

Biologists use DNA to study migration of threatened whale sharks

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giants of the fish world that strike terror only among tiny creatures like the plankton and krill they eat -- are imperiled by over-fishing of the species in parts of its ocean range.

That threat is underscored in a new study from geneticists led by Jennifer Schmidt, University of Illinois at Chicago associate professor of biological sciences, reported online April 7 in the journal [PLoS One](#).

Schmidt and her colleagues studied the [DNA](#) of 68 whale sharks from 11 locations across the Indian and Pacific Oceans and the Caribbean Sea -- an area that covers most of the shark's known range. Results showed little genetic variation between the populations, which indicates migration and interbreeding among far-flung populations of the big fish.

"Our data show that whale sharks found in different oceans are genetically quite similar, which means that animals move and interbreed between populations," said Schmidt. "From a conservation standpoint, it means that whale sharks in protected waters cannot be assumed to stay in those waters, but may move into areas where they may be in danger."

A tropical fish that can grow 50 feet or longer and weigh over 20 tons, a whale shark's range can span oceans. They do not breed until they are about 25 to 30 years old, so it will take a long time for the species to recover from recent population declines.

Whale sharks are listed as threatened, but not every country protects

them. The large animals are especially prized by fishermen for meat and fins used in soup.

Little is known about the shark's biology, perhaps because they have been studied primarily near shore, while mature animals may breed and give birth out in the open ocean. Nor is much known about neonatal or juvenile sharks, including where they grow to maturity, or how and when they move between regions. That has made devising effective conservation efforts a problem.

"The only real threat to whale sharks is us," said Schmidt. "To design proper conservation plans, we need to understand the sharks' lifestyle. We can only protect their habitat if we know what habitat they use."

Schmidt credits some countries for closing whale shark fisheries and hopes that efforts such as ecotourism programs, which sometimes include swims with the gentle giants, may prove an attractive economic alternative to fishing.

With the money brought in by well-managed ecotourism programs, Schmidt said, "people in many countries have come to realize that whale sharks are more valuable alive than dead."

Source: University of Illinois at Chicago ([news](#) : [web](#))

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