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California's New Marine Protected Areas: A Scientific Approach to Saving What Matters

An amazing array of life thrives beneath the surface thanks to protections at Point Lobos State Marine Reserve.



JIM PATTERSON

On the deck of a research vessel just off Central California's Point Lobos, marine biologist Richard Starr of Moss Marine Landing Labs crawls into a yellow, two-person submersible that brings to mind *The Beatles*. But the only music here is the lapping of waves against the ship's hull and the slight creaking of the crane that lowers the research sub into the water. It's like the moments in a hushed and darkened theater before the curtain rises on a dazzling Broadway show.

BY CATHERINE CLARKE FOX

The sub descends slowly, lights off to conserve batteries. "It might take 20 minutes or so. Often you get to this point, just before you lose the light, when you look out into brilliant blue and see jellies and little bioluminescent creatures sparkling because they are startled by the sub." Then comes pitch black. The altimeter tells the pilot the bottom is near, and Starr shifts closer to the observation port: "The sub settles on the bottom, the pilot turns on lights mounted outside the sub, and suddenly there it is, this wonderful underwater scene in front of you." Flashes of brilliant color catch the eye. Rockfish alone create a rainbow: blue, copper, olive, rose and vermillion, to name a few. Not to mention thousands of beautifully hued sponges, anemones, sea stars, and corals.

And here off the Central California coast, says Starr, the terrain is as

stunning as the adjacent land: "If you've seen Big Sur's craggy bluffs, that's what's underwater. Sometimes you're traveling through canyons with sand below and rocks going up 30–40 feet high on either side as you follow a twisted path. There are flat plains with sand or boulder gardens. The most spectacular places look like Yosemite, with craggy rock outcrops, and that also happens to be where you see a lot of fish."

Yosemites of the Sea

Starr's reference to one of our nation's most awe-inspiring national parks is apt. Ocean Conservancy has long supported the designation of Marine Protected Areas, often called "Yosemites of the sea"—underwater places protected much as parks protect special places on land. Point Lobos provides a window on the growing significance of these parks in ocean conservation.

Landscape painter Francis McComus called Point Lobos, a place

that defies hyperbole, "the greatest meeting of land and water in the world." Barking sea lions that perch on its craggy rocks inspired its name, which means "Point of the Sea Wolves." The dramatic, cypress-dotted shoreline has

been protected since the 1930s and is one of California's most beloved and most visited places. In 1960, protection was extended offshore; 750 underwater acres were included in one of the first marine reserves in the United States. Three decades later, Ocean Conservancy led efforts to expand the tiny existing protected area 14-fold, a goal achieved in 2007. "Point Lobos is a crown jewel in California's new system of underwater parks—a Serengeti of ocean life, where otters, harbor seals, seabirds, fish and invertebrates of all kinds stand to benefit from the new protections," says Kaitilin Gaffney, Pacific Program director for Ocean Conservancy.

Major Law Protects Marine Life

Gaffney leads Ocean Conservancy's efforts to fulfill the promise of a law that is the first of its kind in the country: California's Marine Life Protection Act. Throughout the 1990s, international scientific consensus about the value and necessity of setting aside key habitats in the ocean as Marine Protected Areas grew. In response, the state passed the landmark act in 1999. The law requires creation of a statewide network of underwater parks where human impacts like fishing are fully or partially prohibited, to give marine life and habitat a chance to recover and thrive. It requires that California's new Marine Protected Areas be designed as a network and based on science.

The idea of a network is that a series of Marine Protected Areas work together so that the sum is greater than the parts. For example, fish eggs may drift from protected areas and help replenish fish populations elsewhere. Including a portion of all key habitats in Marine Protected Areas dispersed along the coast can also help

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See for yourself: Marine Protected Areas allow all kinds of ocean life to feed, breed and succeed without human impacts.

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Marine biologist Richard Starr works with recreational fisherman to catch, tag and release fish through the California Collaborative Fisheries Research Program.



DEBI PAROLA

RICHARD STARR AND HIS
COLLEAGUES HAVE OBSERVED
MORE THAN

60,000

FISH FROM A HUNDRED SPECIES
AND COUNTED THOUSANDS OF
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TO SEA STARS.

anglers pull in fish as fast as they can, thrilled to be fishing the otherwise off-limits Point Lobos State Marine Reserve. As they land the fish, a team of scientists quickly tags each one, records the species, size, tag number and condition, and releases it back overboard. The goal of the research is to create a baseline survey to track the success of protections, and who better to staff such an effort than fishermen themselves?

Jim Webb of Cambria has been fishing for some 50 years. He describes his experience with the program at Point Lobos: "It was breathtaking to see the water column literally stacked with fish. The density was so great, it was difficult to get your tackle anywhere near the bottom. Every hook in the water caught a fish. We had to stop fishing to let the scientists catch up with the tagging." Webb says it is an inspiration to see this productivity in an area that has been protected for a number of years. "It's what you hope will happen all over."

Nourishing the Web of Life

Around the globe, Marine Protected Areas consistently produce more, bigger and more diverse fish and invertebrates than areas outside of protection (see graphic below). While many may stay within the Marine Protected Areas,

others will naturally spill over into surrounding waters, a good thing for fishermen—and for the well-being of wildlife higher up in the food web, from brown pelicans to otters, sea lions and great white sharks.

Long-time Ocean Conservancy member, author and award-winning underwater photographer Marc Shargel has been diving for more than thirty years, and has seen the changes for himself: "The diving experience today is impoverished, depleted of marine life compared to what I knew three decades ago. To someone with a bit of an eye and a memory, these differences are very evident. Looking at records that stretch back further in time, the depletion is even more dramatic." Shargel joined Ocean Conservancy and others calling for protections; he's starting to see the resulting changes now when he dives. "I am hugely encouraged by this network of protected areas. If we are patient, Nature will restore herself. I'm very excited that my son, now in second grade, may do graduate work in marine science and be counting many more animals than we are counting today."

TO DIVE BENEATH THE SURFACE AT POINT LOBOS FOR A VIRTUAL TOUR, view maps and learn more on how Ocean Conservancy supports Marine Protected Areas, please visit www.oceanconservancy.org/mpa.

provide insurance against the effects of climate change. Richard Starr notes: "Take red abalone. They prefer cold water to reproduce. If water temperatures change and prevent abalone from spawning in the south, and they have been overharvested in other places, we risk losing them completely. But a statewide network of protected areas helps ensure that abalone in the colder northern portion of the state will reproduce into the future."

Science-based Protections

Off Point Lobos, two research projects—one from the submersible below the surface and one from a fishing boat above—are documenting the same benefits noted in Marine Protected Areas around the world.

Starr and his colleagues have observed more than 60,000 fish from a hundred species and counted

thousands of invertebrates, from corals to sea stars. As the tiny sub travels scientifically prescribed routes, Starr has his head pressed against the window, counting and describing everything he sees: "What species is that? What's its length, and its relationship to the sea floor? What kind of seafloor do we have here?"

This research provided an excellent baseline, he says, in addition to telling comparisons. "One of the things we did was compare data from inside the old reserve with data from the expanded area established in 2007. We were able to show that the fish are larger and more abundant in the old reserve where they have had time to recover."

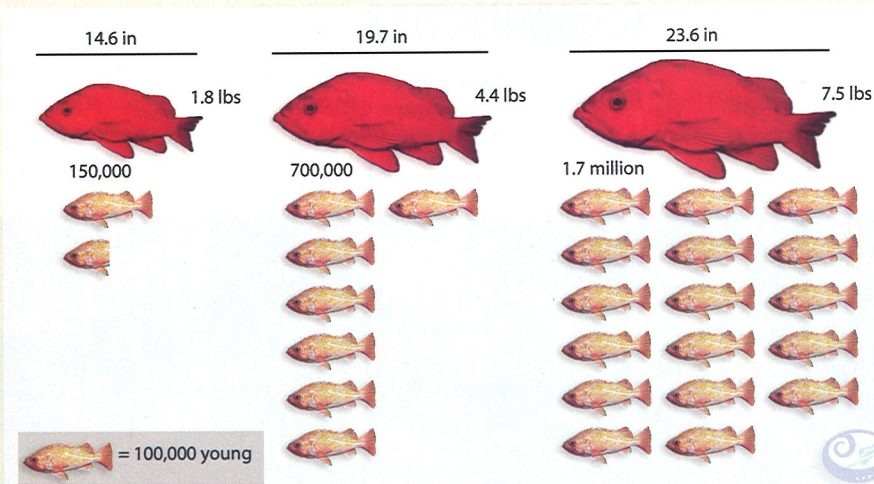
Fishing for Data

Working with the California Collaborative Fisheries Research Program, a dozen or so recreational



Point Lobos State Marine Reserve protects many jewels of the sea like this colorful snail.

WHEN IT COMES TO FEMALE FISH, BIGGER IS DEFINITELY BETTER



Average numbers of young produced by three different sizes of vermilion rockfish. Data: Love et al. (1990) NOAA Technical Report

Older, larger females produce more young. Scientifically designed Marine Protected Areas can provide refuge, allowing fish to grow and reproduce.

COURTESY OF PARTNERSHIP FOR INTERDISCIPLINARY STUDIES OF COASTAL OCEANS (PISCO)