

**QUANTIFYING CORAL REEF CRYPTOFAUNA DIVERSITY OF O‘AHU AND
KAUA‘I ISLANDS USING AUTONOMOUS REEF MONITORING
STRUCTURES**

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ABSTRACT

Coral reefs are hugely productive ecosystems supported in large part by the cryptic biota that inhabit them. Appropriately dubbed “cryptofauna,” these invertebrate populations are highly understudied reef dwellers that comprise the majority of coral reef biodiversity. Quantifying biodiversity of cryptofauna is critical to monitoring changes in these communities caused by anthropogenic-driven environmental change, particularly in coral reef-dependent islands like that of the Hawaiian archipelago. This study attempts to quantify samples of the cryptofauna that occupy Kauai and Oahu coastal reefs. Seventy percent of the 1.2 million people of Hawaii live on Oahu. Thus, this investigation will attempt to determine if the conversion to a highly urbanized system—Oahu—will result in differences in coastal cryptofauna community of a relatively undisturbed system—Kauai. The use of Autonomous Reef Monitoring Structures (ARMS) was employed to mimic complex coral habitats. A total of 16 ARMS units were deployed at both islands at depths of 12-15 m (spaced 3-5 m apart) for two years. Upon retrieval of the units, a total of 5,889 specimens were collected, counted, and taxonomically identified to the lowest possible taxon. Results using PRIMER-6 showed slight differences in community composition between Oahu and Kauai when considering the sampling effort. However, there was no statistical significant difference in the taxa diversity and abundance between the two islands. Thus, results were inconclusive of comparative effects of anthropogenic environmental degradation. Nonetheless, it was evident that the use of ARMS units was excellent to census cryptofauna communities, and thus should be implemented in greater proportions for better data.