WILDLIFE IN BRITISH COLUMBIA AT RISK

Sea Otter

Once extinct in Canada, this Threatened species has been successfully reintroduced.

BRITISH COLUMBIA
Ministry of Water, Land and Air Protection

Why are Sea Otters at risk?

Prior to decimation by the fur trade, Sea Otters were found in a great arc around the North Pacific: from northern Japan along the coastlines of the Kuril Islands, Kamchatka, Commander and Aleutian Islands, Gulf of Alaska, British Columbia, Washington, Oregon and California, south to the vicinity of Cedros Island, Mexico.

Native people harvested Sea Otters throughout their range, but this was unlikely to have seriously reduced any populations. However, a 150-year period of exploitation began with Vitus Bering's exploration of the Aleutians and Gulf of Alaska in 1741. The journals of such explorers, and the luxuriant pelts they brought back, revealed to the world the commercial potential of this far-flung resource. The ensuing maritime fur trade, with China and Europe the major markets, resulted in fierce competition between Russian, American, British, and Spanish traders, and sparked numerous territorial disputes. One of these, the "Nootka Controversy," brought threats of war between Britain and Spain.

Prior to exploitation, the worldwide population of Sea Otters was estimated at between 150 000 and 300 000. During 126 years of Russian control, more than 800 000 are believed to have been taken in Alaska alone. Hundreds of thousands were also obtained along the Alaska to California coastline. By 1911, when a treaty to protect Fur Seals and Sea Otters was signed by Japan, Russia, Britain (for Canada) and the United States, between 1000 and 2000 Sea Otters remained in a dozen scattered locations from the Kuril Islands, Russia, to Prince William Sound, Alaska, and at one site near Carmel, California. The last Canadian record was a specimen obtained near Kyuquot on Vancouver Island in 1929.

Following protection, the remnant Sea Otter populations increased gradually. By the 1980s, an estimated 150 000 or more occupied most of the original range from the Kuril Islands to Prince William Sound, and the isolated remnant in California had increased to over 2000. Since then, however, the Sea Otter population in the Aleutian Islands has declined by over 70 percent. It is thought that a shift in ocean temperature in the North Pacific may have resulted in a shift in fish species composition. Sea lion and seal populations declined, and orcas, which had preyed on sea lions and seals, may have switched to feeding on sea otters.

Like most marine mammals, Sea Otters have low reproductive rates. However, many new populations in formerly vacant habitats have increased steadily at rates as high as 17 to 20 percent per year, indicating that in areas where populations have not reached the limits of their habitat, natural mortality levels must also be quite low. In areas where populations reached maximum densities, such as Amchitka Island in Alaska, starvation was probably the most common cause of death. Mortality also occurs due to excessively worn teeth, which may be accompanied by disease, parasitism, or infection. Severe, prolonged storms can also cause death of pups, aged, or weak individuals. Nesting Bald Eagles regularly prey on Sea Otter pups left untended on the ocean surface. In the western Aleutian Islands, predation by Killer Whales is thought to have reduced the number of Sea Otters drastically. A decline in the abundance of seals and sea lions, the preferred prey of mammal-eating Killer Whales, has apparently resulted in the whales switching to preying on Sea Otters.

By 1911, less than two thousand Sea Otters remained in the world.

Human-caused mortality, though much reduced since the early 1900s, is still a cause for concern. The *Exxon Valdez* oil spill in Prince William Sound, Alaska, in 1989 killed nearly half of the Sea Otters in the oiled area of the Sound; the much smaller *Nestucca* spill off Washington in 1988 killed at least one otter at Checleset Bay, 440 kilometres north of the spill site. Small amounts of oil, by affecting insulation, can cause hypothermia for Sea Otters, and any major spill, an ongoing threat on the B.C. coast, could be catastrophic. Entanglement in fishing nets may cause significant losses in some parts of their range. Shooting, harassment and general disturbance by boat traffic are of common concern in California where large numbers of people live in close proximity to these animals.

What is their status?

The last complete survey of the BC Sea Otter population was carried out in 1995. At that time there were about 1500 Sea Otters, located along the west coast of Vancouver Island, and the central coast of B.C. The population continues to expand its range and increase in size. In 1996, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) downlisted the Sea Otter from Endangered to Threatened. It has been designated as Threatened under the British Columbia *Wildlife Act* and receives legal protection as a marine mammal under the Canada *Fisheries Act*.

Throughout their range in the U.S., Sea Otters receive protection under the *Marine Mammal Protection Act*. The California population, a separate subspecies (variety) named the "Southern Sea Otter", is afforded additional

Federal protection as a "Threatened Species" under the U.S. *Endangered Species Act*.

What do they look like?

Two species of otters occur in British Columbia – the Sea Otter and the more widespread River Otter. River Otters frequent rivers and lakes, but are also common in saltwater along the entire British Columbia coast.

The Sea Otter (*Enhydra lutris*) is our smallest marine mammal, but is one of the largest of the world's 13 otter species – males weigh up to 45 kilograms and reach 148 centimetres in length. Females are slightly smaller. The tail is about one-third the length of head and body; the River Otter's is about two-thirds. Sea Otters are frequently seen in large social groups, resting or feeding on their backs in offshore kelp beds. They rarely go ashore. River Otters seldom occur in groups larger than a single family (although families can include three or four young), don't rest on their backs, and come ashore frequently.

Sea Otter fur, consisting of sparse guard hairs and dense, soft underfur, varies from dark brown to reddish brown. When dry, the fur on the head is cinnamon to light brown. The body is entirely furred except for the tip of the nose, inside of the ears, and palms of the stubby mitten-like forefeet. The flipper-like hindfeet have short, sparse fur. Prominent whiskers, and the grizzled facial fur of older animals have given rise to the nickname "old man of the sea".

Groups of Sea Otters are called rafts, and usually consist entirely of females and pups or of males. Rafts are often large, and may contain over 100 animals. Most individuals make short daily movements between favourite feeding sites and more protected resting areas, resulting in seasonal home ranges of 5 to 10 square kilometres in size. However, studies in Alaska and California have shown that many adult males make yearly or more frequent trips of 80 to 145 km from male rafts to establish temporary breeding territories in female areas.

What makes them unique?

In contrast to whales and seals, which rely on their blubber for insulation, the Sea Otter relies on its well-groomed fur with many tiny air bubbles trapped in it. They have the thickest fur of any living animal, with an incredible 100 000 or more hairs per square centimetre. Frequent grooming activity prevents soiling of the fur, loss of insulation, and reduced buoyancy. The fur is rubbed meticulously with front and hind feet, the flexible otter rolling inside its baggy skin to reach the awkward parts. Folds of skin are squeezed between the forepaws or with the tongue to remove moisture. Finally the fur is aerated by blowing into it or churning the water to a froth with the paws. This air, trapped in the fur, is warmed by the otter's body, and provides insulation against the cooling effects of water.

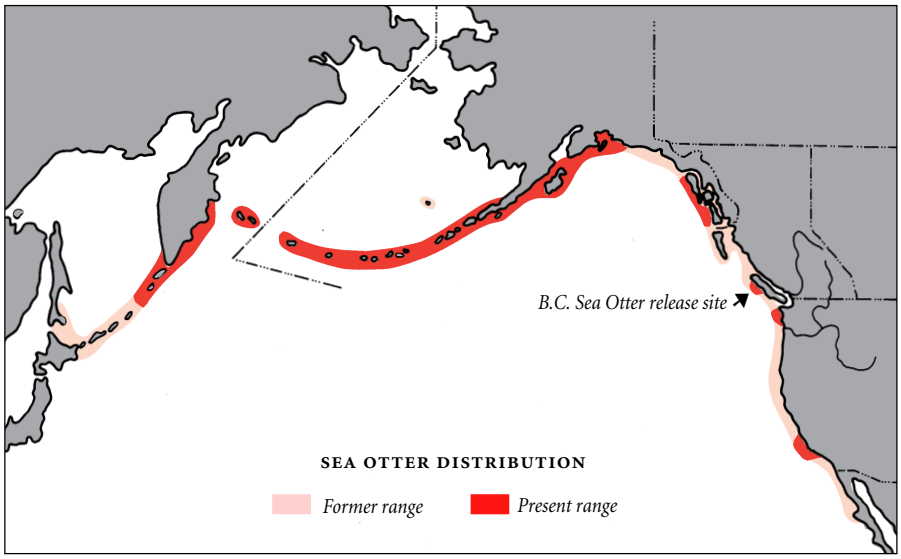
Their fur has an incredible 100 000 or more hairs per square centimetre.

To maintain body heat in chilly north Pacific waters, Sea Otters have a metabolic rate two or three times that of land mammals of similar size. This is made possible by a prodigious food intake (25 to 30 percent of body weight each day), an intestine 10 times the body length, and a rapid digestive rate. Air in the fur, together with large lungs (an adaptation for diving) cause Sea Otters to float high in the water. Other adaptations for diving include blood with a very high capacity to transport oxygen, and ear canals which can be closed. The Sea Otter has large, complex kidneys which allow it to drink seawater.

Sea Otters walk awkwardly on land and even in water do not have the speed or agility of seals. When lying face-up they move slowly by sculling the tail or paddling with one or both hindlimbs. Faster movements are always belly-down and involve up and down undulations of the entire body ("porpoising") with the hindfeet and tail held stiffly as an extension of the body, and the forefeet held against the chest. Normal speeds are 1 to 5 km an hour; the maximum about 9 km an hour. When at rest, Sea Otters lie on their backs, often entwined in kelp to hold their position, feet held high in the air to prevent heat loss.

Most of a Sea Otter's day is spent feeding, grooming, or resting, usually in that order. Otters in areas where populations are small and food is abundant, may spend as little as 10 or 15 percent of their day feeding, compared to 50 or 60 percent in areas where otter numbers are high and readily available foods have been exhausted. Most daytime foraging activity occurs in the morning and late afternoon, most resting around midday.

Sea otters play a vital role in structuring nearshore ecosystems.



The near extinction and subsequent increase of Sea Otters has allowed researchers to study their effects on benthic (seabottom) plant and animal communities as they recolonized or were transplanted into vacant habitats. Many areas that were otter-free for decades, particularly rocks and reefs, have dense populations of sea urchins and little or no kelp (large algae), this having been eaten by the grazing urchins. These areas are described as "sea urchin barrens." Research at Checleset Bay, Vancouver Island, and elsewhere has shown that introduced Sea Otters greatly reduce the urchin populations, allowing extensive stands of kelp to develop. These "kelp forests" drastically change the reef environment. By reducing the effects of invertebrate grazers, and increasing kelp abundance, sea otters may increase the productivity of nearshore communities by a factor of two or three times. Kelp also provides increased habitat for fish such as salmon, perch, greenling, and lingcod. Some species of fish can be up to forty times more abundant in areas with otters than in areas without otters. Kelp also, moderates the effect of waves. Their foraging has thus had a profound influence on nearshore reef communities.

How do they reproduce?

Females breed between three and five years of age and generally have one pup every year. Males mature at five or six years but may not breed until somewhat older. Although young may be born at any time of year, most births occur in spring. Most mating in northern waters is in the fall. The estimated gestation period is 6½ to 9 months. Spring or early summer births may result in better survival than births at other seasons.

Few births have been seen, but most are thought to occur in the water (unlike River Otters, seals and sea lions, which usually give birth on land). At birth the single pup weighs 1.4 to 2.3 kg and is well furred but relatively helpless. Pups receive a lot of maternal care and training until almost adult size, a period of six to eight months or more. Small pups suckle while lying on the female's chest; when larger they nurse while lying beside her in the water. Females with small pups tend to be solitary and to act aggressively toward other otters.

Females leave pups on the surface when they dive for food. They share solid food with the pups shortly after birth, but larger pups aggressively take food from their mothers. The young begin to dive in their second month; the duration of dives and success in finding food increases with age. There is much to learn during the period of dependency.

What do they eat?

Sea Otters dive to the seafloor to obtain a variety of invertebrate animals. The most common prey of Sea Otters are sea urchins, mussels, abalone, clams, scallops, crabs, sea snails, chitons, octopus, and squid. In general Sea Otters feed on the largest and most abundant prey, but switch to smaller items as preferred prey items become scarce. An acute sense of touch, using paws, nose, and whiskers, is very important for finding prey in crevices or bottom sediments, and during dim light. Food items are normally clasped between tough leathery pads of the two forepaws and brought to the surface to eat. Several food items are often stored in a loose pocket of skin in the armpit area for transportation and while feeding.

The Sea Otter uses rocks as tools to break open or dislodge hard-shelled prey.

The Sea Otter uses rocks as tools to break open hard-shelled prey or to dislodge prey such as abalone. It is the only mammal other than the primates (monkeys, apes, humans) known to use tools. While eating, Sea Otters float on their backs, using their chest as a dinner table, and are often accompanied by gulls and small fish which scavenge on leftovers. Items such as crabs and urchins are broken open with paws and teeth; the teeth are modified for crushing hard foods. Hard-shelled mussels and clams are bashed repeatedly against a stone on the otter's chest. Their rock tools range from 6 to 15 cm across, and favourite rocks may be carried in the armpit pouch on several successive dives. Most foraging is at depths under 30 metres, but a dive to 100 m has been recorded.

Where do they live?

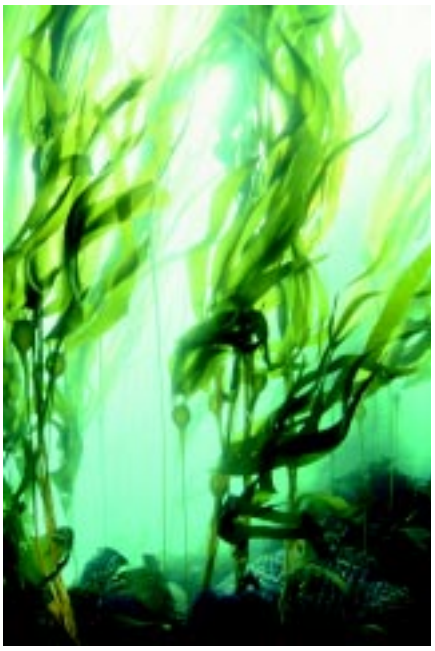
Sea Otters need unpolluted nearshore marine habitats, usually having depths under 40 m, an abundant food supply consisting primarily of shellfish, and freedom from excessive human disturbance. Complex coastlines having many islands, reefs, bays, and points provide a variety of feeding sites and shelter from storms, and appear to support the highest numbers of otters. Habitats of this nature occur along most of the outer coast of British Columbia. The reintroduced British Columbia population, possibly with the help of animals from southeast Alaska and from the reintroduced population in northern Washington, may eventually expand their range into this vacant habitat.

What can we do?

Sea Otters were reintroduced to Canadian waters between 1969 and 1972. This was a cooperative effort involving the B.C. government, Fisheries and Oceans Canada (Pacific Biological Station), Canadian Armed Forces (Search and Rescue, Comox), U.S. Bureau of Sport Fisheries and Wildlife, Alaska Fish and Game Department, and U.S. Atomic Energy Commission. There were three releases totalling 89 Sea Otters (taken from Amchitka Island and Prince William Sound) at the Bunsby Islands in Checleset Bay during this time. By 1995, this nucleus had grown to over 1500.

An Ecological Reserve covering all of Checleset Bay (the Sea Otter release site) was established by the provincial government in 1981, and harvest closures on many key shellfish eaten by the otters (clams, sea urchins, abalone) have been instituted in the reserve by the Department of Fisheries and Oceans Canada (DFO). Periodic aerial surveys are undertaken by the provincial government and DFO. BC Parks controls activities in Checleset Bay by issuing research, educational, and other permits. Research has been undertaken there on effects of Sea Otters on marine communities.

Once extinct on our coast, Sea Otters are now expanding to reoccupy their former habitats and to resume their role in the ecology of B.C.'s coastal ecosystems. Expansion to new areas will also provide increased opportunities for the

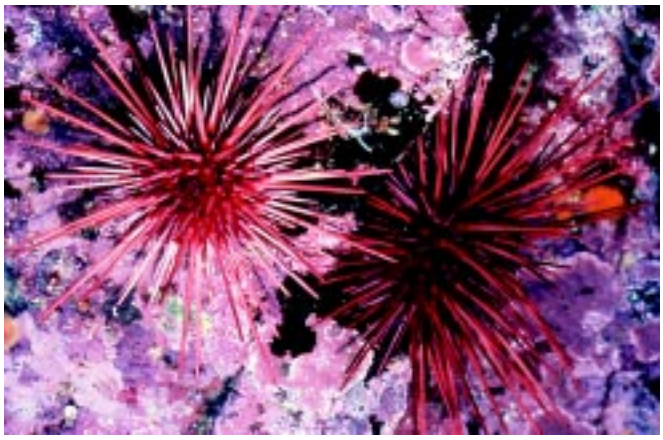


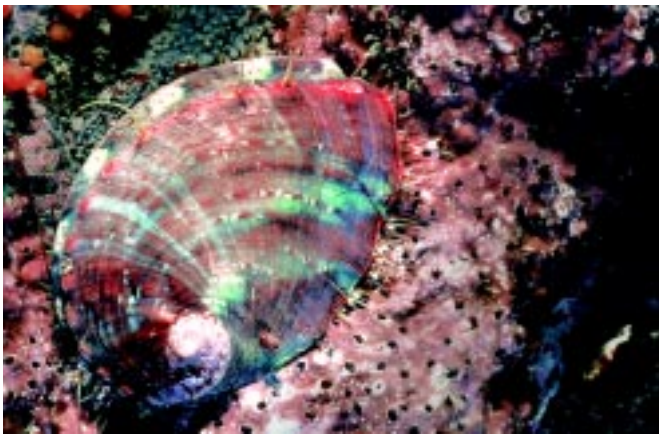
SEA OTTERS ARE OFTEN FOUND IN WEST COAST KELP FORESTS.
Royal B.C. Museum photo

KELP BEDS CAN BE FAVOURED FORAGING SITES.
Jane Watson photo

SEA OTTERS WERE REINTRODUCED TO BRITISH COLUMBIA AT THE BUNSBY ISLANDS OFF VANCOUVER ISLAND.
Rik Simmons photo

A FEMALE SEA OTTER AND PUP.
Royal B.C. Museum photo





SEA URCHINS AND ABALONE FORM A LARGE PART OF THE SEA OTTER'S DIET.
Royal B.C. Museum photos

public to view this engaging animal in the wild. The outlook for B.C.'s Sea Otter is good, although present populations are still relatively small and vulnerable. The public is urged to support programs aimed at preserving this valuable member of our coastal fauna.

Robert Livingston photo

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BROCHURE FUNDING PROVIDED BY

HABITAT CONSERVATION TRUST FUND

ISBN 0-7726-7701-8
WLAP 282920.302
MARCH 2002

TEXT BY **DONALD A. BLOOD**
REVISED BY **JANE WATSON & LAURA FRIIS**
ARTWORK COPYRIGHT **MICHAEL HAMES**
DESIGN BY **ARIFIN GRAHAM, ALARIS DESIGN**
DISTRIBUTION MAPS BY **RICHARD PAWLAS**
PROJECT COORDINATION BY **LAURA FRIIS**

Printed in British Columbia on recycled paper with vegetable base inks.