

## Great Whites on the Menu

By Erik Stokstad  
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### Taking stock.

Genetic tests are helping reveal which sharks are killed for their fins. (Click on the photo for a larger image).

Credit: S. Clarke

For years, great white sharks have been trophy-hunted for their large jaws and teeth. Now, thanks to a DNA test, conservationists have proof that smaller members of the species are being killed for their fins, which are likely sold for food in Asia. The findings could be useful in winning greater international protection for the species.

A few countries, including the United States, have outlawed the killing of great white sharks to help stop the decline of their numbers. In 2004, the Convention for the International Trade of Endangered Species (CITES) required all its signatories to monitor and regulate trade in products from great whites. Some countries argued that stronger protection was unnecessary because the sharks weren't being widely targeted for commercial purposes. Yet data to settle the question were lacking. They have now come from geneticist Mahmood Shivji, who directs the Guy Harvey Research Institute at Nova Southeastern University in Dania Beach, Florida. Four years ago, Shivji and his team developed a DNA test that could help identify various shark species. Not long afterward, he was contacted by law enforcement agents from the National Oceanographic and Atmospheric Administration, who had confiscated 900 kilograms of dried shark fins headed for Asia from a seafood dealer on the U.S. east coast. One sack

had a hidden label reading "blanco" or white in Spanish.

All 21 fins in the bag had DNA fingerprints of great white sharks, the group reported online 21 December in Conservation Genetics. Given the strict U.S. regulations, "it was a surprise that there were so many," says Shivji. By analyzing the shape of the fins, the group concluded that 18 were from relatively small sharks, less than 2 meters long. Since these fins would make puny trophies, they could be intended for the kitchen. (Shark fin soup is a popular dish in some Asian countries.) That a large U.S. exporter took the risk of illegally exporting them suggested to Shivji that there is a valuable market even for small fins from great white sharks.

Researchers don't know much about the fin trade, which has long been secretive. So in a related project, Shivji and collaborators took their DNA tests to the world's largest shark fin market, in Hong Kong. "One of the biggest successes of the study was simply that we were able to sample such a covert and sensitive market at all," says Shelley Clarke of the Joint Institute for Marine and Atmospheric Research, University of Hawaii and National Research Institute of Far Seas Fisheries, in Shizuoka, Japan, who led the research. After analyzing 596 samples, the team found that only 14 species make up 40% of the market, including some that are protected in U.S. and other waters. The researchers reported their findings online 9 January in Conservation Biology.

These genetic tests are extremely valuable for conservation, says Boris Worm of Dalhousie University in Halifax, Nova Scotia. "Enforcement hinges on being able to identify a dried up fin of a shark," he says. "It's the only way to save the species."