

Deepwater Shark Diets Include Other Sharks

These sharks' diets had long been a mystery, but DNA sequencing is shedding light on how they survive in their deepwater world.

By [Jennifer Viegas](#) | Mon Jul 12, 2010 08:00 AM ET

One of the most extensive studies on the diets of deepwater sharks reveals these toothy animals may eat everything from discards tossed off commercial fishing vessels to other sharks.

The study, published in the journal *Deep Sea Research*, is the first such major investigation to utilize DNA sequencing and the Barcode of Life Database (BOLD) to identify prey found in the stomachs of deepwater sharks. Shark edibles are usually too digested or fragmented, but collected DNA can be matched to animals recorded in the database.

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While researchers determined that the shark diets varied, depending on the species, nearly all of the studied deepwater sharks ate what appears to be the hamburger of the sea: hoki.

Project leader Matthew Dunn told Discovery News that hoki are the most abundant fish in the study area. Beyond being common, they also appear to hold universal appeal.

"We seem to like hoki too, and they are sold for human consumption -- often in breadcrumbs -- all over the world," said Dunn, a marine biologist and manager with the Deepwater Fisheries Group at the National Institute of Water and Atmospheric Research Ltd. in New Zealand.

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He and his colleagues studied the stomach contents of multiple individuals representing 6 deepwater shark species: kitefin shark, leafscale gulper shark, roughskin dogfish, longnose velvet dogfish, plunket shark, and the tope shark. All of the sharks were bycatch from fishery trawl surveys conducted on Chatham Rise, east of New Zealand.

Some sharks had nothing in their stomachs, and must have been hungry for a long time. Conversely, one leafscale gulper shark had recently feasted on jack mackerel heads and tails, probable scavenged discards from a commercial fishing boat.

Still other sharks, such as the kitefin, didn't mind a shark-on-shark feast, as birdbeak dogfish remains were found in their stomachs. Fish, crustaceans, squids, salps and other marine dwellers were also identified as being deepwater shark prey.

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In terms of the fishing vessel scavenging by sharks, the effects are two-fold.

"On the downside, being caught by fishing nets increases the mortality rate on sharks, decreasing their population size," Dunn said. "But on the plus side, the increased opportunities for scavenging provided by fishing may benefit the growth and reproduction of the sharks, increasing their population size."

"At the moment, we don't know what the net effect is," he added.

"The extension of bar-coding to the identification of semi-digested prey items in the stomachs of predators was always seen as an important potential for this style of identification tool," Robert

Ward, a scientist who helped to develop BOLD, told Discovery News.

"This is one of the first studies, to my knowledge, which has made use of the Barcode of Life Database for this particular purpose," Ward added, "and the successes detailed in the paper are very interesting and encouraging."

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John Gordon, an honorary research fellow at the Scottish Marine Institute, told Discovery News that he too believes the new paper "opens up yet another tool for a more comprehensive analysis of fish stomach contents."

Gordon has also collected shark stomach contents for analysis. He hopes future DNA research might shed light on mysterious "lumps of blubber" that are "scooped from living cetaceans" by sharks, or "scavenged from dead ones." He is curious to know which large aquatic carnivorous mammals may be the targets of these possible shark "scoop bites."
