

Ongoing collapse of coral reef shark populations

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Investigators have revealed that coral reef shark populations are in the midst of rapid decline, and that "no-take zones" -- reefs where fishing is prohibited -- do protect sharks, but only when compliance with no-take regulations is high. The findings, reported by William Robbins and colleagues at James Cook University and its ARC Centre of Excellence for Coral Reef Studies, appear in the December 5th issue of *Current Biology*.

Reef sharks are so-called apex predators on tropical coral reefs and are therefore of significant potential importance to the functioning of coral reef ecosystems. The reproductive biology of reef sharks makes them particularly vulnerable to fishing, but until now, there have been no studies of the response of these sharks to fishing pressure.

The new work focused on Australia's Great Barrier Reef, which is widely considered to be one of the world's least degraded, and best managed, reef systems. For balancing conservation with sustainable use, the Great Barrier Reef is regulated through an extensive series of management zones in which different areas are open to different levels of fishing. In their study, the researchers determined the status of two species of reef shark—the whitetip and grey reef sharks—by employing a unique combination of fisheries-independent abundance estimates and measurements of the survival and reproduction of individual sharks.

Their findings show that reef shark abundance on reefs open to fishing are about ten times lower than on unfished reefs. Moreover, high reef

shark abundance was only apparent on the most strictly enforced of the no-take zones, suggesting that even moderate levels of poaching can derail attempts to protect shark populations. These observations, coupled with population modeling showing ongoing, rapid declines in population size in fished areas, lead the authors to conclude that reef sharks are approaching “ecological extinction”—that is, becoming so rare that they can no longer perform their natural role in the functioning of coral reef ecosystems.

Source: Cell Press

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