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# Population Genetic Structure Of A Coral Reef Ecosystem Apex Predator, The Gray Reef Shark (Carcharhinus Amblyrhynchos)

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**Population Genetic Structure Of A Coral Reef Ecosystem Apex Predator, The Gray Reef Shark (*Carcharhinus Amblyrhynchos*)**

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Sharks play a major functional role as apex predators in coral reef ecosystems, raising concerns that their ongoing overexploitation will compromise the integrity and sustainability of reefs. The gray reef shark (*Carcharhinus amblyrhynchos*) is a strongly coral reef associated species whose populations are known to have declined substantially in some regions. There is no information on population structure in this species to aid in their management and conservation. We are assessing genetic structure in this species by using entire mitochondrial control region sequences and 15 nuclear microsatellite loci as markers. 93 gray reef shark samples were obtained from across the species' Indo-Pacific distribution (eastern Indian Ocean [Madagascar/Seychelles], Central Pacific [Hawaii], Southwestern Pacific (eastern Australia, Palmyra, Palau, Cocos (Keeling) Islands)). Mitochondrial (AMOVA) and microsatellite (STRUCTURE) data concordantly identify the Hawaii population as a distinct genetic group relative to other sampling locations. The microsatellite data further identify 3 distinct overall gray reef shark groups (eastern Indian Ocean, Central Pacific, and Southwestern Pacific). Our current analyses do not show any evidence of population structure among islands of the Southwestern Pacific, although this question is being further addressed with additional samples from more locations. These results show strong genetic differentiation exists in gray reef shark populations separated by expanses of open ocean, and suggest proper management of this declining species will have to occur at the very least on a regional geographic scale.