

A Second Chance for Sea Otters



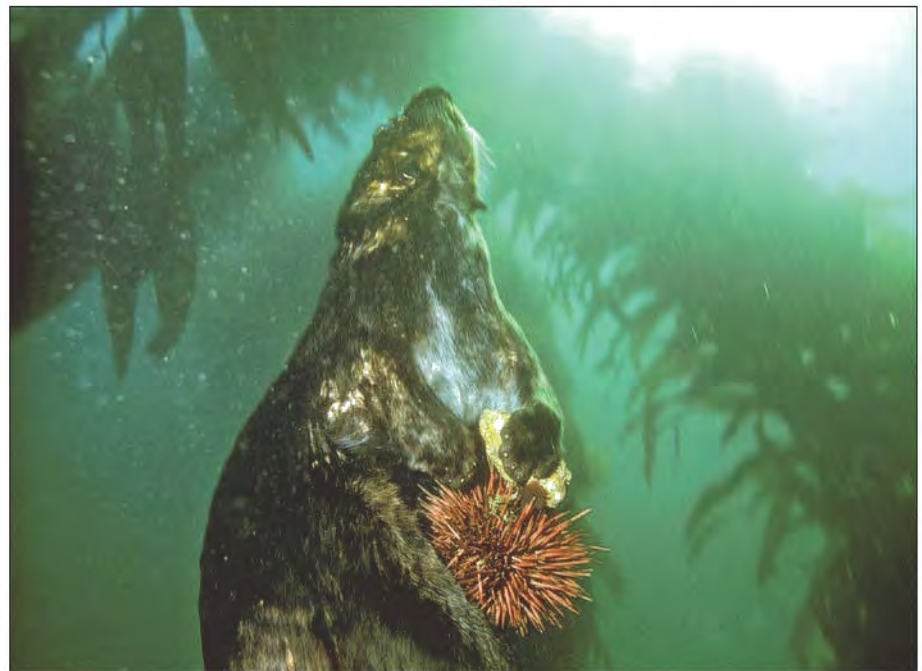
One spring morning in 1938, Howard Granville Sharpe gazed at the ocean through his telescope. Sharpe lived 13 miles south of Carmel, California, at the edge of a rocky cliff overlooking the sea. On this particular morning he glanced over the plentiful kelp beds close to shore. Something caught Sharpe's eye: It floated lazily on its back, covered with long strands of kelp. Was it a small seal or sea lion?

Sharpe did not think it was either.

Sharpe called the California Department of Fish and Game. Commissioners there insisted the animal he saw was a seal or sea lion, but Sharpe protested; he knew what a sea lion looked like, and this creature did not match up with the animals in his pictures. For one thing, the animal was smaller and had beautiful, thick fur. Soon Sharpe located more of these creatures with his telescope; when he looked closer, he saw that they had white furry faces. They look "like muskrats," Sharpe said. As it turned out, Sharpe had "rediscovered" the lost member of the Mustelidae family, the southern sea otter (*Enhydra lutris nereis*), that until that point was thought to be extinct.

Range of the Otter

There are 13 species of otters in the world; only one of



Sea otter with urchin

these species lives in a marine environment. *Enhydra lutris* consists of three subspecies. Sea otters only live in regions of the Pacific Ocean along North America and north

Asia. The playful *E. l. lutris* lives near the Kuril Islands stretching from Japan to Russia; *E. l. kenyoni* lives throughout the Aleutian chain, the Alaska Peninsula, British Columbia, and



Sea otters

Washington; and *E. l. nereis* lives along the western coast of North America, from Monterey Bay National Marine Sanctuary to a point just below Point Conception near Santa Barbara. One population persists on San Nicolas Island off the coast of Los Angeles, and is currently the southern-most geographic extent. At times, a few southern sea otters have been spotted as far south as Baja California.

Changing Population

Historians estimate that 150,000 to 300,000 sea otters occupied the world's oceans before hunters started killing these animals for their beautiful pelts

in 1741. By the early 1900s, 1,000 to 2,000 otters remained, only 50 of which lived off the coast of Central California. Land managers passed the International Fur Seal Treaty of 1911 to protect fur seals, but it ended up protecting several other fur-bearing species, including sea otters. The treaty was the first international law enacted for wildlife conservation, and it effectively stopped the slaughter of certain marine mammals for their valuable fur.

Since 1911, otter populations have increased, though not without setbacks. When disease and environmental factors affected otters and other marine

mammals in the early 1970s, lawmakers passed the Marine Mammal Protection Act to protect and replenish otter, seal, and sea lion populations. Today more than 100,000 sea otters occupy 75% of their original habitat. In the northern Pacific Ocean, sea ice limits the otters' distribution. In California, where winters are warm, the location and condition of the kelp beds where otters forage for food determine the otter's distribution and rates of survival.

Adaptations for a Cold Ocean

Sea otters can grow up to five feet long, and weigh up to 100 pounds. They have wide,

cream-colored heads with small eyes and thick, glossy coats that range in color from dark brown to black. Otters use their webbed hind feet to propel themselves through water at a slow pace on their backs. When threatened, otters flip onto their stomachs and swim away.

Otters dive for food, foraging for sea urchins, sea stars, crabs, abalone, and mussels. They roll on their backs, place a small rock on their stomachs, and use their five-fingered paws to smash sea urchins against the rock. Otters are the only marine mammals to use such tools. If you concentrate while walking along the shore or sitting quietly in a boat, you can

sometimes hear the clicking of shells on rock above the sound of the waves.

In addition to eating and sleeping, sea otters spend large amounts of time grooming their luxurious fur. The pelts, valued by hunters since the 1700s, allow the otters to survive in cold water. One square inch of an otter's coat contains approximately 1 million hairs. That is 10 times the number of hairs on a human head! Because otters have no extra fat on their bodies, they rely heavily on having healthy coats to keep them warm.

The Kelp Forest

When resting, otters often wrap themselves in long strands

of kelp, which keep them from drifting away. Scientists identify sea otters as a “keystone” species, because the presence or absence of these animals affects the size and health of rich kelp forest ecosystems. Without otters to feed on sea urchins, the hungry urchins can devour entire kelp forests and create an urchin-dominated community.

Ocean temperature, light, nutrient availability, competition, and the condition of the rocky substrate (ocean bottom) all affect the abundance of kelp, the home of sea urchins, the otter's preferred food supply. The health of the kelp forest also depends on a process called upwelling, in which winds create currents that bring up nutrient-rich water from the bottom of the ocean. When certain naturally derived nutrients, such as nitrates and phosphates, are plentiful, the abundance of kelp increases, providing food for the sea urchins to thrive. Weather patterns, such as El Niño, warm the water and disrupt the process of upwelling, which in turn affects marine organisms that depend on coastal productivity. An invasive species of kelp called *Undaria* spp., which is growing along the California coast and is sold as wakame seaweed, competes with the kelp, reducing its abundance.



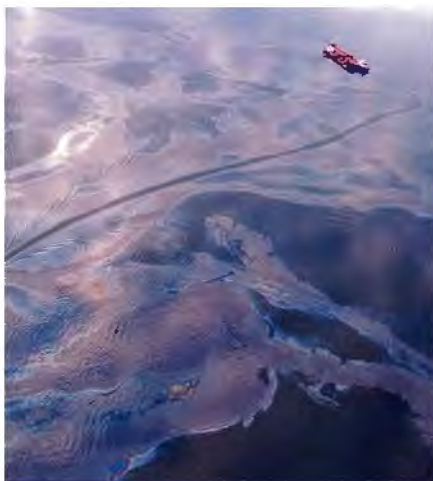
Sea otter

These changes to kelp forests affect the populations of the marine organisms that live there, including organisms that the sea otter depends upon for its diet.

Threats to the Otter

Today oil presents one of the greatest threats to the survival of sea otters. Oil spills leave slicks that float on the surface of the water and coat sea otters with a sticky film that mats their fur and destroys the protective warmth of their coats. If an otter's core body temperature drops a few degrees below normal, it can be fatal, especially in northern waters where the water temperature is much colder than in California.

The southern sea otter in central California faces a unique set of challenges. California otters often must compete with commercial fishermen for food.



Oil spill in ocean



Otter cleaned after oil spill

They are also more threatened by the effects of pollution than otters in the less-polluted northeastern Pacific. For these reasons the southern sea otter is listed as “threatened” under the Endangered Species Act.

Since their rediscovery by Sharpe in 1938, the number of southern sea otters off California's coast has increased, though not as rapidly as in Washington or Alaska. California otters still have a high mortality rate. As otter populations increase, they deplete populations of sea urchins, abalone, and large crabs. Without a steady supply of regular prey, the otters turn to filter-feeding mussels, clams, and worms, all of which contain high levels of bacteria, viruses,

parasites, and contaminants. Large predators, such as great white sharks and killer whales, also threaten otter survival.

At the beginning of the 21st century, 2,692 otters lived off the coast of central California. The engaging sea otter has become a symbol of how environmental pressures can affect interdependent marine communities. Despite a small decline in the otter's population between 2005 and 2006, the trend for the last few years has been slightly upward. As Howard Granville Sharpe wrote in 1938, “Nature's immutable law was: ‘once extinct, always extinct.’” Sharpe understood nature, but he still could not figure out how the otter eluded him until that historic spring morning!