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First Practical Test for Monitoring Shark Trade

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Journal Watch

Shark finning — chopping off the fins and tossing the rest — is increasing worldwide to satisfy the demand for shark fin soup. But tracking this trade is hard because isolated fins from different species generally look the same. Now there is a new way to identify shark species from just their fins.

"We have developed an efficient way to achieve accurate and rapid identification of shark body parts, including dried fins," says Mahmood Shivji of Nova Southeastern University's Guy Harvey Research Institute in Dania Beach, Florida, who presents this work with five coauthors in the August issue of *Conservation Biology*.

While overexploitation threatens fish all over the world, sharks are particularly vulnerable because they grow and reproduce slowly. But shark conservation and management are hampered by the fact that there's no good way to tell which species are being overexploited by the fin and seafood trades. Existing genetic tests that identify sharks from their body parts are too slow and expensive to be practical for monitoring the shark trade. "Reliable quantitative assessment of the current level and impact of the shark fin harvest on the status of individual pelagic shark species is impossible," say Shivji and his colleagues.

To help overcome this obstacle, the researchers developed a new genetic shark-identification test that is quick, accurate, and relatively cheap. So far, they have developed tests for six shark species that are commonly caught in the North Atlantic, either directly or as bycatch in the tuna and swordfish fisheries. These sharks, blue (*Prionace glauca*), dusky (*Carcharhinus obscurus*), longfin makos (*Isurus paucus*) and shortfin makos (*Isurus oxyrinchus*), porbeagle (*Lamna nasus*), and silky (*Carcharhinus falciformis*), are also common in the global fin market.

Shivji and his colleagues evaluated the six shark tests on samples from 33 closely related known species and found that they were nearly 100 percent accurate. The one exception was that the dusky shark test was also positive for the oceanic whitetip shark (*Carcharhinus longimanus*) sample. While both of these sharks are common in the North Atlantic fishery, they are relatively easy to distinguish because the latter has larger paddle-like fins with rounded white tips.

To make the screening more efficient, the researchers combined the shark tests to see if they could analyze for six species at once. The combined test was also nearly 100 percent accurate, again with the exception of the dusky/oceanic whitetip false positive.

Shivji and his colleagues then used the combined test on 75 dried fins from the Hong Kong commercial market. The results showed that the traders did not always identify the fins accurately: notably, 10 of the 55 fins designated as silky were actually from other species.

Next, Shivji and his colleagues plan to develop genetic tests for the roughly 35 major species of exploited sharks. They also envision panels of tests to target the groups of shark species that are characteristic of different parts of the world. So far, the researchers have found that they can test for up to ten shark species at once.

Shivji's coauthors are Shelley Clarke of Imperial College and the Wildlife Conservation Society in London, U.K.; Melissa Pank of Nova Southeastern University in Dania Beach Florida; Lisa Natanson and Nancy Kohler of the National Marine Fisheries Service in Narragansett, Rhode Island; and Michael Stanhope of GlaxoSmithKline Pharmaceuticals in Collegeville, Pennsylvania.

Further Information:
Shivji, M. et al. 2002. Genetic identification of pelagic shark body parts for conservation and trade monitoring. Conservation Biology 16:1036-1047.