



## *Natural History Notes: Sea Otters*



Sea otters (*Enhydra lutris*), members of the family Mustelidae, spend their lives almost entirely at sea. Some of their closest relatives include river otters (*Lutra canadensis*), wolverines (*Gulo luscus*), and mink (*Mustela vison*). These playful, relatively tame mammals were once hunted nearly to extinction for their soft, warm fur. They inhabit the shallow coastal waters of the Pacific Ocean from southern California northward and westward to the Gulf of Alaska and Aleutian Islands. Their range also includes the Commander Islands and nearshore habitats of the Kamchatka Peninsula southward to the northern islands of Japan. Adult males typically weigh 60-70 pounds (27-32 kilograms) and are about 4-1/2 feet (137 centimeters) long, but some 5-foot (152-centimeter) individuals weigh as much as 100 pounds (45 kilograms). Mature females are slightly smaller: they average about 50 pounds (23 kilograms) and 4 feet (122 centimeters) in length, and rarely exceed 70 pounds (32 kilograms) and 4-1/2 feet (137 centimeters).

Primary foraging habitats include rocky and sandy bottomed nearshore waters containing rich populations of benthic invertebrates and stands of kelp. Favorite foods include sea urchins, octopus, crabs, abalone, mussels, oysters, scallops, clams, and other mollusks. They also take starfish, when preferred prey are scarce. To obtain food, sea otters dive up to 100 feet (30 meters) or more using their large, powerful, flipper-like webbed hind feet and broad, flattened tails. After locating prey and prying it off of rocks or plucking from the bottom with nimble forepaws, they clasp it to their chests or hold it in the loose skin under their forearms and swim to the surface. They eat the prey while floating on their backs. Their strong, well-muscled jaws lined with large, flat molars and blunt canine teeth are designed to easily crush protective crab, urchin, and small mollusk shells. Large mollusks with thicker, tougher shells are also no match for these clever animals. Some sea otters have learned to bring two large clams to the surface on the same trip. After rolling onto their backs, they hold the clams in their forepaws and hit them together until the shells crack. They also carry rocks to the surface and use them as tools to help open hard-shelled prey. After balancing rocks on their chests, they grasp clams in their forepaws and strike them against the rocks to break the shells.

Sea otter populations increased markedly throughout many areas of their North American range after the 1970's. However, populations in Alaska's central and western Aleutian Islands have declined in recent years. Evidence suggests that these drops in numbers may be linked to major declines in Steller's sea lion (*Eumetopias jubatus*) and harbor seal (*Phoca vitulina*) populations, and increased predation by killer whales (*Orcinus orca*). By the mid-1990's, populations of sea lions and seals, important prey for many pods of these large marine predators, had dropped to about 10%-20% of their pre-1980's levels in these and other areas of their Alaskan range. Some killer whales may now be feeding heavily on sea otters, in spite of their relatively low energy content and small size, because seals and sea lions have become scarce and hard to find.

Sea otters are well adapted to cold, harsh ocean environments even though they don't have thick protective layers of subcutaneous fat (blubber) to help them conserve body heat, as most marine mammals do. Instead, they rely on specialized fur coats that have an outer layer of relatively sparse guard hair and an extremely dense, thick, woolly layer of fine underfur. The extremely fine underfur, averaging about 650,000 hairs per square inch (100,800 per square centimeter), is the densest mammalian fur known. As a result, sea otters are highly buoyant and they don't get cold or wet while swimming at sea, because the super fine underfur traps layers of air that keep them warm and dry. Because these animals are so dependent on their specialized fur for insulation and flotation, they spend many hours carefully cleaning and grooming it every day.

Many of these graceful, agile animals died during the 1989 *Exxon Valdez* oil spill in Alaska's Prince William Sound. Some sea otters succumbed to hypothermia because oiling destroyed the insulative, protective qualities of their specialized fur coats, and others died after ingesting oil while trying to lick themselves clean.

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