

Leviathans battle in remote depths: Great white sharks may migrate so they can dine on giant squids

March 12 2010, By Jill Leovy



Great white shark (*Carcharodon carcharias*) off South Africa. Image: Hermanus Backpackers, via Wikipedia.

In what could be the ultimate marine smack-down, great white sharks off the California coast may be migrating 1,600 miles west to do battle with creatures that rival their star power: giant squids.

A series of studies tracking this mysterious migration has scientists rethinking not just about what the big shark does with its time but also about what sort of creature it is.

Few sea denizens match great white sharks and giant squids in primitive mystique. Both are the subject of popular mania; both are inscrutable.

That these two mythic sea monsters might convene for epic battles on the stark expanses of the Pacific is enough to make a documentarian salivate.

For more reserved scientists, the possible link between sharks and squid, suggested by marine ecologist Michael Domeier of the Marine Conservation Science Institute in Fallbrook, Calif., is just one part of emerging research that has altered their understanding of the great whites.

The shift began eight years ago with the surprising discovery that great white sharks migrate, somewhat as humpback whales do. That and subsequent studies have demolished the iconic image of Great Whites lurking in relative shallows, ready to snatch an errant swimmer, as popularized in the movie "Jaws."

Domeier said he believes the animals "are not a coastal shark that comes out to the middle of the [ocean](#). They are an ocean shark that comes to the coast. It is a complete flip-flop."

Picture them not as a dorsal fin off the beach but rather as an unseen leviathan swimming through black depths where the oxygen thins and fish glow in the dark, and maybe pouncing on a 30-foot squid.

The squid part is controversial. But Domeier's work and that of other scientists increasingly suggest that great white sharks are not randomly roving eating machines. Instead, they obey set migration patterns, have distinct populations and return to the same locales. They are not desperadoes but dutiful migrants: Nomads but not outlaws, they yearn for home.

But this new understanding raised a question: Why would an animal so large, that grows teeth as humans grow hair, bother to go so far when it

can dine on just about anything in fin's reach? The migration is especially puzzling because it means sharks miss out on coastal food supplies, said the University of Hawaii's Kevin Weng, who also tracked sharks' migration.

Determined to find the reason, Domeier and his team spent three years catching 22 great whites off Guadalupe Island, southwest of San Diego and bolting high-tech tags to their fins. The area, like California's Farralon Islands, is a hot spot for shark visits.

The team used hooks that could cradle a volleyball. They wrestled the sharks onto platforms, lifted them aboard their vessel and put towels over their eyes. The 4,000-pound predator is only a minor threat out of water, Domeier said. But after being thwacked off his feet, he learned to tie up their tails.

Funded by Newport Beach's George T. Pflieger Foundation and others, Domeier arranged a voyage with a National Geographic Channel television crew to follow the sharks in a 126-foot boat. The crew used the tags to track the sharks to an area of the deep Pacific about 1,500 miles east of Kauai that scientists consider an ecological desert because it is so biologically unproductive. There, the sharks abruptly ended their [migration](#), and satellite tags showed them milling around and diving.

Despite hours of surveys and trolling during last spring's monthlong voyage, members found barely any fish or other prey that the sharks might be eating.

But there was an exception: squids. Purple and neon flying squids were easy to find. There also were leaping sperm whales, a marine mammal known to feed in spawning areas for large squids. To Domeier, it was clear: The sharks had found a squid-based ecosystem with big enough prey to attract sperm whales.

Finally, the crew found a whitish carcass of a giant squid that had been chewed on, perhaps by various predators. Because of the lack of alternative food sources, and the pinging tags that traced deep and frequent dives, Domeier said, he formed a speculative conclusion: The sharks go to the area for the same reason as sperm whales: to feed on large squids, including the giant ones in the area, and on various predators the squids attract.

The weather turned bad, and the investigation ended early. The trip back was boring enough for the crew to form a band, then break up.

Domeier said he believes the sharks return to the coast to breed. His tags showed that some females stayed out at sea full-time.

The idea has set off robust debate. Some scientists argue it remains possible that the sharks mate offshore, and all agree that more research is needed to determine exactly what, and when, they eat. And it's highly unlikely anyone will ever see a shark making an easy kill of giant squid.

But Oscar Sosa-Nishizaki, a fisheries biologist in Ensenada, said the tagging effort helps researchers count sharks and plan conservation efforts.

Shark scientists face a dilemma: There is intense popular interest in their work, but some fret it may hinder conservation. Media interest in [sharks](#) tends to be "sparse on detail, high on testosterone," said marine biologist Weng. "It's as if aliens were to visit planet Earth, and the only thing they saw of human beings was ultimate fighting on TV."

Though wary of pop biology, Domeier made the most of it. He used his time on camera to lobby against eating blue fin tuna and Chilean sea bass.

If mythic predator-mania gave him the chance, so be it, he said. "We are at a state of real disaster of our oceans," he said. "Perhaps the scientific routine ... doesn't work."

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Citation: Leviathans battle in remote depths: Great white sharks may migrate so they can dine on giant squids (2010, March 12) retrieved 23 April 2024 from <https://phys.org/news/2010-03-leviathans-remote-depths-great-white.html>

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