FORAGING PREFERENCES BY HERBIVOROUS FISH ON THALASSIA IN SEAGRASS BEDS AND SAND FLATS

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ABSTRACT (DKS)

It has been suggested that beds of the seagrass Thalassia offer protection to herbivorous fish from predation. We examined herbivory on leaves in two environments, sand flats and Thalassia beds, by artificially placing Thalassia leaves 3m from the sand/grass interface and counting number of bites after 20hours. We found a greater, though not statistically significant number of bites in the sand flat treatment. We speculate that predation is not limiting the foraging range of grazers on Thalassia, the probability a leaf will be grazed in the two areas. Leaves placed on sand may have been unusually visible to grazers, or too close to the seagrass bed.

Key Words: Thalassia testudinum, Scaridae, herbivory, habitat complexity.

INTRODUCTION (LCB)

Turtle grass (Thalassia testudinum) is a dominant component of the lagoon community of Jamaican bank/barrier reefs (Kaplan 1982). Parrotfish (Scaridae) are grazers upon Thalassia leaving small semicircles along the edge of the blades as evidence of their herbivory.

Sand flats occur intermixed with Thalassia beds. Presumably, the turtle grass provides more shelter from predation and a higher abundance of food with little travel time or energy cost as compared to the sand flats. Consequently, we expected a greater chance of Thalassia blades being eaten by parrotfish in Thalassia beds as compared to adjacent sand flats.

METHODS (HMF)

180 ungrazed Thalassia testudinum blades were collected from the west fore reef of Discovery Bay, Jamaica. All blades were standardized to 10cm length and heavy epibiont loads were scraped off to reduce variation among leaves.

To resecure blades on the fore reef, 6 blades were clipped in a clothespin (total pins = 30) and 5 clothespins were tied to each bolt anchor (total anchors = 6).

In each of three plots containing both sand and grass two bolts were anchored 3m from the sand grass interface; one on the sand flat side and one on the grass bed side. Plots were 5m apart (Figure 1).

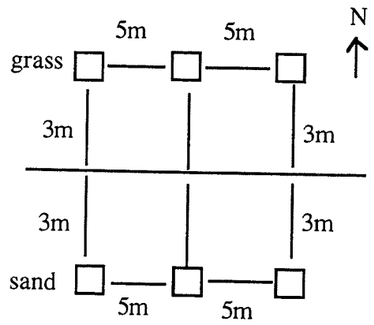

Figure 1. Map of project area.

Blades were collected after 20 hours of exposure to herbivory and number of fish bites were counted per bolt patch. We used a student t-test to compare the two treatments statistically.

RESULTS (HMF)

Although the difference was not significant, herbivory tended to be greater in sand flats than in Thalassia beds ($t = 0.928$, $p > 0.05$; Figure 2).

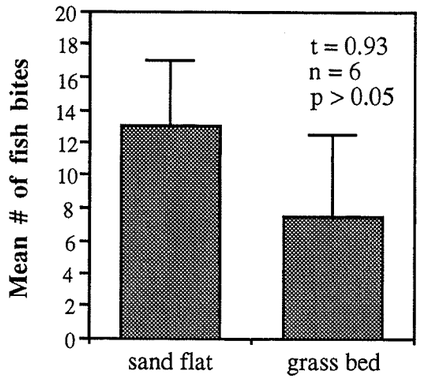

Figure 2. Fish bites on T. testudinum in two different habitats

DISCUSSION (LCB, HMF & DKS)

Our result that more bites were taken in sand flats than in Thalassia beds supports our hypothesis that the substrate plays a role in probability of herbivory. However, the prediction that blades in Thalassia beds would have a greater risk of being eaten than those blades surrounded by sand flats was not substantiated. Presumably, increased visibility and fewer number of blades per area in sand flats increase a blade's probability of being eaten. In addition, reduced predation pressure on herbivorous fish due to overfishing may allow herbivorous fish to forage in sand flats were refuge is limited.

Further studies could examine probability of herbivory at different distances from Thalassia beds. This would distinguish between fringe effects of the sand/grass interface and the actual herbivory differences due to the environment differences. Care should be taken to avoid skewing results due to the effects of damselfish territories.

LITERATURE CITED

Kaplan, E.H. 1982. Coral Reefs: Carribean and Florida. Houghton Mifflin Company, Boston.