

Marine reserves help boost reef shark numbers

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Researchers from The University of Western Australia have used non-destructive stereo video technology to obtain proof that marine reserves can have positive effects on reef shark populations.

In a study of [shark populations](#) in Namena Reserve, Fiji's largest marine reserve (located on the southern coast of Vanua Levu Island), the researchers found the number of sharks in the no-take reserve is two to four times greater than in adjacent areas where fishing is permitted.

A paper on the study, led by researchers from UWA's Oceans Institute, the UWA School of Plant Biology, and the Wildlife Conservation Society (WCS), appears in a recent edition of the journal *Coral Reefs*.

The authors include PhD student Jordan Goetze and research assistant Laura Fullwood.

The researchers conducted their study over three weeks in July, 2009, in Namena - a 60sqm reserve established in 1997 and managed by local communities.

Lead author Mr Goetze and the WCS Fiji team used stereo-baited remote underwater video systems to record reef shark data at eight sites within the reserve and eight sites outside the reserve. They examined both shallow and deeper depths (between 5-8 metres, and 25-30 metres respectively).

"The study not only provides evidence that Fiji's largest marine reserve benefits reef sharks, but achieves this in a non-destructive manner using novel stereo video technology," said Mr Goetze.

"A lot of previous studies have used long-lines to estimate shark abundance and biomass which often results in the animals being killed or harmed. By using the stereo video technology we can make estimates of abundance and biomass without harming the sharks."

The 60-minute video segments taken captured images of five different species of reef shark, providing the researchers with data on shark abundance. They also were able to estimate the length and size of the sharks whenever the animals were within eight metres of the camera, allowing them to gauge [biomass](#) inside and outside Namena Reserve.

Outside the reserve, in areas where fishing is permitted, the researchers found fewer sharks. They noted that because local Fiji communities traditionally consider sharks to be sacred, eating them was typically taboo. However, as demand for shark products grows, higher prices were driving some locals to catch [sharks](#).

"Worldwide, increasing rates of harvesting are leading to the depletion of many of the world's shark species," Mr Goetze said.

He said the most likely driver of higher shark densities within the reserve was the significantly greater availability of prey fish found within the reserve boundaries compared with adjacent areas.

Dr Caleb McClennen, Director of WCS's Marine Program, said the study provided solid proof that [marine reserves](#) could have positive effects on reef shark populations.

"Shark populations are declining worldwide due to the demand for shark products, particularly fins for the Asian markets," Dr McClennen said. "We need to establish management strategies that will protect these ancient predators and the ecosystems they inhabit."

Provided by University of Western Australia

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