

Effects of ecological community characteristics on parrotfish corallivory intensity in the Caribbean

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INTRODUCTION

Parrotfishes are important herbivores that indirectly benefit corals by grazing algae. Yet, some species also graze on coral (corallivory), resulting in direct negative effects on coral growth and reproduction and even causing coral colony mortality.



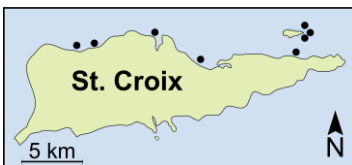
Understanding factors that influence predation intensity will allow us to better evaluate the net impacts of parrotfish feeding behavior for coral communities.

Objective: To examine how differences in coral reef community composition influence the relative intensity of parrotfish corallivory in the Caribbean.

METHODS

Study sites: Caribbean islands of St. Croix ($n = 8$ sites) & Bonaire ($n = 4$).

Field surveys: quantified parrotfish biomass, coral cover (%), and parrotfish predation scar size & abundance per colony in relation to coral species & size.



Statistical analysis:

Linear mixed models to examine the effects of site-level differences in parrotfish biomass, algae & coral cover on:

- (1) likelihood of predation scars presence on colonies within a transect, and
- (2) scars size & abundance per colony.

RESULTS

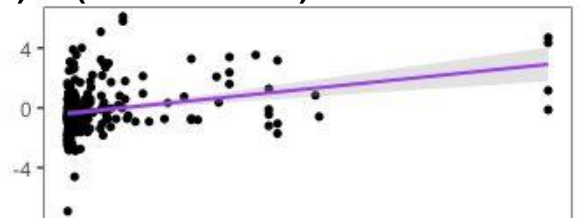
Transect-level predation likelihood:

- Coral cover was not a significant predictor of predation likelihood within transects, though the island was.
- Bonaire was more likely to have predated colonies within transects than St. Croix (1.7 times, $p = 0.02$).

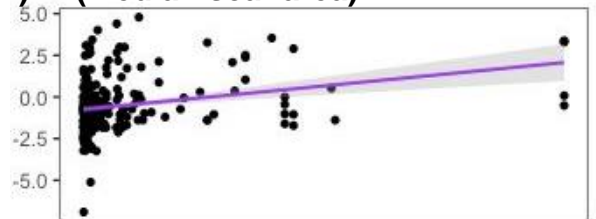
Colony-level corallivory intensity:

- Coral colony size was the dominant factor driving the intensity of corallivory in terms of scar abundance and size per colony ($p < 0.01$ for all).
- We found no significant effect of parrotfish biomass, coral cover, or coral species ($p > 0.05$).

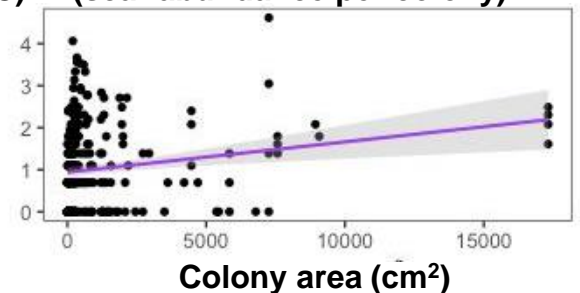
(A) In (max scar area)



(B) In (median scar area)



(C) In (scar abundance per colony)



CONCLUSIONS

Summary:

- We found that corallivory intensity was more strongly influenced by traits of individual colonies, like colony size.
- Our findings suggest that parrotfish corallivory intensity is not strongly influenced by site-level patterns in coral cover or parrotfish biomass.

Future directions:

Examine processes driving variation in corallivory at the colony level, such as nutritional quality & microbial composition.

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