

## Elkhorn Slough National Estuarine Research Reserve

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[\(directions\)](#)

### Otters and Elkhorn Slough




Elkhorn Slough is a jewel on California's coastline and one of the 25 most significant biodiversity hotspots in the world. Its acreage is second in size only to the wetlands in the San Francisco Bay Area. While it offers a variety of rich habitats and vegetation for hundreds of species of birds, fish and other wildlife, it's under constant threat from human activity, pollution and erosion.

This region is home to one of the largest populations of southern sea otters on the California coast. Still, their numbers today are but a fraction of what they were a few hundred years ago when they numbered well over 100,000 along the entire West Coast, from Alaska to Mexico. Hunters nearly wiped them out in the 18th and 19th centuries.

Today, federal law protects the otters from hunters, but they face other dangers nearly as deadly. More sea otters seem to be getting sick and researchers want to find out why.



 **Marker 1** latitude 36.800152 longitude -121.786975

**1b. People and Elkhorn Slough**




Human actions, including building dams, levees and communities in and around Elkhorn Slough have drastically changed the circulation patterns, volume and force of the tides here. One result is severe erosion that degrades habitats. Another is pollution and other factors that affect the sea otter population here.

**1a. Hike, Paddle or Tour**



There are lots of ways to experience Elkhorn Slough. The best way to see the otters up close is to ride one of the tour boats or rent a kayak and paddle up the channel. Slip quietly through the calm water and you'll see up close the slough's most famous inhabitants-- and lots of other wildlife, too. Image source: [Eric Chan](#)



 **Marker 2** latitude 36.808128 longitude -121.786571

2b. Teeming with Wildlife



Elkhorn Slough is an ecological treasure in the middle of the Monterey Bay coastline. It serves as a major regional fish nursery. It provides habitat for many plants and animals, including sea otters. Over 340 species of birds live or visit here.

2a. A Jewel of a Slough



Seven-mile-long Elkhorn Slough ("slew") has over 2,500 acres of tidal salt marsh and tidal flats and is one of California's largest remaining coastal wetlands. Only the San Francisco Bay Area has more. Image source: [kim smith](#)



**Marker 3** latitude 36.809772 longitude -121.786874

**3c. Truly Aquatic Mammals**



Sea otters spend almost all their time in the water, whether resting, sleeping, eating or giving birth. They might put their paws over their eyes to sleep during the day. Sometimes they sleep with all four feet held up in the air or wrap themselves in kelp to stay anchored in one spot.

**3b. Waterproof Fur Coats**



Sea otters don't have blubber. They rely on incredibly thick fur, up to 100,000 hairs per square inch, to keep them warm and dry. (You have about 150,000 hairs on your whole head.) They spend half the day grooming, working in natural oils and air bubbles with their forepaws, to keep their coat water resistant.

**3a. Southern Sea Otters (*Enhydra lutris nereis*)**




Elkhorn Slough is home to one of the largest populations of southern sea otters on the California coast. Today, protected by federal law, their numbers have increased to about 2,800 along 140 miles of central California coastline. But experts say they should number about 13,000. Researchers want to know what's killing the otters. Image source: [Eric Chan](#)

**3d. What's for Dinner?**



Otters will eat just about anything they can grab-- clams, crabs, sea urchins, abalone and lots of other marine animals. They can dive as far as 120 feet and hold their breath for several minutes to find food. An otter must eat about a quarter of its body weight every day. Image source: [Ian L](#)




 **Marker 4** latitude 36.81268 longitude -121.773104

4a. Buoy, Oh LOBO Buoy!



The Land/Ocean Biogeochemical Observatory buoy in the slough is part of a chemical sensor network for marine environments run by the Monterey Bay Aquarium Research Institute (MBARI). Battery-powered sensors measure nitrate, ammonium, phosphate and other nutrients, as well as water properties like salinity, temperature and current velocity. Researchers receive the data in near real time over a wireless network.



 **Marker 5** latitude 36.81309 longitude -121.772052

5a. Birderâ€™s Paradise



Otters aren't the only animals you'll see here. Hundreds of bird species live in or stop by this rich feeding ground every year. You're likely to catch a glimpse of mallards, Canada geese or black-necked stilts. Consider yourself very lucky indeed if you see a belted kingfisher, white-faced ibis or an American white pelican.

5d. Brown Pelican (*Pelecanus occidentalis*)



The skin pouch below this gregarious bird's bill acts as a dip net for catching prey and can hold three gallons of water and fish. An adult eats as much as four pounds of fish a day. Air sacs in their bones and under the skin make them exceptionally buoyant. Image source: [Wikimedia Commons](#)

5b. Great Blue Heron (*Ardea herodias*)




You'll recognize this stately wader by its thick yellow bill, S-shaped neck, blue-gray feathers, white face and black crown. Adults have a wingspan of nearly six feet! These solitary predators are most active at morning and dusk. They can live to be 15 years old. Image source: [Fort Photo](#)

5c. Western Grebe (*Aechmophorus occidentalis*)



You might see a colony of hundreds of these birds diving for crabs or mollusks. During their impressive mating display, a pair seems to run upright across the water, necks arched and wings held back. Image source: [Mike Sipos](#)



 **Marker 6** latitude 36.815722 longitude -121.767239

**6a. What's Killing the Sea Otters?**



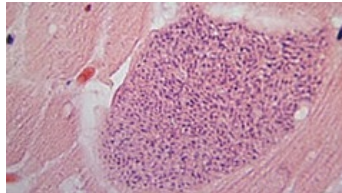
Besides the usual suspects of old age, boat collisions or infectious disease, researchers are finding grave threats to otters from pollution and a brain disease caused by *Toxoplasma gondii*, a parasite found in cat feces. As many as 17 percent of otters die from this disease, and researchers want to know why and how.

**6c. Studying Otter Deaths**



A half-dozen dead sea otters wash up on California's beaches every week. Researchers want to know what killed them. Marine veterinarians perform a necropsy, or complete post-mortem examination, on the fresh carcasses to determine if the otter died of parasites, shark bite, heart disease or any of the dozens of other hazards otters can encounter.

**6b. *Toxoplasma gondii***



When a cat eats a rodent or bird infected with *Toxoplasma gondii*, the parasite develops in the cat's gut. Its eggs are released in the scat. These particularly hardy eggs find their way into the ocean through sewers or runoff. Mussels and other filter feeders ingest them. Otters eat the shellfish and are infected by the parasites.