

Sea otters are truly irresistible. They are cute and cuddly looking, with friendly faces and playful personalities. It's hard to believe that these delightful creatures were once hunted almost to extinction. But at one time, sea otters were in great demand for their pelts to make fur coats. By 1910, it was thought that sea otters were extinct. In 1911, the United States signed a treaty with Japan, Russia, and Great Britain that made it illegal to hunt sea otters, on the off chance that some still survived. Some did survive, and the population made a remarkable recovery—until recently.

Sea otters are found only in the North Pacific Ocean, where they live along rocky shorelines and in protected coves.

Unfortunately, sea otter populations are on the decline throughout their range. Most live in the northern part of their habitat, near Alaska, Canada, and Russia, where they have a large population of around 123,000. Their numbers decrease as they move south, with only 2,900 residents along the California coast as of 2014. Scientists think that there may have been as many as 16,000 sea otters in California during the 1800s.

There are 13 species of otters, but only one species of sea otter, divided into three subspecies. The other otters are river otters. All otters belong to the weasel family, which



includes weasels, skunks, minks, sables, ermines, wolverines, and badgers. The scientific name for the sea otter is *Enhydra lutris*, which means “otter in the water.” The name fits sea otters well because they spend almost all of their time in the ocean—they eat, sleep, mate, give birth, and feed their young at sea. They are the most aquatic of all otters.

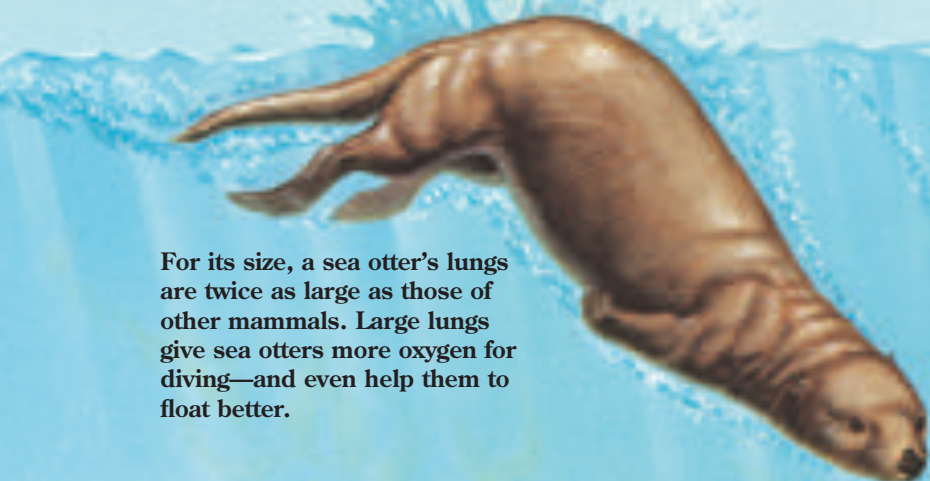
Sea otters are the largest members of the weasel family. They are also among the smallest of all marine mammals. Like whales and other

marine mammals—like all mammals—they breathe air, feed milk to their young, are warm-blooded, and have hair on their bodies.

Groups of sea otters, called *rafts*, float among the kelp beds, where there is plenty of food. Playful by nature, they are sometimes called the “clowns of the kelp beds.” But their playfulness and curiosity contributed to their near extinction in the early part of the 1900s. While the return of the sea otter is a success story, the current decline in the southern population shows how important it is to guard against threats to the sea otter’s safety.

Sea otters spend most of their time eating, resting in the kelp, or cleaning their fur. They are the only marine mammals that eat, sleep, and carry their young while floating on their backs.

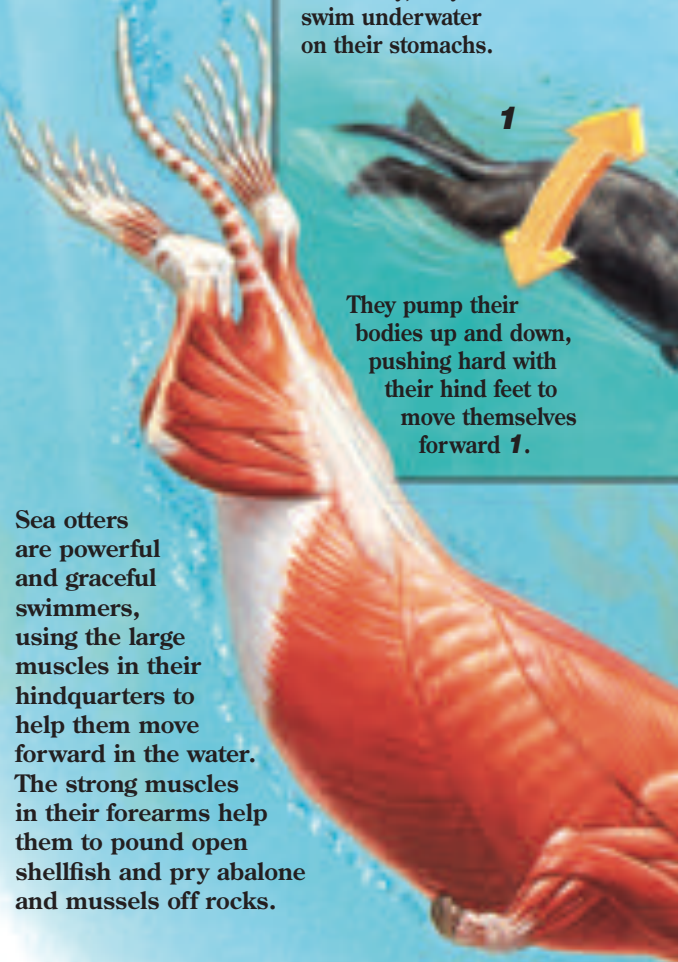




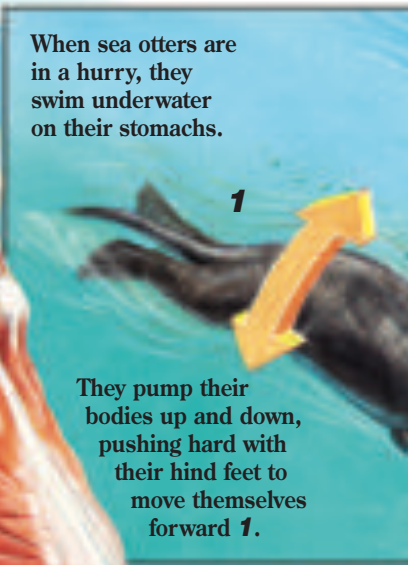
For its size, a sea otter's lungs are twice as large as those of other mammals. Large lungs give sea otters more oxygen for diving—and even help them to float better.

A sea otter is well-suited to life in the ocean. Its flexible, cylindrical body moves through the water with ease, but drags clumsily on the ground when it comes ashore. This is because its short legs, so powerful in the water, can't support the sea otter's long body on land. Males reach a body length of about four feet and have a foot-long tail. They can weigh as much as 90 pounds or more. Females are somewhat smaller.

Sea otters can hear quite well, and they hold their small ears upright at the surface to listen for danger. But when diving, they point their ears downward to keep out the seawater.



Sea otters are powerful and graceful swimmers, using the large muscles in their hindquarters to help them move forward in the water. The strong muscles in their forearms help them to pound open shellfish and pry abalone and mussels off rocks.



When sea otters are in a hurry, they swim underwater on their stomachs.

They pump their bodies up and down, pushing hard with their hind feet to move themselves forward **1**.

The smaller and sleeker river otters have longer legs than sea otters. This makes them as agile on land as they are in the water. The many species of river otters scamper over rocks and riverbanks in North, Central, and South America, Europe, Africa, and Asia. None but the sea otter is adapted for a life spent at sea.



When swimming in dark or murky water, where it's hard to see, sea otters use their sensitive whiskers to feel their way around and to find food. Their whiskers also help sea otters feel vibrations in the water.



To get around at the surface, sea otters swim on their backs. Usually, they kick their hind feet out to the sides. But sometimes they just swish their tails back and forth without using their feet at all **2**.



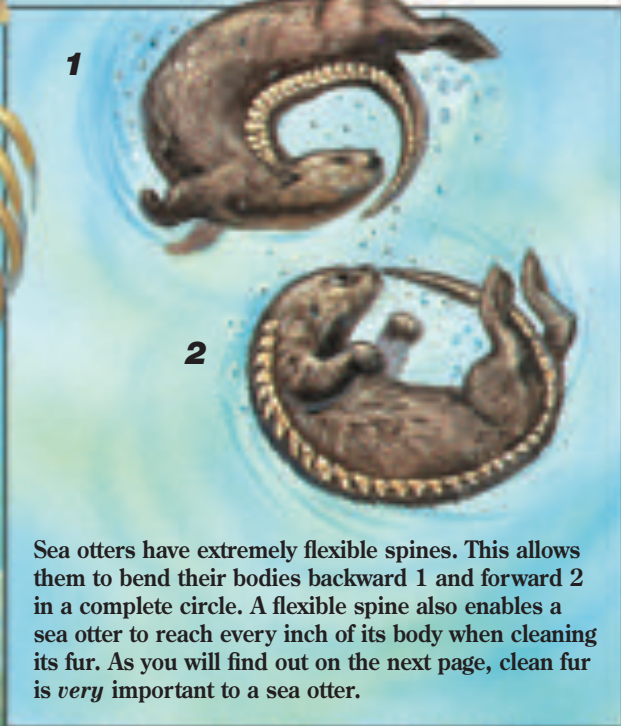
A sea otter's forepaws are very sensitive. They have short claws that usually don't extend beyond the edge of the paw. They also have tough pads on their paws to help them grip slippery fish and pick up prickly sea urchins. Inside their paws, they have five individual fingers, much like your fingers.

See for yourself how a sea otter's paw works. Pull a sock over your hand. Now write with a pencil. See how well you can control the pencil, even though your thumb and fingers are covered? In the same way, a sea otter can manipulate objects even though its paws are covered with mitten-like skin.



If you look closely at a sea otter's back feet, you will see that the *outside* toe is the longest, and the *inside* toe is the smallest—just the opposite of your toes! For otters, this works. Your feet are designed for walking, but with a large outer toe, an otter can spread its webbed feet wider for swimming.

Sea otters have strong jawbones and large, rounded teeth to help them crush the shells of crabs, snails, and sea urchins. Their big lower teeth, called *incisors*, jut forward and are used to scoop the meat out of the shells.



Sea otters have extremely flexible spines. This allows them to bend their bodies backward **1** and forward **2** in a complete circle. A flexible spine also enables a sea otter to reach every inch of its body when cleaning its fur. As you will find out on the next page, clean fur is *very* important to a sea otter.

A sea otter's coat must be groomed and cleaned constantly. Clean fur is a matter of life and death to a sea otter. This is the only marine mammal without a layer of fat, or blubber, to keep it warm in the cold ocean. Instead, the sea otter's thick fur coat must keep it warm.

Sea otters have the thickest fur of any animal in the world. In fact, some otters have as many as a billion hairs on their bodies. But it's not the fur alone that keeps otters warm—a sodden, soggy coat would be cold! Instead, a protective pocket of air at the base of the fur insulates sea otters from the ocean's chill.

Because their fur is so dense, sea otters must spend a great deal of time each day grooming themselves. If they don't groom, their fur gets matted and cannot hold air bubbles. By keeping clean, sea otters stay healthy and warm.

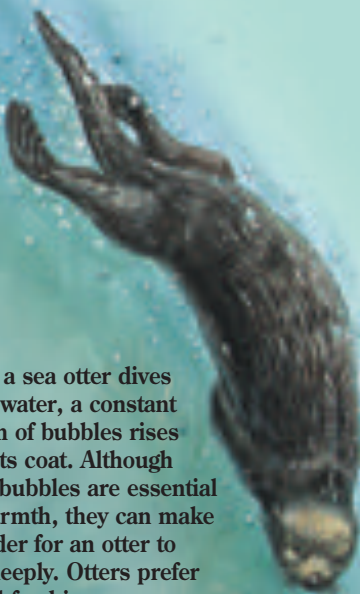


A sea otter has two types of fur. There are the long, coarse strands called *guard hairs*, and there are the shorter, finer hairs called *underfur*. When otters groom themselves, they are actually fluffing up their underfur to trap tiny air bubbles between each hair. These bubbles make a shield that blocks out the cold water.



1

See for yourself how air bubbles help a sea otter float. Fill a sink with water. Then push a dry sponge under the water. See all the bubbles coming out of the sponge as it fills with water. Now it barely floats. If a sea otter doesn't often fluff up its fur to trap bubbles, then it can't float as well either.



When a sea otter dives underwater, a constant stream of bubbles rises from its coat. Although these bubbles are essential for warmth, they can make it harder for an otter to dive deeply. Otters prefer to find food in more shallow water.



2

Now squeeze out the wet sponge and set it on the water's surface. Notice how it floats higher in the water. That's because you've replaced the water with air bubbles. That's just what a sea otter does when it grooms itself. It squeezes out the water to make room for the air bubbles.



A sea otter uses its forepaws as clamps to press water out of its fur. In addition to rubbing hard to get air next to its skin, an otter may blow into its thick coat. This traps even more air in the underfur.



Although a sea otter looks soft and cuddly, it would probably snap at anyone trying to pet its fur. Sea otters usually don't enjoy having their coats touched because this could soil their fur and be harmful to their health.

Using its sharp claws as a comb, a sea otter will scratch and brush its fur to untangle and clean it. A grooming sea otter will roll, twist, and squirm to reach every inch of its fur. Its coat is so loose on its body, an otter can pull it around to clean areas that are hard to reach.



Many dogs, like this German shepherd, also have thick fur—but it's not nearly as thick as sea otter fur. Otters have at least four times as much fur on their bodies as German shepherds do.

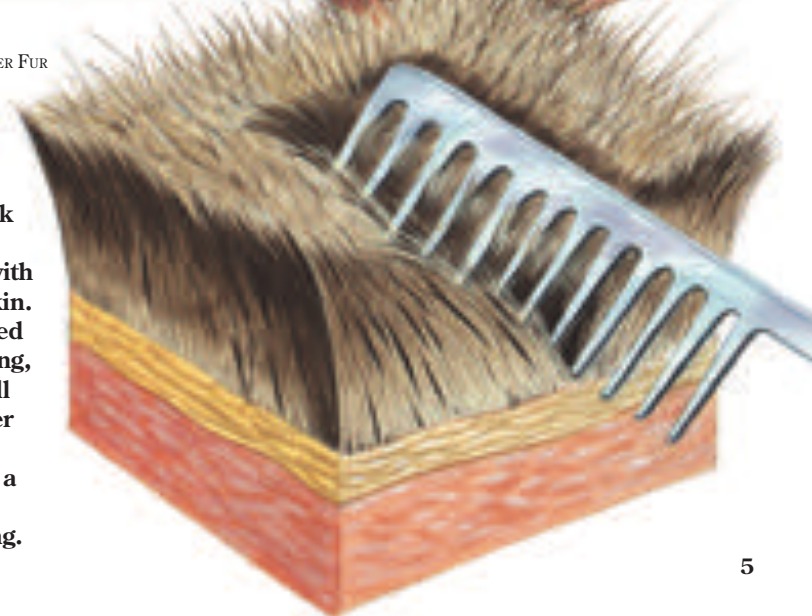
DOG FUR

A German shepherd has only about 40,000 hairs per square inch, whereas a sea otter can have up to a *million hairs* per square inch! If you tried to part a dog's fur with a comb, you would be able to see the skin at the base of the fur.



SEA OTTER FUR

Sea otter fur is so thick and dense it would be impossible to part it with a comb and see the skin. Because sea otters need warm coats all year long, they don't shed hair all at once like some other animals. Instead, they lose a few old hairs at a time—and grow a few new ones—all year long.

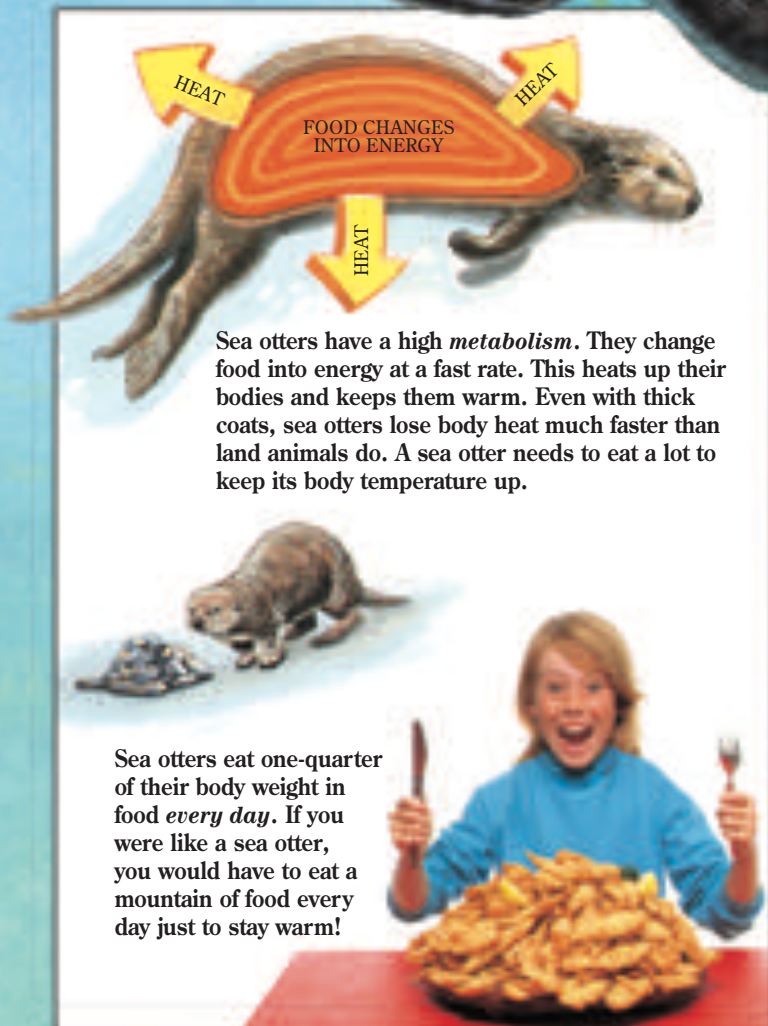


Sea otters eat many different types of food—and a lot of it! Shellfish is their favorite food, especially clams, scallops, mussels, and abalone. But they also like crabs, sea urchins, squid, snails, octopus, and fish. They prefer foods that they can pick up easily or pry off rocks.

In areas where sea otters have been living for a long time, studies show that individual otters have their own favorite foods. Each otter eats only two or three types of foods. This could explain why so many otters can live peacefully in the same area.

To collect and eat their food, sea otters often use large stones as tools. Humans, a few other primates, and sea otters are the only mammals known to use tools. They use stones as hammers to break loose abalone or mussels from the rocks. They also bang shellfish against flat stones to crack open their hard shells.

To find food, a sea otter may dive to 140 feet, or occasionally to 300 feet. But otters usually prefer shallower water where food is easier to reach. Their average dive is 35 feet and lasts about a minute. When necessary, sea otters can stay submerged for several minutes.



The diagram shows a sea otter with a cross-section of its body. Three yellow arrows labeled 'HEAT' point outwards from the otter's body, indicating heat loss. In the center of the otter's body, the text reads 'FOOD CHANGES INTO ENERGY'. Below the diagram, there is a photograph of a young girl with blonde hair, wearing a blue turtleneck, sitting at a table with a large plate of fried food. She is holding a knife and a fork, looking happy. To the left of the girl, there is a small illustration of a sea otter sitting on a rock, eating a shellfish.

Sea otters have a high *metabolism*. They change food into energy at a fast rate. This heats up their bodies and keeps them warm. Even with thick coats, sea otters lose body heat much faster than land animals do. A sea otter needs to eat a lot to keep its body temperature up.

Sea otters eat one-quarter of their body weight in food *every day*. If you were like a sea otter, you would have to eat a mountain of food every day just to stay warm!

When a sea otter finds shellfish or other foods, it sometimes stashes them in hidden pouches located under its forelegs. But more frequently, it carries a flat stone in its pouch and food in its paws.

A sea otter feeds at the surface, floating on its back. It takes the flat stone it has carried in its pouch and places it on its chest. Then, holding the food between both paws, it pounds the shell on the stone until it cracks open.



While they are eating, and after they have finished a meal, sea otters roll in the water to wash off bits of shell, food scraps, and fish slime. By frequently rolling in the water, the otters keep the food from getting stuck in their fur.



People who harvest shellfish for a living blame sea otters for eating too many clams and abalone. It's true that otters do eat a lot of shellfish. But studies show that there are fewer shellfish all along the California coast—even in places where there are no sea otters! This suggests that it is *people* who are taking too many shellfish—not sea otters.

Kelp is the fastest-growing plant in the world. Kelp also provides homes for many types of sea creatures. Sea otters help kelp to grow by eating its greatest enemy—the sea urchin. Sea urchins devour kelp very quickly. With sea otters around, the sea urchin population is kept low so the kelp forest can flourish.



Kelp harvesting is a huge industry. Kelp tops are turned into a powder called alginate, which is used as a thickener in milkshakes, ice cream, and toothpaste. It is also used in frozen dinners, juices, and salad dressings as well as in vitamins and medicines. Have you had your kelp today?

Sea otters snooze.






Few mothers are as loving and devoted to their young as sea otters. Sea otter pups need good mothers because they are totally helpless at birth. They can barely swim. They can't feed themselves. And they don't know how to clean their fur to stay warm.

For the first month of its life, a sea otter pup rests quietly on its mother's chest as she cuddles, grooms, and feeds it. Until the pup is about six months old, its mother never leaves it except to look for food. Sea otter mothers have only one pup at a time, probably because young pups need so much attention.

Generally, sea otters are social animals. Although they feed by themselves, they often gather together in rafts to rest in their favorite kelp bed. Sea otters are the only otters that group together this way.



Sea otters spend as much time feeding at night as they do during the day—and so they nap for short periods whenever possible. Young or old, most sea otters sleep with their forepaws tucked under their chins or held over their eyes.



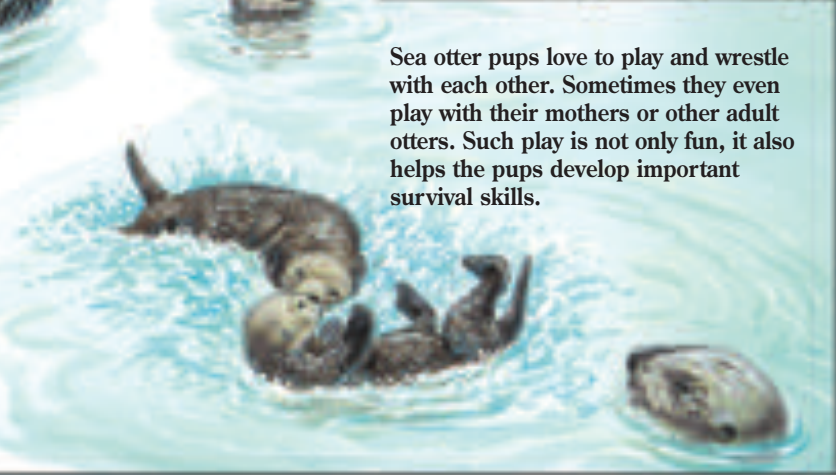
Sharks, killer whales, and bald eagles are the sea otter's only natural enemies. To feed its young, an eagle may swoop down and snatch a young sea otter pup from the water while its mother is off looking for food.

Sea otter pups are born on land and in the water. They weigh four to five pounds at birth. Young pups spend most of their time resting on their mothers' chests to stay warm and safe. Read more about growing up sea otter at www.zoobooks.com/learnmore.

When a sea otter mother must leave her pup alone, she sometimes wraps it in kelp to keep it from drifting away on an ocean current. Even adult otters like to anchor themselves in kelp to sleep.



One of the very first things a sea otter pup needs to learn is how to groom its fur. And a good way for a pup to learn is by watching its mother. Pups must also learn what foods to eat, how to dive, and how to use a stone for cracking open hard-shelled food.



Sea otter pups love to play and wrestle with each other. Sometimes they even play with their mothers or other adult otters. Such play is not only fun, it also helps the pups develop important survival skills.

When escaping from danger, a sea otter mother tucks her pup under her foreleg and dives underwater. If the pup is large, she sinks her teeth into its loose fur and pulls it under. Pups are not strong enough to dive by themselves until they are two to three months old.



Mothers and pups—and other females—usually float in rafts apart from the male otters. The largest raft of sea otters ever seen was in Alaska. It had more than 2,000 members. Most rafts are much smaller, with 50 to 100 otters. In California, the average raft has only about a dozen animals.

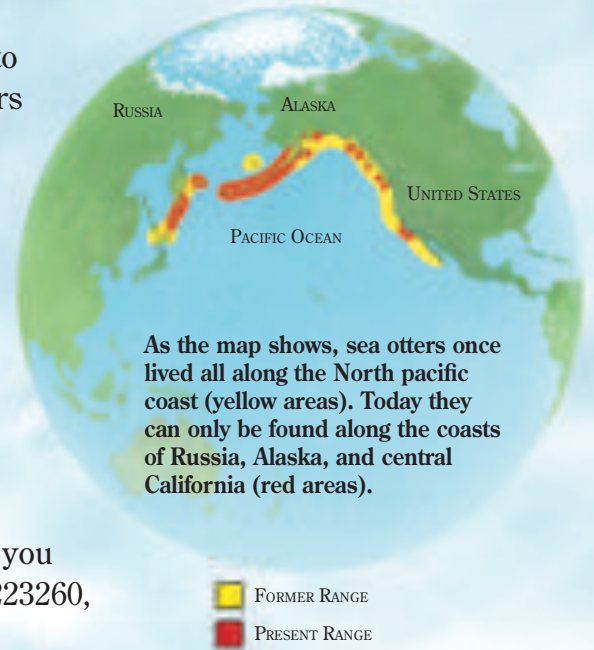
Do you suppose these are kissin' cousins?





Dangers to sea otters began when people started hunting them for their fur in the 1700s and continued to hunt them until 1911. The first people to bring otter furs to the marketplace were the Russians. They made so much money selling them that other nations began hunting otters, too. Close to one million sea otters died during this period. The only reason the hunting stopped was that no more otters could be found. Although it seemed too late, a law was passed in 1911 making it illegal to hunt sea otters. This helped protect the few otters that remained.

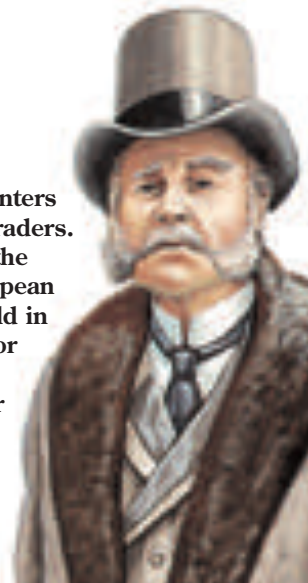
Now there are new dangers to sea otters. Oil spills are major threats. When oil sticks to otters' fur, they can't float or stay warm. Alaskan sea otters have already been injured by oil spills, and California sea otters are also at risk. To find out how you can help sea otters, write to Friends of the Sea Otter, P.O. Box 223260, Carmel, California 93922, or visit www.seaotters.org.



People who hunted sea otters paddled their boats close to them and then killed them with guns or spears. Although native Alaskans had been hunting otters for years, it was not until foreigners began hunting them that their numbers declined.

When sea otters are alarmed or frightened, they hold their paws up in the air and hiss. If anyone comes too close, they dive under the water for safety.

Russians and other hunters took sea otter furs to traders. The traders then sold the furs to Asian and European markets. Furs were sold in London and other major cities to be made into coats, capes, and other winter clothing.





Because sea otters sleep, raft, and feed in kelp beds, often swimming just beneath the surface, they can suffer injuries from careless boaters. Motorized jet skis are particularly dangerous for otters. Even though they have no propellers, jet skis can zip through kelp beds at top speeds—running over otters and sometimes injuring them seriously.



Oil prevents air bubbles from staying in an otter's fur. If rescued quickly, an oiled sea otter can be scrubbed with dish soap to clean its coat. But even if it is rescued, it can still get sick—especially if it swallowed any oil.

Fishermen drop “walls” of netting in the ocean to catch fish. They are called gill nets because fish swim into the mesh and are trapped when their gills get caught in the net. Sometimes sea otters and other marine mammals get tangled in the nets, too. Now, under California law, fishermen cannot put their gill nets in water less than 180 feet below the surface. Sea otters seldom dive that deep, so the law gives them better protection.



To increase their range and chances of survival, Alaskan sea otters have been moved to areas along the Pacific Northwest coast. Some of these relocated otters have established new colonies.



Off the coast of central California, a 100-mile-long sea otter refuge was established to protect otters from harm. But even outside this refuge, sea otters are protected under the Marine Mammal Protection Act. It is important to keep the laws that protect wildlife.



The return of the sea otter is a success story for wildlife conservation. More than 200 years ago, seal and whale hunters, explorers, and traders thought there was an unlimited supply of sea otters. The fur thought to be the most beautiful in the world was worn by Asian royalty and was prized in Europe. Sea otters were slaughtered by the thousands. One Alaskan village exported 15,000 otter skins in a single year.

At the beginning, the curious sea otters made it easy for the fur hunters. They swam up to the boats. When they became more wary, the female otters continued to swim to the boats if their infants had been taken. Young sea otters also approached the boats if their mothers had been killed and taken aboard.

The rapid decline of sea otters prompted their early protection. But when the United States purchased Alaska in 1867, the raid on sea otters began again. By 1900, the take had dropped from almost 50,000 to 127. The sea otter that had ranged from Japanese and Russian waters to Baja California seemed doomed to extinction.

A 1911 treaty between four nations granted the sea otter protection from hunting, and sea otters eventually made a comeback. Now, the California sea otter seems to face new dangers. For the last several years, three or four dead otters have washed ashore weekly. But in even more recent times, strandings have exceeded 300 per year, with a variety of causes. Throughout California, scientists are seeing more sea otter deaths from great white shark bites. Females seem to face additional pressures. After using great amounts of energy raising a pup, they become emaciated and are more likely to get sick. Diseases such as *toxoplasmosis*, caused by cat waste, have led to many female casualties. We can help keep sea otters healthy by making sure our trash, dangerous chemicals and pet waste get properly disposed of and don't end up in the ocean.

Like all animals, sea otters have a role in maintaining balance in the natural world. The kelp that harbors other sea creatures is protected by sea otters, which subsist largely on sea urchins—the destroyers of kelp. Animals native to an environment are beneficial to their habitat. Sea otters help to maintain a natural balance along much of the Pacific coast.

A sea otter enjoys a tasty meal of crab.





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