Citizen scientists match research tool when counting sharks

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Shark data collected by citizen scientists may be as reliable as data collected using automated tools, according to results published April 23, 2014, in the open access journal *PLOS ONE* by Gabriel Vianna from The University of Western Australia and colleagues.

Shark populations are declining globally, and scientists lack data to estimate the conservation status of populations for many shark species. Citizen science may be a useful and cost-effective means to increase knowledge of shark populations on coral reefs, but scientists do not yet know enough about how data collected by untrained observers compares to results from traditional research methods. To better understand the reliability of datasets collected by citizen science initiatives, researchers in this study compared reef shark sightings counted by experienced dive guides (citizen scientists), with data collected from tagged reef sharks by an automated tracking tool (acoustic telemetry). 62 dive guides collected data during over 2,300 dives using standardized research protocols, including reporting on the dive site, date, species, counts, estimated depth, current, visibility, and number of tourist divers in the group. Both data sets were collected at coral reefs on the Pacific island of Palau over a period of five years.

Scientists found a strong correlation between the number of grey reef sharks observed by dive guides and those identified by telemetry at both daily and monthly intervals. The authors suggest that the same variation in shark abundance was detectable by both citizen scientists and telemetry. Furthermore, the presence of tourist divers didn't correlate

with the number or average depth of reef sharks recorded by telemetry, indicating that shark behavior was unaffected by the divers' presence during the study. The guides' data also suggests that the water's current strength and temperature may have impacted the relative abundance of sharks at the monitored sites, which corroborates previous telemetry data. The authors posit that the correlated results demonstrate the potential role citizen science may play in shark conservation in coral reef ecosystems.

Gabriel added, "Our study shows that with a little bit of training and a good sampling design, recreational divers collect very useful data that can be used to monitor shark populations over long periods of time and across large spatial areas. Such programs have relatively small costs when compared with other methods currently used."

More information: Vianna GMS, Meekan MG, Bornovski TH, Meeuwig JJ (2014) Acoustic Telemetry Validates a Citizen Science Approach for Monitoring Sharks on Coral Reefs. *PLoS ONE* 9(4): e95565. DOI: 10.1371/journal.pone.0095565

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