

**Predation Risk Drives Spatial and Temporal Patterns of Habitat Use  
for Juvenile Fishes in a Back Reef Seascape**

**Influencia de la Depredación Patronas Espaciales y Temporales de la utilización del Hábitat  
por los Peces Juveniles en un Arrecife Posterior**

**Influence de la Prédation sur L'utilisation Spatiale et Temporelle de L'habitat des Juvéniles  
de Poissons dans un Environnement D'arrière Récif**

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**EXTENDED ABSTRACT**

Perceived risk of predation influences animal behavior and may alter an animal's use of resources within a landscape. Here, an acoustic positioning system was used to examine the influence of predation risk (Great Barracuda *Sphyræna barracuda*) on spatial and temporal patterns of habitat use and movement for juvenile Schoolmaster *Lutjanus apodus* and White Grunt *Haemulon plumieri* in a model back reef seascape near Guanica, Puerto Rico. Schoolmaster and White Grunt showed strong spatial and temporal (diel) shifts in habitat use to potentially minimize predation risk. Both species exhibited very little movement from structured habitat such as mangroves (Schoolmaster, White Grunt) or patch reef (White Grunt) during daylight periods when Barracuda were most active, and generally avoided open channel and seagrass areas preferred by Barracuda. However, these patterns were reversed during low light periods when Barracuda movement rates decreased. White grunt activity increased dramatically (5 fold increase in movement rate) during twilight periods and individuals were observed making daily crepuscular migrations across predator fields to and from nighttime foraging areas located in shallow seagrass beds. While Schoolmaster lacked the directed movement routes of White Grunt, mean rates of movement increased two fold from day to night as individuals moved from inside the mangrove prop roots to mangrove edges, open channel, or seagrass beds to forage. Results from this study demonstrate that juvenile Schoolmaster and White Grunt minimize predation risk through time allocation patterns and spatial avoidance of high risk areas within back reef seascapes.

**KEYWORDS:** Habitat connectivity, VPS, *Sphyræna barracuda*, *Lutjanus apodus*, *Haemulon plumieri*