

Sea Otters and Kelp Forests



compiled by
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Sea otters are keystone predators that maintain the dense, productive forests of kelp in coastal Alaska. Kelp forests are habitat for many invertebrates that are food for over 20 species of fish; these forests also provide spawning habitat for herring and Atka mackerel as well as nursery areas for salmon fry. Many birds, such as sea ducks, use them for resting and feeding. The forests of giant algal fronds protect the coastline from severe wave action and, like our land-based forests, absorb carbon dioxide from the atmosphere, helping to reduce global warming.

Kelp forests provide a variety of recreational opportunities: Tourists appreciate the chance to observe high-diversity marine habitats from glass-bottomed boats and to watch the sea otters; where kelp fronds smooth the water surface, kayakers can take refuge from rough water; SCUBA divers explore the rich habitats.

The major threat to these rich kelp forests is grazing by sea urchins, which can decimate the forest and prevent regrowth of the fronds. **Sea otters are the main predator of sea urchins and keep the urchin population in check.** Sea urchins greedily graze on kelp when otters are not around, but in the presence of the predators, urchins hide in crevices and eat just the plant scraps. Loss of sea otters therefore can have a huge impact on our coastal ecosystems.

By eating sea urchins, sea otters maintain the density of kelp on our coastlines. Researchers from

the University of California-Santa Cruz compiled forty years of data on otters and kelp stands, from Vancouver Island to the western Aleutian Islands, documenting the indirect effect of sea otters on kelp. In addition, research has shown that kelp forests can absorb twelve times more carbon dioxide when otters are eating urchins than when the urchin population destroys the kelp forests.

Like the keystone in an arch, sea otters control the structure and composition of the rest of the system.

When sea otters are removed from the ecosystem the urchin populations grow dramatically and demolish the kelp forests. Loss of the physical structure brings loss of habitat and food for numerous other species that use the kelp.

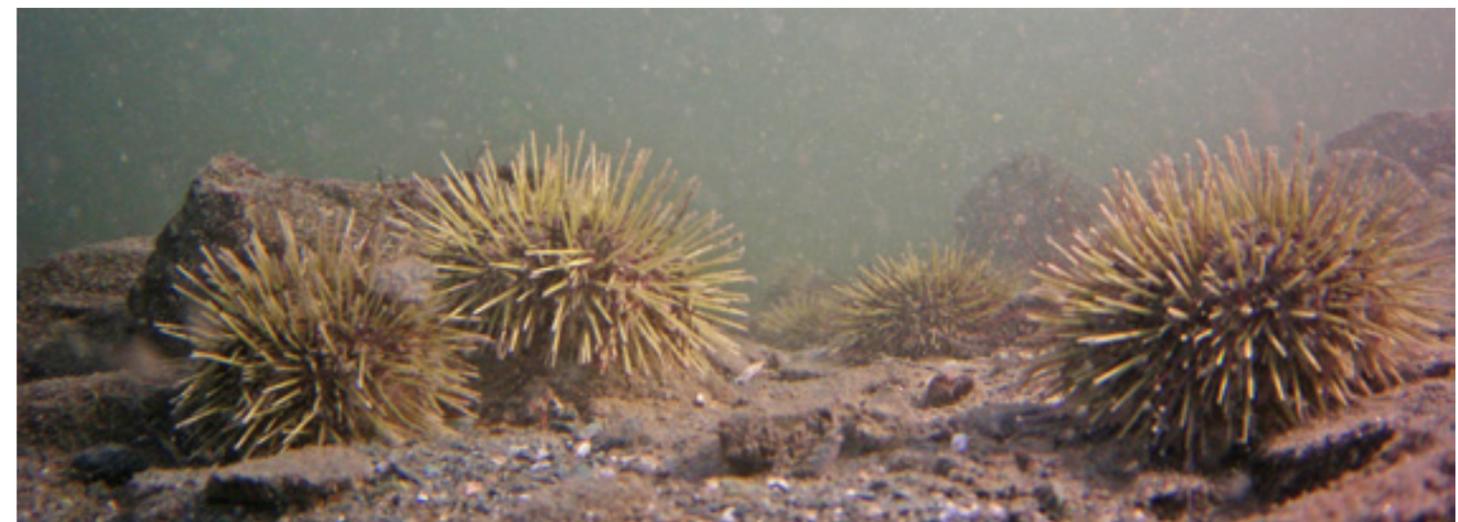
Sea otters rarely haul out on land. They feed, mate, give birth, and rest in salt water. They sometimes raft together in large numbers, often anchoring themselves by wrapping up in kelp fronds, while they float on their backs. In Sitka, hundreds of them can be seen, resting in the kelp forests and sometimes vocalizing to each other. Sea otters were hunted to extinction in southeast Alaska during the 1880s. In the 1960s they were re-introduced and once again these marine mammals can be seen busily restoring ecosystems in places like Sitka (see cover photo).



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Kelp forests are habitat for over 20 species of fish in Alaska, such as this Kelp Greenling.



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For More Information

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