Quantifying the disturbance-diversity relationship in shellfish gleaning

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ABSTRACT

Coastal gleaning has social, cultural, and economic benefits, but there are limited studies that quantify its impact on the environment. Studies that do so mostly describe unregulated coastal gleaning as a threat to local biodiversity, treating it as a binary variable; however, factors that influence gleaning variability suggest that the level of disturbance it creates lies in a gradient. This study proposes an investigation into the shellfish gleaning practices in Brgy. Ticalan and Brgy. Pinagbayanan at San Juan, Batangas, and its relationship with the intertidal and estuarine mollusk community under the framework of the Intermediate Disturbance Hypothesis (IDH). By applying the IDH, the ecological response at intermediate disturbance levels may reveal sustainable conditions that can benefit both the gleaners and biodiversity. It will also be the first in-situ mollusk biodiversity survey conducted on the sites and the first to formally document gleaning practices in the area. Semi-structured interviews, GPS-tracking, and Kernel Density Estimation (KDE) will be used to document gleaning practices, identify gleaning areas, and estimate their respective gleaning intensities. In-situ biodiversity surveys will be used to evaluate mollusk diversity in two river-bound shores to represent different gleaning intensities in similar environmental gradients. Biodiversity metrics, population metrics, catch-per-unit effort, and catch value will also be recorded to contextualize the study within its social and economic relevance. The study hypothesizes that a low to intermediate level of gleaning can maintain, if not enhance, local biodiversity levels while contributing to household food security and resilience.