

Comparative analysis reveals use patterns of deeper Caribbean coral reefs by shark species

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A lemon shark. Credit: George Schellenger

Three species of shark, tiger, lemon and Caribbean reef, all use deeper coral reefs in the Virgin Islands, but only lemon shark presence was associated with seasonal grouper spawning aggregations, according to a study published May 4, 2016 in the open-access journal *PLOS ONE* by Alexandria Pickard from Nova Southeastern University, Florida, Bradley

Wetherbee of the University of Rhode Island and colleagues.

Groupers and other fish often spawn together in [coral reefs](#) at depths between 30 and 150 meters in the Caribbean, and these aggregations may make them easy pickings for predators. However, little is known about [coral ecosystems](#) at these depths when compared to shallow coral reefs. To quantify spatio-temporal patterns of reef use for three species of shark, the authors of this study analyzed data from acoustic transmitters placed on 18 [sharks](#)—6 [lemon sharks](#), 10 [tiger sharks](#), and 2 Caribbean reef sharks—that were tracked with acoustic receivers covering an area of more than 1,000 square kilometers near the island of St. Thomas.

The authors found that all three species were present year-round in deeper coral reefs, but shark use patterns differed. While only two Caribbean reef sharks were tracked, both had a small range typical of the species that was not associated with the presence of spawning groupers. The range of lemon and tiger sharks was about 100 times greater, but only the lemon sharks showed increased activity in spots where groupers were actively spawning. Though the study included only a small number of sharks monitored over varying lengths of time, the findings may suggest that fish prey location may influence movements of their shark predators, and that group spawning events may shape ecosystem dynamics in deeper coral reefs.

Bradley Wetherbee, a co-author of the study, notes, "Our study demonstrates that every member of a community has its own unique role or niche. Even though three species of sharks might be found in the same place at the same time on a reef, they are all doing different things and interact with other [species](#) in different ways".



A grouper spawning aggregation. Credit: George Schellenger

More information: Pickard AE, Vaudo JJ, Wetherbee BM, Nemeth RS, Blondeau JB, Kadison EA, et al. (2016) Comparative Use of a Caribbean Mesophotic Coral Ecosystem and Association with Fish Spawning Aggregations by Three Species of Shark. *PLoS ONE* 11(5): e0151221. [DOI: 10.1371/journal.pone.0151221](https://doi.org/10.1371/journal.pone.0151221)

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