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Science could foster reintroduction of sea otters

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GENETIC MATERIAL extracted from bones discarded by Native Americans hundreds of years ago may explain why an effort to reintroduce sea otters on the Oregon coast failed.

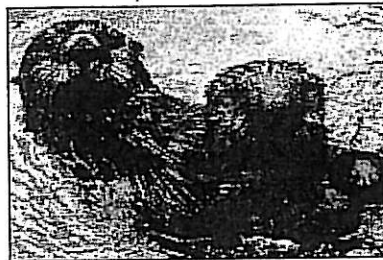
The reintroduction effort occurred more than 30 years ago, when sea otters taken from Alaska's Amchitka Island were released along the coasts of Washington and Oregon. Biologists hoped the otters would create new colonies.

While the otters flourished in Washington, Oregon's new population did not fare so well, vanishing altogether after several years.

Scientists have been unsure why the Oregon otters disappeared.

But now they have reason to suspect the 1970 reintroduction may have used the wrong subspecies of otter, one not suitable for the Oregon habitat.

DNA research conducted at Portland State University on ancient sea otter bones revealed that native Oregon sea otters may be more closely related to southern sea otters than to the Alaskan otters.



Thelma and Ozzie, who live at the Oregon Zoo, are southern sea otters, a subspecies that research suggests is more compatible with the Oregon coast than northern sea otters.

Photo: **MICHAEL DURHAM** /
Oregon Zoo

The research was funded by the Confederated Tribes of Siletz Indians, which belongs to a group that favors the reestablishment of otters on the Oregon Coast. Known as the Elakha Alliance, the group is an informal association of tribes, agencies, individuals and organizations that sees the eventual reestablishment of sea otters as an important step in restoring the ecosystem of the Oregon coast.

Commercial fur hunters apparently wiped out all of Oregon's original otter population. When the otter was protected by federal legislation in 1911, only small populations remained in Alaska and near Monterey on the central California coast.

In an attempt to understand why the otters transplanted to Oregon vanished, Portland State researchers began to study the DNA of ancient Oregon sea otters. Mitochondrial DNA was extracted from samples of teeth and bones collected from middens, or refuge heaps, at Native American sites along the coast. The samples ranged from 200 to 2,000 years old.

The DNA information collected from the ancient sea otters was then compared with DNA information collected from modern otter subspecies.

The side-by-side comparison of the two genetic blueprints revealed a possible reason for the failure of the transplanted northern sea otters - Oregon's native sea otters might have been more closely related to southern sea otters than to Alaskan sea otters.

Though making sure that any future reintroduction effort uses the correct sea otter subspecies is important, it is still not enough to ensure that the sea otters will thrive in Oregon. To increase the chances of their success they also need protected areas in which to live and breed.

The Oregon Ocean Policy Advisory Council recently recommended that the governor establish and test a limited system of marine reserves. These efforts are aimed at restoring the health of the coastal ecosystem, of which the sea otter is a vital part.

"We know that the sea otter is a keystone species," said Tony Vecchio, director of the Oregon Zoo, which is a member of the Elakha Alliance.

"Losing sea otters resulted in a sea urchin bloom, which clear-cut our kelp forests and destroyed the homes of animals and fish that relied on these forests," Vecchio said. "The ocean we see today is not the healthy ecosystem which was once here."

The Oregon Zoo facilitates communication between the alliance and other organizations that care for sea otters. The zoo is supportive of the marine reserves as a first step toward the successful reintroduction of sea otters to Oregon's coast.

The Oregon Zoo is home to three southern sea otters, named Thelma, Eddie and Ozzie.

Ozzie, who's now 2 years old, has the distinction of being the world's first southern sea otter to be conceived, born and raised by its mother at a zoo or aquarium.

Other southern sea otters have been born in zoos or aquariums but none has survived. The Oregon Zoo is working with Monterey Bay Aquarium and other agencies in sea otter conservation programs to help ensure the continuing survival of the sea otter through rehabilitation and research.

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There are only about 2,000 southern sea otters living along the California coast, most of them in the Monterey Bay area.