MONA REEF COMMUNITY STRUCTURE AND FUNCTION FOR MPA DESIGN

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The Mona Island Natural Reserve (MINR) was designated in 1986 and is managed by the Puerto Rico Department of Natural and Environmental Resources (DNER). As an isolated island in the middle of a partial biogeographic boundary, healthy coral reef fish communities at Mona are essential both for population maintenance and genetic connectivity between Puerto Rico and Hispaniola. Throughout history many different activities have occurred on and around the islands of Mona and Monito including guano mining, military air bombing practices, agriculture, commercial and recreational fishing, camping, feral animal hunting, hiking and SCUBA diving. At present, the MINR is the largest (157,575 ha) marine protected area (MPA) in Puerto Rico, with boundaries extending to 9 nautical miles from the coast incorporating the insular shelf of Mona and Monito as well as deep water habitats exceeding 2,000 m depth.

The purpose of this study is to investigate how the abundance and distribution of benthic habitats less than 25 m in depth influence the abundance, distribution, and species composition of coral reef fishes. Underwater visual surveys of the fish community were conducted throughout the insular platform surrounding Mona Island to provide a "seascape approach" that emphasizes the connectivity among habitats as ecological requirements change through ontogeny. Fish were quantified and sizes estimated at 613 sampling sites in diverse habitats. Additionally benthic video transects were recorded to analyze composition of the benthos. The localized distribution pattern of key habitats used as settling, nursery and spawning grounds suggests that zoning of no-take versus open areas is important in maintaining populations.

Study results will be presented to the Puerto Rico DNER within the context of management implications for this MPA, and will also provide a spatially explicit baseline for monitoring the effectiveness of the no-take zone. Finally this study will identify essential fish habitat and establish a framework that could be used for ecosystem based management of this oceanic MPA.