

Cabo Pulmo—Giving Optimism to Coral Reefs

Original source: <http://ocean.si.edu/ocean-news/cabo-pulmo-giving-optimism-coral-reefs>



Fish swim in Cabo Pulmo Marine Reserve off the Baja California peninsula. Credit: Octavio Aburto

On the east coast of Mexico’s Baja California Peninsula lies a small marine protected area that represents one of the most impressive successes in ocean conservation. Cabo Pulmo is a very old coral reef next to a very small town. Estimated to be 20,000 years old, the reefs of Cabo Pulmo have long been considered a treasure of the Baja California peninsula. John Steinbeck wrote about the reefs, their teeming life, and their electric colors in his 1951 book *The Log from the Sea of Cortez*.

In the early 1990’s, after decades of overfishing, the [reefs in Cabo Pulmo](#) were no longer the colorful fish-filled playgrounds they once were, and the 120 people who lived there took notice. Particularly, the Castro family. Having lived in Cabo Pulmo for 100 years, the Castro family had unique ties to the nearby ocean which gave them food and jobs. Three generations of Castros— Mario, Paco, Luis, David, Braian, Yair, and Joshua— understood that they would have to give up their fishing to save their reef. They approached their community with the plan and, with support from other fishers, they lobbied their government and successfully secured protected status for the reef.

In 1995, Mexico's state of Baja California Sur officially established the Cabo Pulmo National Park, a marine protected area covering 27.5 square miles of Cabo Pulmo reef. Of the vast ocean, only 2 percent is protected and only 0.1 percent is free from extractive activities like fishing and mining. In the Gulf of California, only 5 percent of protected areas are designated as “no-take” or no fishing areas. At its founding, the Cabo Pulmo

National Park had an impressive 35 percent reserved as no-fishing areas. After determined action by local families, the no-fishing area of the park was expanded to 100 percent.

It did not happen overnight, but the reefs of Cabo Pulmo were transformed. In 2009, after 14 years of protection, every group of fish had returned to Cabo Pulmo, from small herbivores to mid-sized carnivores to top predators. Predatory sharks, massive rays, humpback whales, sea turtles and ospreys are among the many species that now rely on Cabo Pulmo for reproduction, feeding and habitat. The reef has even become a refuge for at least one endangered species: the large and valuable gulf grouper.

By every count, the number of fish has increased. But counting fish has its limitations; a 5-ounce goby does not have the same impact on an ecosystem as a 100-pound shark. For that reason, scientists have a method for comparing the amount of life in an ecosystem: they add up the mass of all the living animals and call this the “biomass.” In the 14 years of protection, the biomass in Cabo Pulmo increased by 463 percent and was five times larger than the biomass in nearby open-fishing areas. In 1995, the top predators like sharks and large grouper had all but disappeared. By 2009, the biomass of top predators had increased tenfold. By all measures, the protected area was a success. In fact, Cabo Pulmo has the largest increase in biomass observed by scientists in any protected area.



The park is so successful and so important to the recovery of local fish populations that in 2005 it was named a UNESCO World Heritage Site, and in 2008 it became a Ramsar International Wetlands site.

While other national parks and marine protected areas are larger, Cabo Pulmo has been so successful because of the commitment of the community to enforce and protect the reserve. They are now being rewarded with the fruits of their labor. Fishing just outside the park is better than before and the tourism industry has taken off. In 2006, tourism in the small town brought in \$538,000, generating jobs for the community with income rates well above the average in Mexico. In return, residents continue to enforce the park regulations, clean the beaches, and protect important animals like nesting sea turtles. Their challenge is ongoing, as tourism in the region grows and puts new pressures on the reefs and the fish populations. Plans were in the works for a resort only miles north of the reef that, if improperly managed, could seriously impact the progress made.

Why has Cabo Pulmo been so successful in restoring fish populations? It is clear that community involvement, protected area size, fishing eradication and other factors were key in this impressive success. But it is still unclear to scientists exactly how slow-

growing top predators, like sharks, could have recovered in this short period of time. The [open nature of the ocean likely plays an important role](#). Slow growing animals probably did not grow up in Cabo Pulmo, but Cabo Pulmo provided a refuge for migrating animals from other regions looking for booming fish-stocks on healthy coral habitats. In turn, the fish that mature in Cabo Pulmo have spilled over into other reefs and regions.

You may have heard of the “oceans” of the world. Yet, in reality, there is only one ocean that is all connected. This is cause for optimism. As seen in Cabo Pulmo, positive impacts in one regions can spill over into others and, if properly managed, depleted fish populations can rebound with help from populations elsewhere. While a reef recovery in Mexico is unlikely to restore a fish population in Australia, it is uplifting to know that success can have a ripple effect, spreading the positive impacts well beyond the borders of its own efforts.