still large and healthy in 1972 when the U.S. Congress passed the Marine Mammal Protection Act (MMPA). While problems with Alaskan marine mammals were not the reason that Congress passed the MMPA, its broad-reaching, protection-oriented policies applied to Alaska as well. Since passage of the MMPA, consumptive uses of marine mammals in Alaska have been largely restricted to subsistence harvesting by Alaska Natives.

It would seem reasonable to expect that the protective status afforded by the MMPA would allow marine mammal populations to flourish, and most people simply assumed that this would be the case. Indeed, populations of harbor seals, elephant seals, and California sea lions have increased markedly off the coasts of California, Oregon, and Washington. However, much to the surprise and dismay of most people, populations of Pribilof fur seals, Steller sea lions, and harbor seals have declined greatly in Alaska. Following is a brief description of the status of each of those three species and a discussion of the possible causes and implications of the present situation.

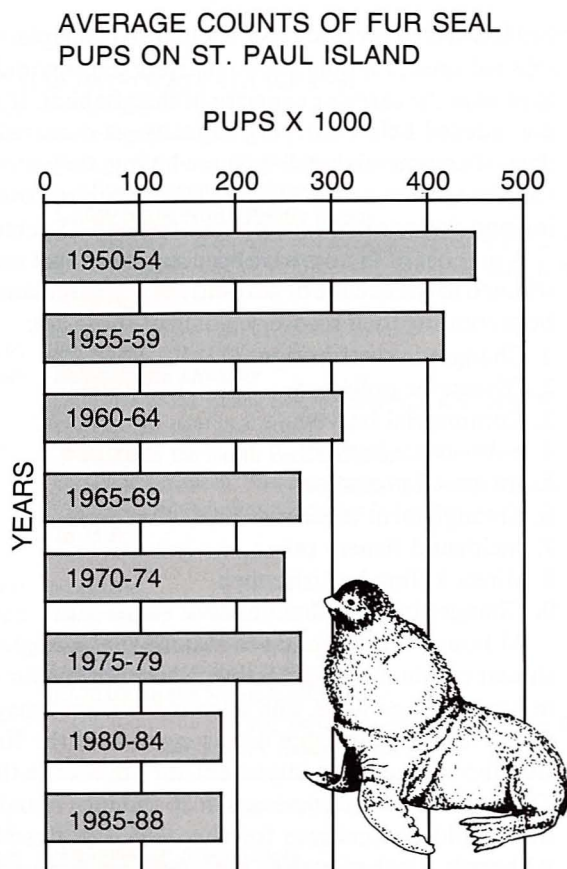
Pribilof Fur Seals

Pribilof, or northern, fur seals range throughout subarctic waters of the North Pacific Ocean and adjacent seas. They are generally an offshore species and are seldom seen in coastal waters except when they return to rookeries during the summer pupping and breeding season. Major northern fur seal rookeries occur on the Pribilof Islands off Alaska and the Commander Islands, Robben Island, and the Kuril Islands of the Soviet Union. A much smaller rookery occurs on San Miguel Island in California, and a few fur seals have recently established a colony on Bogoslof Island in the Aleutians. Over 70 percent of the total population breeds on two islands of the Pribilofs, Saint Paul and Saint George.

The Pribilof fur seal herds have been extensively studied since the early 1900s. The size and status of the population has been

Illustrations by Terry Jose

Figure 1.



indexed mostly from estimates of pup production. The number of pups born annually on the Saint Paul and Saint George rookeries combined increased from less than 100,000 in 1912-15 to an average of more than 550,000 in 1952-57. The number began to decline in the late 1950s, with the decline continuing at least through 1980, when total pup production was about 240,000. There was no statistically detectable trend in pup production during 1981-86. Similar changes in counts of harem bulls and idle males confirm that a major population decline has occurred.

Estimates of the total number of animals in the stock indicate a peak of perhaps 2.2 million in the mid-1950s, followed by a decline to about 870,000 in 1983. The overall magnitude of the change is well shown by the counts of fur seal pups on St. Paul Island (Fig.1). Based on all of this information, the National Marine Fisheries Service (NMFS) concluded that the current population is less than 50 percent as large as it was at its peak, and in May 1988 they listed the Pribilof fur seal stock as depleted under terms of the Marine Mammal Protection Act.

Steller Sea Lion

Steller, or northern, sea lions occur around the North Pacific rim from California to Japan. They are most abundant in the Gulf of Alaska and the Aleutian Islands. The first significant studies of Steller sea lions in Alaska were conducted in the late 1950s. At that time, counts of animals on rookeries and haulouts

totalled about 140,000 for the region from the Kenai Peninsula to Kiska Island. Similar counts made in 1985 indicated a total of only about 68,000, suggesting an overall population decline of 52 percent. In 1989, only 25,000 sea lions were counted in the Kenai-Kiska region. The greatest declines had occurred in the eastern Aleutian islands (-94 percent) and western Gulf of Alaska (-82 percent), with smaller declines in the central Gulf of Alaska (-73 percent) and central Aleutian Islands (-72 percent). Based on counts at Forrester island, the number of sea lions in southeastern Alaska seems to have stayed relatively constant, at least since 1977. Counts of sea lions on haulouts in the western Aleutian Islands in 1988 indicated a 65 percent decline in numbers since 1979.

Counts of pups on the beaches may be more accurate than counts of older animals, and pup counts confirm that a major decline has occurred in the sea lion population. This is best illustrated by counts at Marmot Island, a particularly well-studied rookery in the Gulf of Alaska (Fig. 2). From 1967 through 1984, the number of pups counted on Marmot was usually 5-6,000. This number dropped to 4,381 in 1986, 2,910 in 1987, and 3,136 in 1988. The average pup count in 1987-88 was only 47 percent as large as it was in 1978-79.

Based on this information, the NMFS has listed Steller sea lions as a threatened species under provisions of the Endangered Species Act. (Please see the previous issue of *Alaska's Wildlife*-July-August 1990--for further information on the status of the sea lion.)

Pacific Harbor Seal

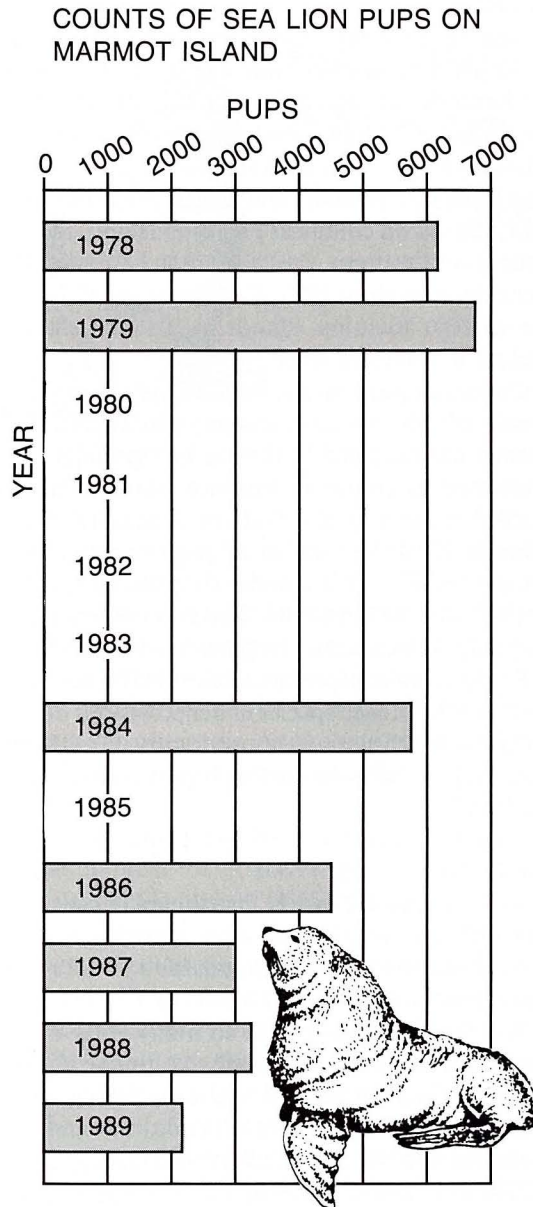
Harbor seals are widely distributed in coastal waters of the North Pacific Ocean. They haul out in large concentrations in a few areas and also use innumerable small rocks, islets, and sand spits.

Because they haul out in so many areas over such a wide range, it is much more difficult to estimate abundance of harbor seals than fur seals or sea lions. Using a variety of data sources, including counts of seals, the amount of habitat available, and the effects of harvests on regional abundance, ADF&G estimated that about 270,000 harbor seals inhabited Alaskan waters in 1973.

There is information available on the trend in abundance of harbor seals in some areas. Aerial counts have been made of seals on the large haulouts along the north side of the Alaska Peninsula at intervals since 1966. Counts made in 1966-73 and 1975-77 were quite similar and suggested a minimum 20-25,000 seals hauled out in the area. However, the maximum count obtained in 1985 was only 11,728. The count had decreased by 51 percent since the mid-1970s, at a rate of 3.5 percent per year.

In the late 1950s and early 1960s, Tugidak Island, in the Gulf of Alaska, was one of the largest harbor seal haulouts in the world, with about 20,000 seals using the area. Standardized counts of seals hauled out on the island during the molt indicate that a major decline has occurred in the period since 1976 (Fig. 3). The maximum counts indicate a steady and rapid decrease in numbers as follows: 1976--9,300; 1979--4,900; 1984--2,200; 1986--1,700; 1988--1,400.

Figure 2.



In parts of Alaska where harbor seals are more dispersed, their abundance has been indexed by aerial counts along standardized flight lines that include most known haulout areas. Such trend counts conducted in 1984 and 1988 indicated that the number of seals had stayed relatively constant in the area around Ketchikan but had declined markedly in Prince William Sound, where the count decreased from about 1,800 to 1,000.

Possible Causes of the Decline

Scientists began intensive studies of marine mammals only within the past 50 years or so. We therefore don't have a long time-series of data showing the kinds of population fluctuations that have occurred in the past. However, we do know that marine mammals are long-lived, slow growing, and produce few young, which are traits characteristic of what biologists

call K-selected species. Basic ecological principles state that K-selected species should show relatively stable populations sizes at or near the carrying capacity of their habitat. If populations are reduced below carrying capacity, as occurred during the days of commercial sealing and whaling, they should begin to recover as soon as the limiting factors are removed. Recovering populations may increase at a rate of 5-15 percent per year.

A number of factors have been suggested that may have contributed to the decline of seal and sea lion populations and may be preventing their recovery. Some of those are:

1. Changes in distribution
2. Disease or pollution
3. Commercial harvest
4. Subsistence harvest
5. Increased predation
6. Entanglement in debris
7. Incidental fishery take
8. Direct killing by fishermen
9. Changes in prey abundance

Although it is tempting to assume that a single factor, or a similar combination of factors, is responsible for the declines in fur seals, sea lions, and harbor seals, that may not be the case. However, available data suggest that the first five possibilities are not very important for any of the three species. There have been no increases in abundance noted in any area that could compensate for the decreases described above. Although Alaskan marine mammals are exposed to disease-causing agents and pollution there is no indication that it has resulted in significant mortality or reduced productivity. During the recent outbreak of canine distemper in European seals, many thousands of dead seals appeared on the beaches. No similar die-offs have been noticed in Alaska. Subsistence harvests of seals and sea lions are small and should be well within sustainable limits, and commercial harvests of harbor seals and sea lions stopped in 1972. Commercial harvesting of fur seals continued through 1984, but it involved only subadult males and should not have caused reduced pup production. The possible effects of killer whale predation on pinniped populations are unknown, but there is no evidence to suggest that the amount of predation has changed in recent years.

The last four factors all relate in some degree to interactions with the fishing industry. Although there is a wide variety of debris in the oceans, net fragments and plastic packing bands (like the ones used on boxes of bait), are particularly common. Some researchers think that entanglement in debris may kill five percent of the Pribilof fur seal population each year. Sea lions and harbor seals appear to become entangled less frequently.

Incidental taking refers to entanglement or capture of animals in actively fishing gear. Although animals are occasionally caught in crab pots or on longlines, most are caught in trawls or gillnets. The level of incidental take is well documented for foreign fisheries operating in the U.S. Economic

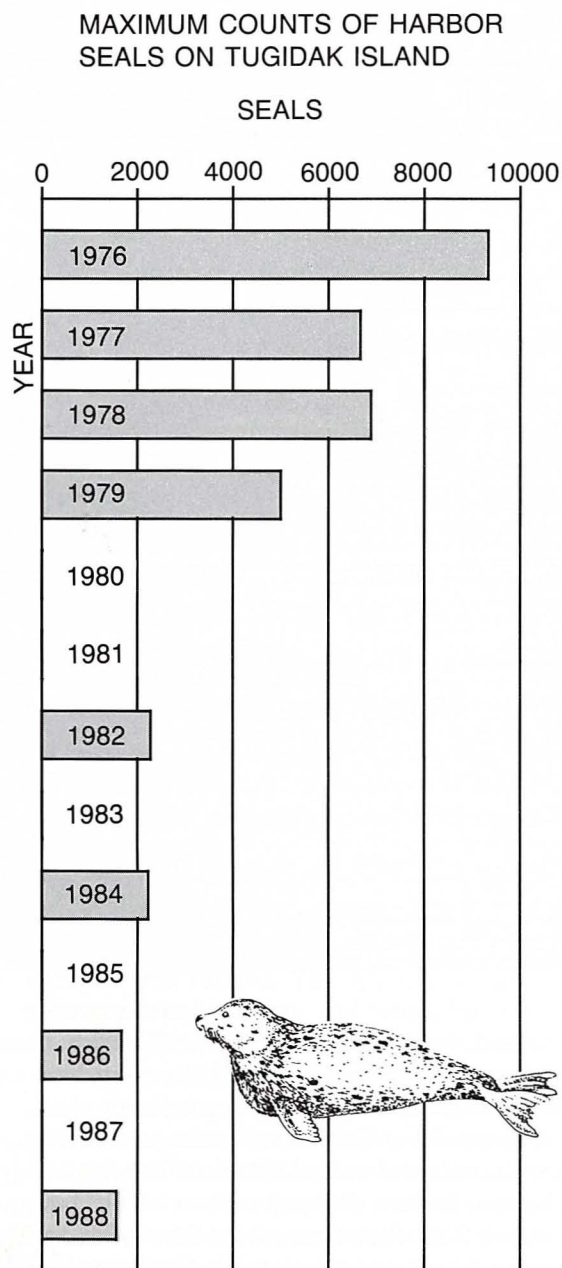
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Seals and Sea lions

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Zone. The largest takes recorded were of a few hundred to more than a thousand sea lions taken annually in the Shelikof Strait pollock fishery in 1982-84. The number of animals taken in domestic fisheries and in foreign fisheries operating outside the U.S. zone is very poorly documented. Sea lions and harbor seals are caught in nearshore salmon gillnet fisheries and fur seals are caught in the high seas squid fishery. (For more information on this subject, please see the previous issue of *Alaska's Wildlife*, July-August 1990.)

Figure 3.



Fishermen are allowed to kill some kinds of marine mammals if they are directly interfering with their gear or catch, and the animal cannot be deterred using non-lethal means (such as seal bombs). Any other harassment or killing, such as taking animals for crab bait or shooting at animals on haulouts, is clearly a violation of the Marine Mammal Protection Act. Gunshot wounds are common in dead seals and sea lions found on beaches, but the reason for the shootings and the total number of animals killed are unknown.

Pollock, herring, and salmon are important foods of fur seals, sea lions, and harbor seals; they also support important commercial fisheries. These marine mammals also eat capelin, sand lance, squid, octopus, and other species of little or no commercial value. The results of competition between marine mammals and fisheries are poorly understood. However, sea lions collected in the Gulf of Alaska in 1985-86 showed clear signs of nutritional stress which correlated well with the decline in Gulf of Alaska pollock stocks.

Implications for Alaskans

The reasons why fur seals, sea lions, and harbor seals have declined in Alaska may never be fully understood. But, regardless of who or what is responsible for the problems with Alaska's seals and sea lions, those who use Alaska's coastal waters should be very concerned. If the declines are due mostly to natural causes and the seas can no longer support large numbers of fish-eating pinnipeds, what does this tell us about fish populations and their environment? If human activities have caused the declines or are likely to slow population recoveries, people will need to find ways to minimize their impacts.

Protective listings such as have been applied to Pribilof fur seals and Steller sea lions indicate widespread recognition of major conservation problems, and are sure to result in restrictions on activities that might impact the species of concern. The effects of regulations on people will be variable, and may range from minor inconvenience to major economic disruption. Fishermen should expect to find it more complicated sharing their fishing grounds with protected species. Others who simply want to watch or photograph animals may be prohibited from approaching close enough to do so.

All people who are concerned with Alaska's marine resources can do a lot to help in this situation. Each individual should stop discarding debris into the ocean, and should avoid harassing marine mammals in any way. People who do harass marine mammals or otherwise abuse Alaska's waters and wildlife should be reported to the proper authorities. Conservationists and fishermen should join with other individuals and organizations to work for protection of important marine mammal habitats and the perpetuation of healthy marine ecosystems. We need to work together to develop an adequate understanding of Alaska's seas and the resources they contain, and to devise effective programs for their conservation and management.

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