

## Case Study: Point Sur State Marine Reserve

Marine Protected Area

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Saturday, January 29, 2011

With its 1,770-kilometer (1,100-mile) coastline, it is no surprise California has one of the most extensive networks of marine protected areas (MPAs) in the United States.

The state has three types of MPAs: state marine reserves, state marine parks, and state marine conservation zones. California's Central Coast, the area between Monterey Bay in the north and Point Conception in the south, also has mixed-use state marine recreational management areas. Mixed-use areas incorporate scientific, educational, recreational, and commercial activities.

The Point Sur State Marine Reserve and the Point Sur State Marine Conservation Area are located next to each other near the small Central Coast town of Big Sur. The reserve touches the shoreline, while the conservation area is part of the open ocean just outside the reserve. Together, they cover about 50 square kilometers (19 square miles) of marine habitats.

Key habitats protected by the two MPAs include a large kelp forest, an offshore rocky reef, and the underwater Sur Canyon. These diverse habitats provide niches for numerous species of fish, seabirds, marine mammals, and invertebrates such as crab, shrimp, and mussels.

### CREATION

In 1999, California passed the Marine Life Protection Act (MLPA), which required the state to evaluate existing MPAs and possibly design new ones. The goal of the act was to create a more unified approach to protecting California's marine ecosystems, as well as improve recreational and educational use of the area.

The act created five separate study regions: the Central Coast, North Central Coast, South Coast, North Coast, and San Francisco Bay. Regulations for each region go into effect over time. The California Fish and Game Commission phased in regulations for Central Coast Marine Protected Areas in 2007. In that region, 29 MPAs protect 528 square kilometers (204 square miles) of state waters. The protections are designed to help non-migratory species like rockfish, sea otters, and abalone.

### GOALS

Marine reserves and conservation areas differ slightly in their goals and the level of protection they provide to

marine life. The Point Sur MPAs are good examples of a marine reserve and marine conservation area.

*Marine reserves* usually offer the most protection to the environment. There are more restrictions related to commercial and recreational fishing. Non-commercial use of the reserve is allowed, including scientific collection, research, and monitoring. Recreational activities like diving, surfing, swimming, and boating are also permitted.

No commercial or recreational take of living marine resources is allowed in the Point Sur State Marine Reserve. This mostly limits fishing, but it also prohibits the harvesting of crabs, abalone, or mussels.

In a *marine conservation area*, some commercial and recreational harvesting is allowed. People can also do scientific research as well as kayak, dive, snorkel, and swim.

In the Point Sur State Marine Conservation Area, commercial and recreational take of salmon and albacore tuna is allowed. This helps the local fishing and tourism industries, which employ thousands of people.

### *Environmental goals*

Both marine reserves and marine conservation areas focus on maintaining the habitat of threatened or endangered species. One of the endangered species found in the Point Sur MPAs is the California sea otter, which is listed as threatened under the Endangered Species Act. A survey by The Otter Project in spring 2009 found 2,654 otters up and down the coast, a decrease of about 4 percent from the year before.

Sea otters, marine mammals once hunted for their thick, soft fur, depend on kelp forests for survival. Kelp is a large type of seaweed that grows dozens of feet tall, rising from the ocean floor to form thick beds of ropy leaves on the surface. Hundreds of sea creatures live in the kelp forest.

Sea otters forage for food such as sea urchins, crabs, and abalone on the floor of the kelp forest. On the surface, they entangle themselves in its long ropes, which anchor them to the area so they don't drift away with a current or tide.

By protecting the kelp forest, the Point Sur MPAs are helping maintain an entire ecosystem: the kelp itself; the organisms that feed on it, such as sea urchins; and the predators that feed on them, such as the sea otter.

## **HABITATS AND USES**

The habitats at the Point Sur MPAs are important for scientific, commercial, and recreational stakeholders. Stakeholders are individuals or communities with an interest in the area.

### *Scientific Use*

Scientists often monitor the fish populations in the Point Sur MPAs. Different fish live in different habitats in the reserve, and require different techniques for study.

To help monitor the number of perch or rockfish, marine biologists may dive into the rocky reef. In the kelp forest, scientists may dive or use sonar to track large populations of sardines or garibaldi. Sometimes, they may actually catch fish and record information about them—their weight, length, color, and sex. This is called “hook-and-line sampling.”

In the deep Sur Canyon area, biologists may need to use remote-operated vehicles (ROVs) to study the strange organisms living in the dark, cold depths. Krill, a shrimp-like animal that is one of the most important parts of the ocean food web, is common in Sur Canyon. Migrating gray whales, as well as non-migratory animals such as bat

rays, eat tons of krill in the Point Sur area every year.

### *Commercial Use*

Commercial activity takes different forms at the Point Sur State Marine Conservation Area. (No commercial activity is allowed at the Point Sur State Marine Reserve.) The salmon and albacore fisheries are two of the largest fisheries in California. Fishermen, buyers, and food companies employing thousands of Californians depend on the industry.

Albacore, sold as “white meat tuna,” is caught using different techniques. One popular method is trolling. Trolling is a hook-and-line method where long fishing lines are towed behind or alongside a boat. According to the Monterey Bay Aquarium, trolling is a sustainable fishing method. Fish are reeled in soon after they are caught, and if one of the hooks catches bycatch (an animal that is not an albacore tuna), fishermen can immediately return it to the ocean.

A less-sustainable fishing method is purse seining, which relies on a large net to catch entire schools of fish. The bycatch of purse seining may include dolphins and sea turtles.

### *Recreational Use*

Recreation and tourism are important parts of the economy of California’s Central Coast. Millions of people from all over the world travel to the Point Sur area every year to enjoy the pristine coastal wilderness, redwood forests, mountains, creeks, and waterfalls.

Snorkeling, kayaking, and scuba diving are major recreational pursuits in both MPAs. Point Sur usually doesn’t have big waves, but some surfers still find opportunities. During the annual migration of the gray whale, the area is popular for whale-watching, from both the shore and in commercial boats.

## VOCABULARY

| Term                            | Part of Speech   | Definition  |
|---------------------------------|------------------|---|
| <b>bycatch</b>                  | <i>noun</i>      | fish or any other organisms accidentally caught in fishing gear.  |
| <b>California Current</b>       | <i>noun</i>      | cold ocean current that flows south in the Pacific Ocean from British Columbia, Canada, to Baja California, Mexico.                                   |
| <b>canyon</b>                   | <i>noun</i>      | deep, narrow valley with steep sides.   |
| <b>coastline</b>                | <i>noun</i>      | outer boundary of a shore.  |
| <b>commercial</b>               | <i>adjective</i> | having to do with the buying and selling of goods and services.   |
| <b>ecosystem</b>                | <i>noun</i>      | community and interactions of living and nonliving things in an area.   |
| <b>endangered species</b>       | <i>noun</i>      | organism threatened with extinction.  |
| <b>Fish and Game Commission</b> | <i>noun</i>      | group that maintains an area's native fish, wildlife, plant species, and natural communities for their ecological value and their benefits to people. |
| <b>fishery</b>                  | <i>noun</i>      | industry or occupation of harvesting fish, either in the wild or through aquaculture.   |
| <b>food web</b>                 | <i>noun</i>      | all related food chains in an ecosystem. Also called a food cycle.  |
| <b>forage</b>                   | <i>verb</i>      | to search for food or other needs.  |

|  |                        |   |
|--|------------------------|---|
| <b>habitat</b>                           | <i>noun</i>            | environment where an organism lives throughout the year or for shorter periods of time.   |
| <b>hook-and-line sampling</b>            | <i>noun</i>            | scientific monitoring method where scientists catch fish and record information about them their weight, length, color, and sex.        |
| <b>kelp forest</b>                       | <i>noun</i>            | underwater habitat filled with tall seaweeds known as kelp.   |
| <b>marine conservation zone</b>          | <i>noun</i>            | area of the ocean set aside for protection of aquatic ecosystems.   |
| <b>Marine Life Protection Act (MLPA)</b> | <i>noun</i>            | (1999) California law passed to create a network of marine protected areas (MPAs) along the California coast.                           |
| <b>marine park</b>                       | <i>noun</i>            | part of the ocean protected by the government to preserve a threatened ecosystem or habitat. Marine parks are often recreational areas. |
| <b>marine protected area (MPA)</b>       | <i>noun</i>            | area of the ocean where a government has placed limits on human activity.   |
| <b>marine reserve</b>                    | <i>noun</i>            | part of the ocean where no fishing, hunting, drilling, or other development is allowed.   |
| <b>migrate</b>                           | <i>verb</i>            | to move from one place or activity to another.  |
| <b>niche</b>                             | <i>noun</i>            | role and space of a species within an ecosystem.  |
| <b>non-migratory</b>                     | <i>adjective</i>       | organism that lives in one habitat and does not travel or migrate.  |
| <b>predator</b>                          | <i>noun</i>            | animal that hunts other animals for food.   |
| <b>prohibit</b>                          | <i>verb</i>            | to disallow or prevent.   |
| <b>purse seining</b>                     | <i>noun</i>            | fishing technique that relies on a large net to catch entire schools of fish.   |
| <b>recreational</b>                      | <i>adjective</i>       | having to do with activities done for enjoyment.  |
| <b>reef</b>                              | <i>noun</i>            | a ridge of rocks, coral, or sand rising from the ocean floor all the way to or near the ocean's surface.                                |
| <b>regulation</b>                        | <i>noun</i>            | rule or law.  |
| <b>resource</b>                          | <i>noun</i>            | available supply of materials, goods, or services. Resources can be natural or human.   |
| <b>ROV</b>                               | <i>noun</i>            | remotely operated vehicle.  |
| <b>scuba</b>                             | <i>noun, adjective</i> | (self-contained underwater breathing apparatus) portable device for breathing underwater.   |
| <b>sonar</b>                             | <i>noun</i>            | method of determining the presence and location of an object using sound waves (echolocation).  |
| <b>stakeholder</b>                       | <i>noun</i>            | person or organization that has an interest or investment in a place, situation or company.   |
| <b>sustainable</b>                       | <i>adjective</i>       | able to be continued at the same rate for a long period of time.  |
| <b>trolling</b>                          | <i>noun</i>            | fishing technique where long fishing lines are towed behind or alongside a boat.  |
| <b>wetsuit</b>                           | <i>noun</i>            | tight-fitting outfit worn by divers and swimmers to retain body heat in cold water.   |

**wilderness**

*noun*

environment that has remained essentially undisturbed by human activity.

#### FOR FURTHER EXPLORATION

##### Articles & Profiles

- National Geographic Traveler: Big Sur

##### Websites

- California Department of Fish and Wildlife: Marine Protected Areas
- California State Parks: Point Sur State Historic Park



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