

an underwater Serengeti

Photos by George Duffield and Nonie Silver
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JACQUES COUSTEAU DESCRIBED COCOS ISLAND as the most beautiful island in the world, and the few people who have a chance to visit would likely agree with the praise. Located about halfway between Costa Rica (to which it belongs) and Ecuador's Galapagos Islands, Cocos Island is a place of superlatives. It is the only island in the eastern Pacific Ocean that has a tropical rainforest and, with peaks as high as 2,000 feet, the only one with cloud forests as well. Six-hundred-foot-high cliffs punctuated by tree-lined bays form the shoreline. The rugged landscape makes for stunning scenery: Waterfalls tumble down the mountains, turn into streams and rivers, and then cascade straight into the ocean.

Equally impressive is the oceanic wilderness surrounding the island. The geology underwater is just as dramatic as that above: A shallow fringing reef encircles the island's bays

and then the seafloor drops sharply to a topography of submerged massifs and valleys where deep and shallow currents mix together. The unique confluence of ocean countercurrents, wind currents, and underwater mountains combines to create an ecosystem that supports one of the most amazing displays of marine life on the planet.

The waters around Cocos Island are most famous for the schools of sharks that live there. Hundreds of scalloped hammerhead sharks spend their days being "cleaned" by the butterfly and angelfish that pick parasites from around their gills. Also regularly seen are whitetip reef sharks resting on the sand or hunting in packs in the shallow coral reefs at night. Many other sharks live in the Cocos waters in significant numbers, including the Galapagos, silky, and blacktip, along with the gentle, filter-feeding whale shark. Tiger sharks, some more than 12 feet long, started showing up recently and are

Scientists and Recreational Scuba Divers Are Working to Protect the Spectacular Marine Life in the Waters Around Costa Rica's Cocos Island





often spotted chasing green sea turtles. There are rays, too — marbled, spotted eagle, and majestic, giant mantas that glide by like silent stealth bombers.

The waters also abound with many species of marine mammals. Pods of bottlenose dolphins hunt with vast schools of yellowfin tuna, and humpback whales pass by Cocos on their annual migrations. Orcas — those massive predators that embody an impressive combination of size, strength, and agility — were first spotted in the park in the fall of 2011.

An abundant food web supports the unmatched number of large predators. Cocos Island waters are home to at least 300 fish species, including 20 that occur nowhere else on Earth. There are Pacific creolefish, Mexican goatfish, and blue and gold snappers, plus innumerable two- to three-foot-long bigeye trevally — their schools stretching 40 feet high in the water column and as far as the eye can see.

There are few other places in our world's oceans that equal the sheer variety and number of marine species found

near Cocos Island. It is like an underwater Serengeti.

Cocos' abundant marine wildlife has made the region a magnet for scientists and scuba enthusiasts, who often rank the waters as one of the top ten diving spots on the planet. Now marine biologists and divers are teaming up to understand the unique characteristics of the region — and to protect its underwater inhabitants.

Despite its remote location and designation as a Costa Rican National Park and a UNESCO World Heritage site, the waters of Cocos Island face the same threats as marine ecosystems everywhere: overfishing; plastic pollution that washes in from far away places; ocean acidification that is harming reef communities; and climate change that could unravel the unique mix of currents that make the place such a rich and diverse ecosystem.

Costa Rican law prohibits fishing within 12 nautical miles of the island. But industrial fishing boats lurk around the edges of the no-fishing zone and manage to do significant damage.



Massive longline fishing gear — with its thousands of miles of monofilament line, hooks, and buoys — is often found entangled on the island's rocks. Factory tuna boats using giant purse seine nets send speedboats and helicopters into the park to drive schools of tuna outside the sanctuary and into their holds. Sharks, too, are routinely hunted by fishermen seeking to tap into the lucrative shark fin trade. Sometimes lights from illegal fishers can be spotted inside the protected zone at night. These fishing techniques — whether legal or illegal — cause the collateral damage known as bycatch. Fishermen intentionally or unintentionally kill thousands of sea turtles, sharks, rays, and bony fish each year.

In response, Costa Rican environmentalists and international partners have pressured the government to tighten protection of the area. Last year Costa Rican President Laura Chinchilla Miranda announced the creation of an expanded bioserve — the Seamounts Marine Management Area — that will expand the purse seine no-fishing zone around the island by more than 1,000 nautical square miles. The government, under intense pressure from environmental activists, has finally taken steps to crack down on shark-finning operations that illegally land their catch at Costa Rican docks.

Enforcing regulations in such a huge area is not easy. Nor is conducting research at a remote location like Cocos, which requires large (and expensive) vessels. Local conservationists

are eager to track the movements of sea turtles, sharks, and rays as a way of charting migratory pathways. They hope to someday establish protected swimways to and from this ocean oasis.

To help monitor what's happening in the reserve, environmental organizations have enlisted the scuba-diving community as citizen-scientist assistants. Divers are expected to pay for their berth and food on expeditions to the islands. In exchange, they get the chance to participate in the research by catching turtles, tagging sharks, taking photographs, and recording data. It's environmental recreation at its best. The divers get to enjoy the underwater wonders of Cocos Island even as they help ensure that the place will remain worthy of Cousteau-like praise for generations to come. ■

Todd Steiner is Executive Director of Turtle Island Restoration Network, whose Costa Rican sister organization PRETOMA (www.pretoma.org) played a vital role in establishing the Seamounts Marine Management Area. **George Duffield** is an award-winning photographer and producer of the documentary film *The End of the Line*. **Nonie Silver** — CEO of a Washington, DC consulting firm — is an avid ocean conservationist and a veteran of six Cocos Island shark-tagging expeditions. To become a volunteer research assistant on an upcoming Cocos expedition, visit: www.seaturtles.org.