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New weapon against illegal shark-fin trade

By Curtis Morgan
Knight Ridder News Service 9 January 2006

MIAMI — Shark-fin soup, so prized that a bowl can fetch $150 in some corners of Asia, has taken a bloody chunk out of shark populations worldwide.

Now, scientists at Nova Southeastern University are helping federal fisheries agents bust a black market in fins with a DNA test that does what even the best biologists cannot. The genetic test has been used in a dozen cases of illegal shark-finning, the practice of severing fins and dumping carcasses at sea. Recently, the test has also produced evidence that not even the great white shark has escaped the cook pot.

That's alarming for a rare creature that, despite its occasional taste for humans, is supposed to be one of the world's most protected shark species.

"This is the first documentation that white sharks are available in the international trade," said Mahmood Shivji, director of the Guy Harvey Research Institute at NSU's Oceanographic Center in Dania Beach and leader of a team that developed the test.

The finding came after federal agents got suspicious about sacks of dried fins at a New York seafood dealer. An outside label read "porbeagle," a shark legal to harvest.

But hidden inside, another read "blanco" — Spanish for "white."

They turned to Shivji to sort out the puzzle. The answer — 21 sharks, all great whites, including 18 puny pups.

The seizure two years ago had not been made public until a study, co-written by Shivji, was published Thursday in the journal Conservation Genetics.

Co-author Ellen Pikitch, executive director of the Pew Institute for Ocean Science at the University of Miami, said the finding is troubling because international traders had long dismissed the fins as poor stock.

"This changes our perception about the pressures being placed on great whites," she said. "Some people didn't think great whites were being hunted, other than very large ones for their jaws or fins for trophies."

The way the fins were packaged — dozens from one species — indicated high value.

"The fin trade is very secretive," Shivji said. "We think this suggests a specialized market."

Sonja Fordham, a shark specialist with the conservation group Ocean Conservancy, said the find should bolster arguments for more protection.

"We were all in the same camp, thinking white sharks weren't particularly vulnerable except for their jaws," she said.

The United States and Australia have banned killing great whites, and in recent years, the sharks have joined many international endangered species and trade lists. But there is scant protection in many Asian countries and few rules in the open sea.

Studies estimate some shark populations have been halved in two decades. While sharks face multiple threats, scientists believe soup demand, fueled by growing prosperity in China and other Asian countries, has made the predators increasingly popular prey.

Large sharks are particularly vulnerable to overfishing because they grow slowly and produce relatively few

offspring. Female whites turn out two to 10 pups, which immediately swim off as fully formed eating machines.

Great whites are believed in decline, though Pikitch acknowledges less is known about them, particularly in the Atlantic Ocean, where they are rare. Catches off Florida historically have been scarce.

Paul Raymond, chief of law enforcement for the National Oceanic and Atmospheric Administration in the Southeast, said he couldn't discuss details of the seizure because the dealer, "a major exporter," had yet to be formally charged.

It's legal to kill many sharks and, with proper permits, sell fins harvested on shore. But fines for illegal finning or possessing any of 19 prohibited sharks, including great whites, can reach $100,000. Repeated violations can cost seafood dealers and commercial fishermen their licenses.

Raymond, a study co-author, credited Shivji and Nova Southeastern University graduate students who do much of the testing for helping in a dozen cases, including shark-finning incidents off Florida. Because penalties rise sharply if fins come from a shark on the protected list, it's critical to identify it accurately.

But without a carcass, it's difficult — at least for anyone who doesn't peddle shark flesh.

"An Asian buyer can deal out a basketful of fins like a deck of cards and be able to tell you what each species is," Raymond said. But "even some of our best shark scientists can't identify these fins morphologically. You're sometimes looking at a basket that could have 5,000 fins from 12 species."

Raymond said other methods of identifying fins are slow and require a lot of meat.

Shivji took a snip the size of a fingernail clipping. Back in the Nova Southeastern University lab, a dash of synthetic shark DNA, the test "primer," was added to a 2-inch test tube, then run through machines that churn out odd graphs and long sequences of letters that people with advanced genetic degrees can read like musical notes.

They're genetic "markers," unique to every species.

Pew publicist Christopher Dudley billed it "CSI: Shark Fins," and the process is akin to the tech-squad magic popularized by cop shows. After three years of refinement, Nova Southeastern University can now test for up to 14 species at once and identify 80 percent of Atlantic sharks.

Most people, of course, won't respond to man-eating sharks with the same empathy reserved for grass-munching manatees. But the University of Miami's Pikitch emphasized that sharks have helped maintain the intricate balance of the oceans for 400 million years.

"Sharks are the top predators in the ocean, and great whites are at the top of that food chain," he said. "If we remove them, we're going to have great impacts throughout the system."