

Documenting the History of Change in the Waters of the Revillagigedo Archipelago

Field Report by **ADAM BASKE**

GRADUATE STUDENT, CENTER FOR MARINE BIODIVERSITY AND CONSERVATION, SCRIPPS INSTITUTION OF OCEANOGRAPHY

Ocean lovers associate the Revillagigedo Islands with marine megafauna, and rightfully so. These seamounts attract whales, several types of sharks, dolphins, giant mantas, tunas, and billfish by acting as an oasis in the marine desert known as the Eastern Tropical Pacific. The diving community refers to this island group as the “Mexican Galápagos” and considers them a premier location for big animal encounters. While they remain a world-class dive destination, some of their most charismatic inhabitants, the pelagic sharks, face serious threats. Pelagic shark populations have plummeted world-wide, and the sharks within the Revillagigedo Biosphere Reserve are no exception.

As a graduate student at the Center for Marine Biodiversity and Conservation, I took on the task of quantifying what scientists call the “shifted baseline” of sharks and mantas in the waters of the Revillagigedos. The term, originally used by the fisheries scientist Daniel Pauly in 1995, refers to how our perceptions of “healthy” marine ecosystems are based only on what we have experienced in our lifetimes. Our general disregard for the historical context of species abundances and diversity leads people to believe that poorly-studied ocean ecosystems are thriving, when in truth, many face serious threats to their already compromised existence. Without an understanding what marine ecosystems looked like before human influences, we have no chance of comprehending the scope of change that has been driven by our actions, nor the scope of the actions required to return oceans to a “healthy” state.

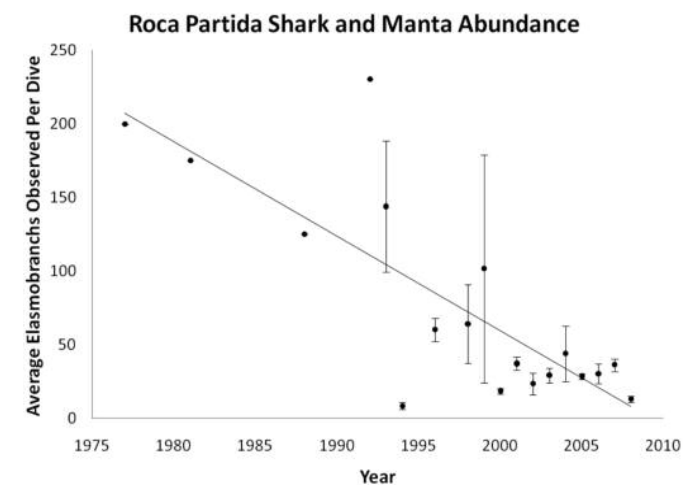
HISTORICAL RECORDS:

To provide a better historical perspective of the Revillagigedo marine environment, I initially resorted to old ship records. I found two accounts, both of which suggested that the number of sharks in the waters made it impossible to catch other fish. On Sept. 24, 1793, Captain James Colnett wrote, “At Rocka Partida was a prodigious quantity of fish, but we caught only few, as the sharks destroyed our hooks and lines, and no one on board, but myself, had ever before seen them so ravenous.”

In 1889, the U.S. ship, The Albatross, surveyed the islands, and a log from the trip retold a similar story. “We had only been fishing a short time when many sharks appeared about us and did much damage to our gear... sharks were exceedingly abundant and troublesome and the utmost care had to be exercised to prevent their carrying away our gear.”

The commercial and recreational fishermen I spoke with shared similar stories to those found in old ship logs even though their stories only dated back 45 years. For fishermen, the abundant sharks for which the Revillagigedos were famous habitually ruined expensive gear. Trophy tuna and wahoo hooked to the end of a fishing line provided easy targets for the silky and Galápagos sharks. Naturally, the fishermen I interviewed despised the sharks, and did everything in their power to avoid them.

The SCUBA diving community started coming to the islands in the late 1970s, and were first group to ever observe the marine life of the Revillagigedos in its natural state – with no bait in the water. Marty Snyderman, a professional underwater photographer, provided me with the earliest account of diving at the Revillagigedos, dating back to 1979. “One of the only dives I ever aborted was my first dive on Roca Partida. A silky shark attacked a triggerfish, and the place went off. Silky, Galapagos, silvertip, white tip, and scalloped hammerheads frenzied. I’m talking of seeing over 500 sharks within minutes. I was just saying to myself ‘Dear Jesus, don’t get clobbered.’”



CATEGORY	SIGNIFICANT DECLINE SINCE 1994?	POSSIBLE EXPLANATION
Pelagic Sharks	Yes	Global shark overfishing driven by shark fin demand. Poor protection of the reserve.
White Tip Reef Sharks	No	Low value of fins. Life history keeps them close to seamount.
Manta Rays	No	\$10,000 fine for killing a manta. Low value of meat.

Photos by Marty Snyderman

“We saw an enormous school of hammerheads with what were either dusky, large silky, or Galapagos sharks mixed in by the dozen. The swarm of sharks was so large that it looked on our side-scan sonar like a separate rocky pinnacle rising up next to Partida.”

-From Howard Hall’s account of his first trip to Roca Partida in 1981

Other divers I interviewed who visited throughout the 1980s shared similar stories. Sharks, sharks, everywhere! And the best place to view the abundant shark species was at Roca Partida – the smallest of the Revillagigedo Islands.

However, after interviewing divers who had visited the islands in the last few years, it was obvious to me that the baseline had dramatically shifted in the last 20 years. Unfortunately, no fishing records or monitoring efforts existed that would enable me to quantify this change in a similar fashion to other “shifting baselines” studies. I needed to create a tool that would allow me to collect data in an unbiased fashion, and that would eventually answer the question of how much shark abundances had changed over the last 30 years.

THE SURVEY:

Unlike the fishermen, who detested the sharks, divers reveled in the opportunity to interact with these magnificent creatures. Over the last 30 years, divers have flocked to the islands to interact with the giant mantas and photograph schools of hammerheads. For these reasons, I figured the scuba diving community would be best suited to help me quantify how shark populations have changed around the islands in the recent decades. I set off to develop a survey with the help

of professional sociologists and the dive boats operators that take customers to the islands.

In February, 2008, I finalized the retrospective survey. As of now, I have 129 responses, dating back to 1977, and the picture the data paint is clear. What divers see today on a typical dive at Roca Partida greatly differs from what divers saw 20 years ago. Just as the anecdotal evidence suggested, the baseline has shifted. I realize that my results offer a course estimate, but the message is powerful and the trend is undeniable.

The Revillagigedo Islands are even harder to protect than they are to pronounce. Their location and distance from one another make it extremely difficult to enforce the fishing ban. However, this year the Mexican government took several progressive steps to keep the fishermen out. Mexican fishing vessels that venture more than 100 miles from shore are required to have a GPS tracking system installed, which will be monitored by fisheries officers. Additionally, the staff at the Navy station on Socorro Island was recently trained on how to better handle fisheries violations. The news is promising, and we can only hope that Mexico, as well as other countries that oversee open-ocean seamounts, will protect these gems of abundance and biodiversity. ■

For more information on the survey, its parameters and more detailed conclusions, please see the entire article at www.bajalife.com/ecowatch/adambaske.html