

Case Study: From Hunted to Heroes - The Story of the Sea Otter



Introduction and History of Sea Otters

Sea otters (*Enhydra lutris*) are marine mammals that live along the northern and eastern coasts of the Pacific Ocean. Sea otters have dense fur, with up to one million hairs per square inch, which traps air and insulates their bodies. This fur was prized by traders to sell for clothing and bedding.

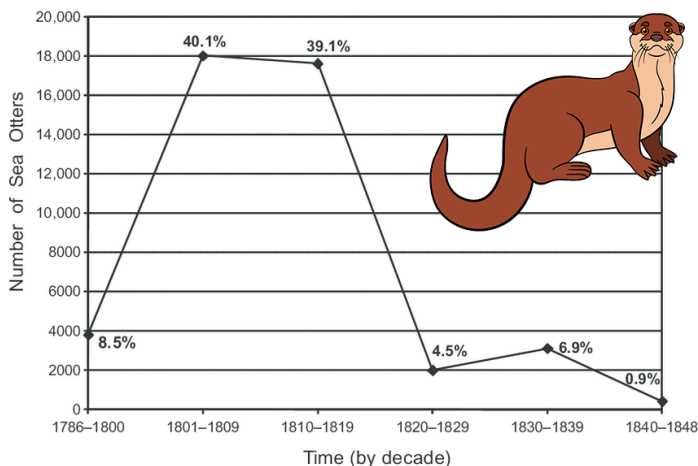
Sea otters are known for their playful behavior. They often float on their backs, use rocks to crack open clams or sea urchins, and rest in groups called “rafts.” Sea otters reproduce slowly, with females usually giving birth only once per year to a single pup.

Sea otters were once abundant, with populations estimated in the hundreds of thousands. However, beginning in the 1700s, they were hunted extensively for their fur. Traders harvested sea otters at unsustainable rates, and by the early 1900s, the species was nearly extinct. Only small groups survived in remote areas of Alaska, California, and Russia.

Sea Otter Population Data Through History

Historical records suggest that sea otter populations once ranged from 150,000 to 300,000 individuals across the Pacific. By the early 1900s, after more than a century of intensive hunting, their numbers had fallen to fewer than 2,000. In 1911, the International Fur Seal Treaty included protections for sea otters, marking the beginning of their recovery.

Over the decades, populations slowly began to rebound, especially after the U.S. passed the Marine Mammal Protection Act in 1972 and the Endangered Species Act in 1973. Today, there are about 125,000 sea otters worldwide, though their distribution is uneven. Some areas have seen strong recovery, while others remain vulnerable to oil spills, disease, and fishing gear entanglement.



- Where do sea otters live?
- Why were sea otters hunted?
- How do sea otters rest?
- Suggest a definition for each word:
 - Abundant
 - Unsustainable
 - Extinct
 - Distribution
 - Vulnerable
- Examine the graph of sea otter populations.
 - What is being measured?
 - During what time frame?
 - How many sea otters were present in 1820?
- What caused the sea otter decline?
- What law was passed in 1973 to protect sea otters?

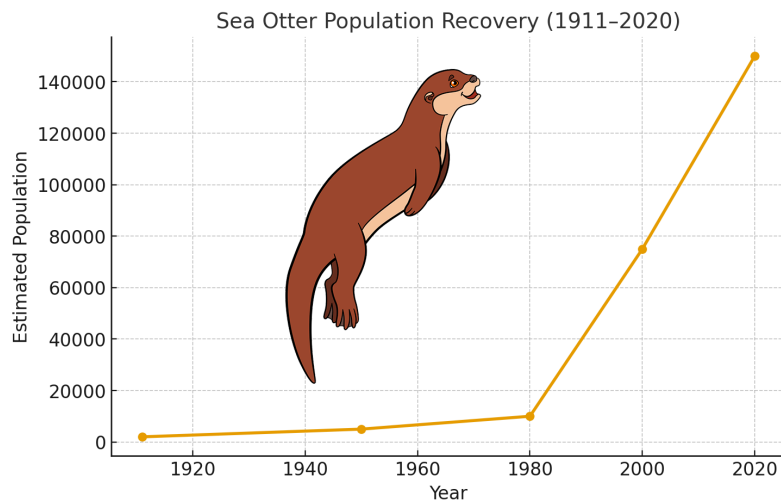
Sea Otters, Kelp Forests, and Sea Urchins

Sea otters play a crucial ecological role as a **keystone species**, meaning their presence has a large impact on the health of their ecosystem. Kelp forests are large underwater habitats that provide food and shelter for a wide variety of organisms, including fish, invertebrates, and marine mammals.

Sea urchins feed on kelp, especially on the holdfasts that anchor kelp to the ocean floor. When sea urchin populations grow unchecked, they can destroy kelp forests, leaving behind “urchin barrens.” Sea otters help control sea urchin numbers by feeding on them, which allows kelp forests to grow and thrive. Healthy kelp forests not only support **biodiversity** but also help absorb carbon dioxide, contributing to climate regulation. Without sea otters, kelp forests collapse, but with sea otters, they flourish.

Laws and Recovery Efforts

Conservationists have also worked on programs to relocate otters to new habitats and rehabilitate stranded pups. Despite these successes, sea otters still face serious threats, including oil spills, entanglement in fishing nets, pollution, and diseases. Continued protection and management are essential to ensure that sea otters remain a vital part of coastal ecosystems.



8. What is a keystone species?

9. What are holdfasts?

10. What feeds on the kelp forest?

11. How do sea otters keep the kelp forest healthy?

12. What is biodiversity?

13. What still threatens sea otter populations?

14. According to the graph, how many sea otters were estimated in
1980? _____ 2000? _____ 2020? _____

Predict how the population will change after 2020.

15. **Synthesis:** Create a food web that includes at least four organisms that live in the kelp forest.