Spatial Patterns and Habitat Structure Influence on Seagrass Invertebrate Communities Across the Florida Keys

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Seagrasses are a foundational coastal ecosystem, maintaining several key ecosystem functions such as providing valuable foraging grounds for a diversity of consumers. Invertebrate communities are an essential element of seagrass ecosystems due to their ability to transfer energy from primary producers to higher-level consumers, subsequently increasing seascape connectivity through trophic linkages. Yet, despite their key role as secondary producers, tropical seagrass invertebrate communities are largely understudied. Here, we conducted a series of seagrass habitat structure and benthic invertebrate community surveys across the Florida Keys National Marine Sanctuary (FKNMS) to increase our understanding of the proximate drivers shaping seagrass invertebrate communities across tropical ecosystems. Preliminary analyses suggest that invertebrate density exhibits the strongest positive correlation with seagrass canopy height in comparison to other seagrass structure metrics (shoot density). Invertebrate density also varies spatially across the FKNMS, with significant differences between the upper, middle, and lower regions, indicating that broader environmental factors may also influence patterns of invertebrate abundance. Currently, seagrasses and their associated invertebrate communities are at risk due to rapidly changing environmental conditions, therefore understanding the drivers of variation in invertebrate density will be crucial to predict how critical ecosystem functions may change in the future.