Impacts of mangrove habitat degradation on fish community structure along Guyana's coastal regions

Mark Ram[1,2] and Donald Taphorn[3]

[1]Department of Biology, University of Guyana, Turkeyen Campus, P.O. Box 10–1110, Greater Georgetown, Guyana
[2]Centre for the Study of Biological Diversity, University of Guyana
[3]Royal Ontario Museum
mark.ram@uog.edu.gy

INTRODUCTION

At least 35% of the world's area of mangrove forests has been lost in the past two decades, thus exceeding that of tropical rainforests & coral reefs (Vance *et al.,* 2001). In Guyana, mangrove cover has vastly reduced due to both natural and anthropogenic factors. Fisheries success in many tropical coastal zones are directly dependent on the health of the mangrove forest (Robertson and Duke, 1987; Ronnback *et al.,* 1999, 2001). This study investigated mangrove fish species distribution, population structure and degradation impacts on fish community indices in order to improve mangrove fish resource management and conservation.

Aim

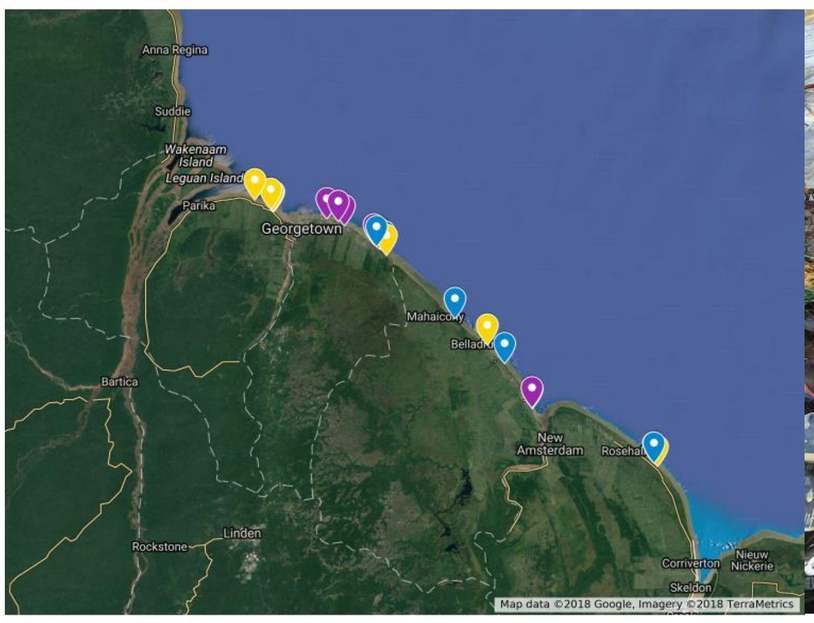
To determine the impacts of mangrove habitat degradation on fish community structure along Guyana's coastal regions.

Objectives

1. Describe and compare fish community structure in degraded and forested mangrove habitats.
2. Investigate seasonal changes in fish community structure.
3. Investigate relationships between the environmental features and fish community indices.
4. Determine prey availability in degraded and forested mangrove habitats.

METHODOLGY

This study was conducted along coastal Guyana. Mangroves were randomly selected and classified based on habitat type as natural, degraded and restored. Fish sampling was done at high and low tides using a combination of gear types (cast net, gill nets and hand nets). Once caught fishes were measured, weighed and identified to species level. Fish were then subjected to a stomach content evaluation in the laboratory.



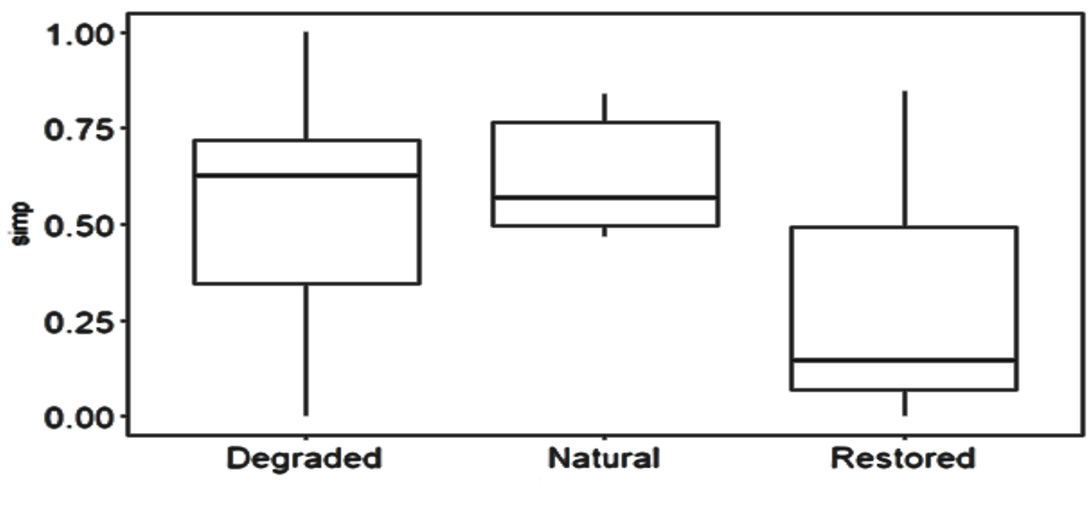
Pic. 1: Study Sites

Pic. 2: Fish Identification

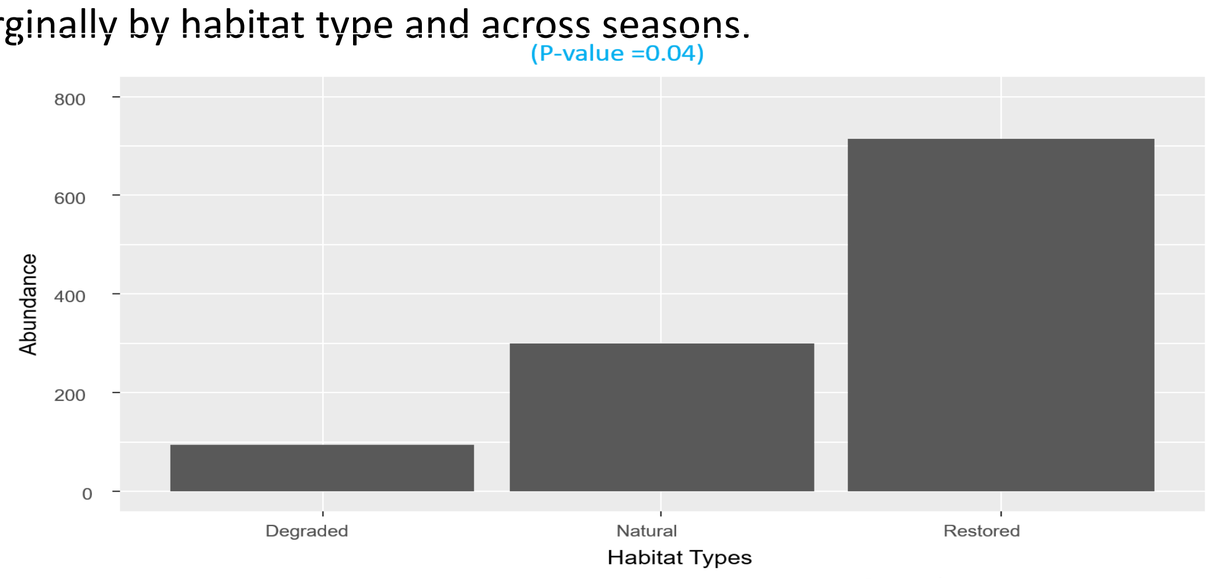
Pic. 3: Stomach Content Analysis

RESULTS & CONCLUSIONS

Lower fish diversity, abundance, relative abundance, composition, density, biomass and species richness were recorded in degraded mangrove habitats in comparison to forested mangrove habitats. Juveniles used mangrove forests during high tides, therefore, they required extensive mangrove cover for high fisheries production. Some species correlated positively to the changes in environmental parameters while others correlated negatively. Seasonality changed the environmental factors which in turn affected the community structure of fishes. Prey items were species-specific varied marginally by habitat type and across seasons.

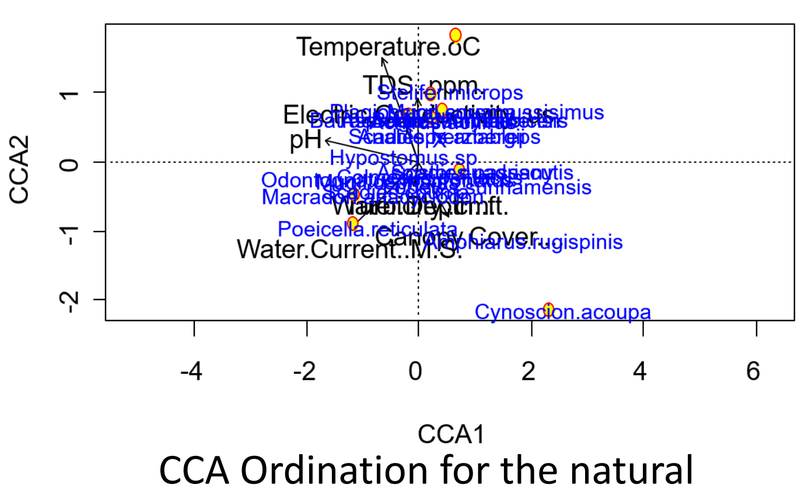


Natural

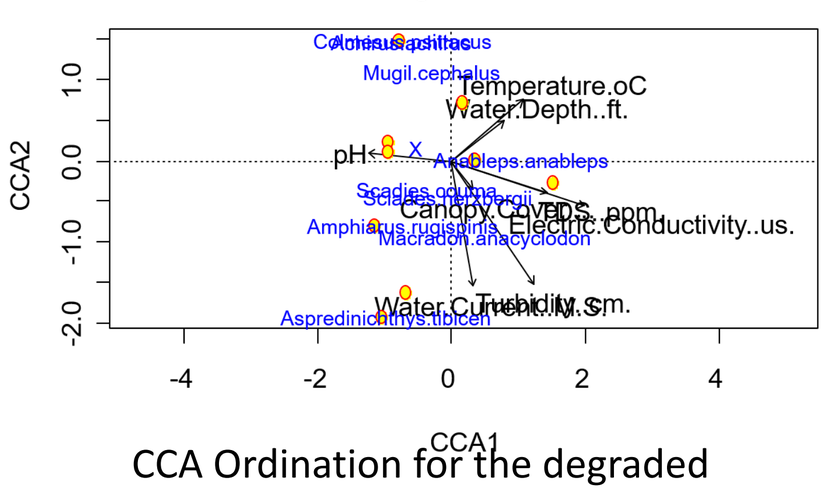


Degraded

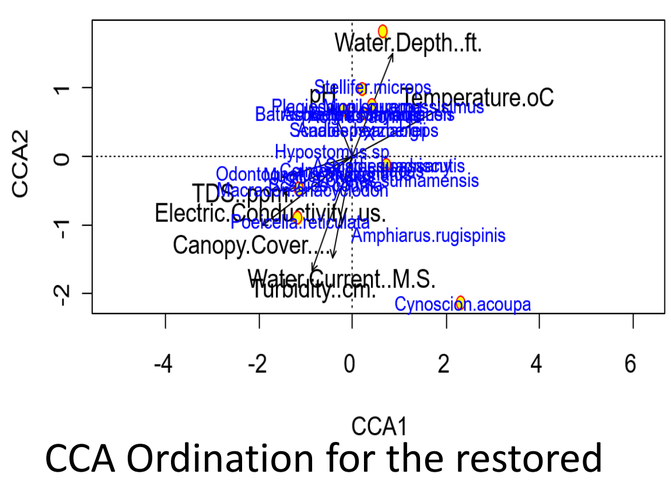
Restored



CCA Ordination for the natural mangrove habitats



CCA Ordination for the degraded mangrove habitats



CCA Ordination for the restored mangrove habitats

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