Hohonukai: An Environmental Study of Hawaii's Marine Biota Using Underwater Time-Lapse Photography

Marine biota living in and below the Mesopelagic Zone (>200 m depth) are rarely studied due to the challenges of conducting observational studies in deep water. Since 2009, several projects involving deep water sites south of Oahu were conducted to assess the effects of discarded munitions and other human debris on Hawaii's ocean environment and marine life. However these studies focused on biota in close proximity to discarded WWII munitions, while little data exists on organisms living in their natural habitat. This project focuses on studying marine biota living at ~550 m depth using a specially engineered, low-cost (<$1,000), time-lapse photographic system specially designed to withstand extreme pressure and perpetual darkness. The apparatus was deployed in deep water by a research vessel and ROV. The dramatic four day deployment yielded 6048 images of marine life including several species of echinoderms, eel, shrimp, anemones, crabs, and fish. Identification, quantification, and comparison of this project's images to those taken from prior munition studies reveal distinct similarities and significant relationships between organisms living on or away from human debris. This research may be the first of its kind to compare the behavior of deep ocean marine biota in their natural habitat with those living in direct contact with human debris. This project demonstrates that time-lapse photographic studies of underwater sites are crucial to assessing the effects of discarded human debris on marine environments and yields unexpected results concerning preconceived notions of the effects of human pollution in our oceans.

Awards Won:

Third Award of $1,000