

Q&A

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Exploring the behavior of sharks

A huge shark, believed to be a great white, has been sighted off Niihau and Lehua in recent weeks. Waikiki Aquarium shark expert Jerry Crow, Hawaii Institute of Marine Biology associate researcher Kim Holland and Hawaii Institute of Marine Biology research assistant Stephen Kajiura answered questions about sharks in Hawaii.

Q. *What are the chances of seeing a great white shark in Hawaii?*

A. It's unlikely. Great white sharks feed on marine mammals such as sea lions and seals. Hawaii's waters contain monk seals, but not enough to draw great whites.

Q. *What kinds of sharks in Hawaii are known to attack humans?*

A. Sharks display different behaviors in different areas of the world. However, in Hawaii, three types have been known to attack: the tiger shark, the gray reef shark, and the Galapagos shark. Most attacks are by tiger sharks.

Q. *How are these sharks identified?*

A. Tiger sharks, which can grow to about 16 feet, can be identified by their blunt snouts. A young tiger shark has stripes on the side of its body which becomes less pronounced as it matures.

The gray reef shark, identified by a tail edged in black, can grow to about five feet. (The black tip reef shark, a species not known to attack humans, also has a tail with a black edge, but has a black dorsal fin as well.)

The Galapagos shark grows to about 10 to 12 feet and looks like a "typical shark" with a long thin pectoral fin.

Q. *Why do sharks attack?*

A. Although there are hypotheses about sharks attacking humans because their food source is scarce, shark experts say that no one is certain what makes sharks attack. The gray reef shark, however, does show aggressive behavior when it is cornered or threatened.

Q. *What do sharks eat?*

A. Unlike the gray reef and the Galapagos sharks, which feed primarily on reef fish, adult tiger sharks feed on turtles, gulls and also land animals washed downstream.

Q. *Are there certain areas in Hawaii's coastal waters where sharks are found more frequently?*

A. Because of such changing factors as food availability, water temperature, water clarity and the season, shark experts are not certain. Tiger sharks have been known to inhabit not just coastal waters but deep waters, and have been documented making migrations from Oahu to Molokai.

Q. *Are sharks endangered?*

A. Experts say that although the number of sharks in Hawaii's coastal waters is unknown, there is no indication that any of Hawaii's shark species are endangered.

Q. *What is the impact of shark-hunting on Hawaii's ecological system?*

A. Experts are unsure of its direct impact.

Lynda Arakawa is an Advertiser staff writer.

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Hawaii's Environment



JAN TENBRUGGENCATE

What do big sharks eat? Anything!

Tiger sharks are associated with most shark attacks on humans in Hawaiian waters, but studies of shark behavior and eating habits suggest the species isn't out there looking for people, but is simply biting what looks interesting.

A study of stomach contents of 281 tiger sharks collected in a shark control program from 1967 to 1969, and from a shark catching program in 1976, shows that tiger sharks aren't selective feeders.

"Tiger sharks may be opportunistic feeders that prey heavily on abundant, easy-to-capture prey," wrote the authors of a report on the study, published last year. The authors are Christopher Lowe, Bradley Wetherbee, Gerald Crow and Albert Tester.

They found that tiger shark diets appear to change as they get larger, and that the bigger tigers are more likely than smaller ones to pose a threat to humans, since they tend to take prey of about the same size as humans.

Among small sharks up to 6 feet in length, bony fish and eels (as opposed to fish with cartilage instead of bones, such as sharks and rays) were found in the stomachs of 89 percent. Twenty-two percent had bird remains in their stomachs, and there were smaller amounts of squid and crabs. A small shark had eaten a cat.

Among medium-sized sharks of 6 to 9 feet in length, fish were still common, but not as common as among smaller sharks. Many of these sharks had eaten lobsters, other sharks, turtles, dolphins, goats and sheep.

Large sharks, identified as more than three meters (about 10 feet) long, had been eating a much broader array of foods, so that no single food category formed a majority. The two fishing programs caught 135 sharks in this size range, of which 22 percent had empty stomachs.

Here's how the eating habits of the rest of the big sharks were itemized:

- 40 percent had eaten fish. Puffers and porcupine fish were the most common, as they were in the fish diets of the smaller sharks.

- 37 percent of the sharks' stomachs contained remains of sharks and a few rays.

- 35 percent had eaten crustaceans, mainly lobsters.

- 25 percent had birds in their bellies. Sharks regularly swallow seabirds resting on the ocean's surface.

- 16 percent had mammal parts, mainly dolphins, but three had eaten goats, two had eaten dogs, two rats and one a mongoose. One of the big tigers' stomachs contained human remains.

- 15 percent had eaten turtles.

- 10 percent had eaten octopus, squid or related animals.

About 21 percent of the big sharks had consumed sticks, tin cans, clothing, kitchen scraps, aluminum foil and plastic bags.

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GREAT WHITE

Shark article was yellow journalism

Two articles on the possible recent sighting of a great white shark in Hawaii waters recently appeared in The Advertiser. One was written by a writer who interviewed professional experts and wrote a professional and accurate report. The second was written by a writer who interviewed some professionals and also some nonprofessionals.

The latter report sensationalized the subject and contained misinformation (e.g., gray nurse sharks and blue sharks do not exist in the coastal waters of Hawaii; the idea that small sharks increase when large sharks are caught is only a theory, not a fact).

This story also glorified the philosophy that humans should not disturb the marine ecosystem by catching sharks. In that case, should people stop fishing?

Humans have seriously altered the nearshore ecosystem in Hawaii by overfishing numerous reef fish species. This may be one reason large sharks are venturing into shallow near-shore habitats in recent years.

This second report is another example of yellow journalism from The Advertiser. Hawaii needs and deserves better.

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