

## ABSTRACT

### THE ASSOCIATION OF SPONGIVORE REEF FISH TO BENTHOS ATTRIBUTES

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This study seeks to investigate the distribution of spongivore reef fish and their relation to ecological and environmental attributes of selected Philippine coral reefs. The study was conducted using underwater Fish Visual Census (FVC) and Video Transect Techniques (VTT) (n = 114 transects) in twenty-seven (27) municipalities, ten (10) provinces, and three (3) marine biogeographic regions. Ecological attributes and environmental factors that potentially influence spongivore fish assemblages were examined. The result revealed that the community structure and distribution of spongivore reef fish was associated with the presence and abundance of sponges and their habitat attributes such as live hard coral cover (HC). Both sponge and hard coral cover showed strong association with spongivore fish distribution. The sponge cover was found significantly correlated with spongivore species richness ( $r=0.221$ ,  $r^2= 0.298$ ,  $p<0.01$ ) while hard coral cover was more correlated with both spongivore species richness ( $r=0.327$ ,  $p<0.01$ ) and abundance ( $r=0.345$ ,  $r^2= 0.193$ ,  $p<0.01$ ). These suggest that food and other benthos attributes e.g., refuge and shelter are important factors to the spongivore fish community structure. Their distribution was classified primarily according to four major environmental factors based on the presence and abundance of spongivorous reef fish. In addition, categorical classification of the reef zone/angle (i.e. reef-slope) showed positive correlation with spongivore species richness, abundance and biomass, while Non-metric Multidimensional Scaling (nMDS) plots showed clear patterns clustering (four groups) at 30% similarity. This grouping of localities was found influenced by the ecological (sponges and hard coral cover) and environmental attributes (reef slope, wave exposure and turbidity). Principal component analyses as well as the multiple regression analysis reinforced that spongivore distribution were influenced by ecological factors (sponges and hard coral cover) and environmental factor (reef slope, wave exposure and turbidity). Spongivore assemblages tended to have higher association values where reefs were sloping to steep wall drop offs, clear water, topographically complex and exposed reefs. The study highlights for the first time, the importance of spongivore fish on sponge distribution in the light of varying ecological and environmental conditions. These insights provide leads to areas with potential for drug discovery balanced with a biodiversity conservation perspective.

Key words: Spongivore reef fishes, sponges, coral cover, community structure