



Creating the Nation's first BioPark

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Letter from the Desk of David Challinor  
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Many of my past letters have been about the overharvesting and subsequent decline of wild animal populations. But some wild animals have prospered by adapting to life with humans and exploiting human-altered habitats. For example, Canada geese and white-tailed deer thrive in the suburbs. A host of alien invaders such as starlings, house sparrows and fire ants thrive in our midst for various, often complicated reasons. They have become pests, but methods to control their spread have been only marginally successful.

This letter is about an extraordinary mammal that has bounded back from the brink of extinction and may be on its way to competing so successfully with humans for beaches that it may become a major pest. The northern elephant seal (Mirounga angustirostris) is an enormous animal, the largest of all pinnipeds (seals, walruses, etc.). Some males weigh up to four tons and are 18 feet long; females are smaller, about one ton and 10 to 12 feet long. The southern elephant seal belongs to a different species and is slightly larger than its northern relative. There is no evidence that the two species ever mix as they appear to be strictly cold water animals kept separate by equatorial waters.

When whalers explored the remote islands of the world in the XIX century, they easily harvested elephant seals whose blubber was a source of flammable oil. Both elephant seal species haul out on sandy beaches twice a year -- once to give birth and breed and a few months later returning to moult -- the only seal with a double migration (a phenomenon to be discussed later). As a result of the ease with which they could be harvested, they were soon hunted to the point where no northern seal was reported seen between 1884 and 1892. In that year some collectors landed on remote Guadeloupe Island about 200 miles off the coast of Lower (Baja) California. They killed seven of the eight seals they found there and sent the skins to the Smithsonian! Clearly other seals escaped by being at sea at the time because by 1922 a group of 260 animals was counted. Since oil made from blubber was no longer commercially competitive with carbon petroleum products, there was no longer a reason to kill these seals. Mexico then passed a law protecting elephant seals and the U.S. soon followed suit. Thus protected they have rapidly multiplied at a rate of more than 14%/year; by 1975 the seals had run out of space on their preferred remote island beaches off the California coast and the first pup was born on a mainland beach near Santa Cruz, California in 1975. Now this beach has hundreds of elephant



seals and has become a local tourist attraction. Seals have been reported "scouting" other mainland beaches further north and it is likely they will soon occupy these as well. Given the pressure on California beaches from surfers, swimmers, nudists and picnickers, the conflict between people and seals is rising and some form of seal management is probably inevitable.

What is intriguing, however, is how to account for this unbelievable rate of population increase when other local pinnipeds seem to be in decline. The Pribilof Islands fur seals and Steller sea lions show a marked decrease in population and were added to the U.S. government's list of endangered and threatened wildlife. This large sea lion -- the big males are three to four times larger than the California sea lion males commonly seen in zoos and circuses -- is a direct competitor with commercial fishers. The sea lions not only steal fish from nets, but they prey on the very fish the fishers are trying to catch, such as pollack, cod and salmon. As a result many Steller sea lions are shot and their Aleutian Island population dropped 80% between 1960 and 1990. As is the case in Europe when fish catches decline, generally from human overfishing, seals are blamed as "unfair" competitors. The government's ban on shooting Steller sea lions is unpopular with Alaskan fishers and has fueled a rising number of hostile encounters between federal law enforcement officers and the commercial fishers.

The California sea lion is competing more successfully than formerly with humans and many on the west coast have lost their fear of people; they now congregate on fishing piers and marinas to the delight of transient tourists, but to the frustration of boat owners. All sea lions, however, prey more on fish humans desire and stay nearer shore than do elephant seals.

When not on their beaches, elephant seals travel round trip 20,000 km (12,500 miles) between their feeding grounds in the Gulf of Alaska and their home bases in southern California. With so much time spent at sea, they avoid being shot or harassed by humans. Furthermore, as a result of advanced technology, scientists have glued instruments to the fur on the seals' backs that record geographic location at sea and time-depth of dives. Radio transmitters are also attached so that the seal being monitored can be located when it returns to shore to allow recovery of the recording devices. Of 65 seals instrumented, 43 recorders were recovered; 36 contained complete information and three only partial data.

When the data were analyzed, the results were amazing. The post-breeding and post-moult migrations of the females kept them at sea about 307 days of the year; the males averaged slightly less, or about 250 days/year, but they actually covered longer distances. The sexes remain separated when at sea, but both

spend an incredible amount of time diving and are only at the surface breathing about seven minutes/hour. They dive straight down and spend approximately 10 minutes at their maximum depth of about 2,000 feet before coming to the surface to breathe for about two minutes; they can stay down a total of about 20 minutes. The deepest dive so far recorded was a mile down! When diving frequency and depth are calculated on a yearly basis, they travel vertically about 8,000 km (5,000 miles).

No other mammal makes two migrations a year or travels nearly as far, although some pelagic birds migrate further distances. It is also possible that with further research we may discover that some whales or marine turtles may go further, but for now sea elephants hold the record.

There are still many questions to be answered, such as: Why do males and females remain segregated at sea? How do they navigate? How do they locate their prey at such extreme depths where no surface light penetrates? There must be a considerable food source there, for which they do not seem to have to compete with humans. Let us hope that the fish and cephalopods which they eat will not be competitively harvested and that these seals can continue to exploit their mysterious deep water larder, a resource for which this species has become so well adapted. Breeding beaches may ultimately be the limiting factor in how large their population can grow without seriously competing with humans, but even when hauled out on maintained beaches they have become a tourist attraction.

We can speculate on how many breeding and moulting elephant seals will be tolerated on west coast beaches, but this is one mammal which has successfully recovered in less than 50 years from near extirpation. The current population is thus descended from probably less than 100 individuals, but so far this genetic bottleneck does not seem to have had any deleterious effect. There is indeed hope that other rare species can be saved, even ones that we humans perceive as ugly and unappealing as the elephant seal.

David Challinor  
(202) 673-4705