Predation of two snail species (Cerithideopis californica and Cerithideopsis montagnei) by a the whelk (Thais kiosquiformis) in Panamanian mangroves in 2014 (Estuarine Parasites project)

Website: https://www.bco-dmo.org/dataset/644751
Data Type: Other Field Results
Version: final
Version Date: 2016-05-05

Project
» How does mangrove habitat structure influence parasite transmission and predation in tropical estuaries? (Estuarine_Parasites)

Contributors	Affiliation	Role
Byers, James E.	University of Georgia (UGA)	Principal Investigator
Torchin, Mark E.	Smithsonian Tropical Research Institute (STRI)	Co-Principal Investigator
Allison, Dicky	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager
York, Amber D.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Table of Contents

- Coverage
- Dataset Description
  - Methods & Sampling
  - Data Processing Description
- Data Files
- Parameters
- Deployments
- Project Information
- Funding

Coverage

Spatial Extent: **Lat**:8.89288 **Lon**:-79.65868
Temporal Extent: 2014-10-31 - 2014-11-04

Dataset Description

Data for predation of two snail species (*Cerithideopis californica* and *Cerithideopsis montagnei*) by a species of whelk (*Thais kiosquiformis*) at different levels of potential escape structure. Three types of cage treatments were used which varied the amount of structure.

1. Trunk: cages included mangrove trunks.
2. Trunk_Pneum: cages included both mangrove trunks and pneumatophore roots.
3. Unstructured: cages did not include mangrove trunks or pneumatophore roots.

Methods & Sampling

To determine whether differential use of mangrove structure by snail species mitigates predation rates by the whelk *Thais kiosquiformis*, we conducted a field experiment. We used *T. kiosquiformis* because it was the only predator we observed eating *Cerithideopsis californica and Cerithideopsis montagnei* snails (both according to direct observation and forensic evidence) during preliminary tethering trials in the forest.

Cages were constructed using an outer shell of welded stainless steel wire 1/2” mesh to ensure rigidity and an inner lining of chicken wire with smaller (1/4”) mesh size to prevent snail escape and prevent predator invasion. We built circular cages that enclosed 0.5 m2 and were 40 cm high. Cage height was reduced by no more than 5 cm when buried and cages had no lids because in lab trials, snails did not climb the metal cage materials.

Six cages were assigned to each of six treatments (36 cages total) that crossed predator presence/absence with three types of structure availability. The three structural manipulations were mangrove tree trunk only, both a trunk and pneumatophore roots, or no climbing structure. We used naturally existing tree trunks for these treatments, requiring haphazard but non-random cage placement. The appropriate root treatments were sometimes created by pruning preexisting pneumatophores to eliminate them. Each cage was cleared of all macrofauna and stocked with 50 snails of each *Cerithideopsis* species and, if appropriate, five predatory *T. kiosquiformis* whelks. All snails were collected on-site, within 50 m of where cages were installed. Cages were monitored as often as the tide and weather permitted; almost daily.

Over the course of the experiment, we documented *T. kiosquiformis* and *Cerithideopsis spp.* climbing behavior and all *T. kiosquiformis* predation events (recorded in the dataset accessible on this webpage) that occurred inside each cage. We did not count or record the number of uneaten prey snails, but all prey snails in a cage not recorded as eaten were assumed to be alive. Over time, a number of cages developed gaps through which both predator and prey snails could escape as the tide redistributed shell rubble in and around the cages. We stopped collecting data on a cage after a gap was seen since the number of predator and prey snails inside the compromised cage was no longer guaranteed to be equal to that in other cages.

Data Processing Description

DMO notes:

spelled out the name of the prey species; was reported with abbreviation;
added lat and lon to dataset to enable geospatial referencing

[table of contents | back to top]

Data Files

File
snail_pred.csv (Comma Separated Values (.csv), 5.37 KB) MD5:6aafa100cb27b8aad28fdd73a9d52445 Primary data file for dataset ID 644751

[table of contents | back to top]

Parameters

Parameter	Description	Units
treatment_type	structure content of cage; 1) "Trunk" cages contained a mangrove trunk that prey snails could potentially climb to escape Thais kiosquiformis predators. 2) "Trunk_Pneum" cages contained both a mangrove trunk and pneumatophore roots that prey snails could potentially climb. 3) "Unstructured" cages contained no structure that prey snails could potentially climb	text
cage_code	a unique identifier for each cage; a combination of a letter ("A" "B" or "C" depending on the treatment assigned to each cage) and a number (we had 12 replicates of each treatment so a number between 1 and 12)	text
snail_id	a unique identifier for each prey snail observed being eaten in the field by Thais kiosquiformis	number
cage_gap_date	the last reliable date from which data were collected on a cage (because on that date the cage had a gap large enough that prey snails could escape).	YYYYMMDD
predation_date	the date a predation event was observed in the field.	YYYYMMDD
species	the species of prey snail eaten by Thais kiosquiformis	text
lat	latitude	decimal degrees
lon	longitude; West is negative	decimal degrees

[table of contents | back to top]

Deployments

Mangrove_Byers

Website	https://www.bco-dmo.org/deployment/644763
Platform	Panama_shore
Start Date	2014-10-31
End Date	2014-11-04
Description	Mangrove site: Bique, Panama

[table of contents | back to top]

Project Information

How does mangrove habitat structure influence parasite transmission and predation in tropical estuaries? (Estuarine_Parasites)

Coverage: Bique, Panama: 8.89288 N, -79.65868 W

Extracted from the NSF award abstract:

This proposal aims to catalyze a research collaboration between professor Byers from the University of Georgia, professor Torchin from the Smithsonian Tropical Research Institute and Professor Lopez from the Institute for Scientific Research and Technological Services (INDICASAT) in Panama. The addition of Professor Lopez to this collaboration adds expertise in plant biology and mangrove forest structure to the proposed project and gives a new direction to the existing collaboration between Drs. Torchin and Byers. This project will examine the effects of parasitism and predation of a group of congeneric mud snails of the genus Cerithidea in tropical mangroves. These preliminary experiments would be carried out during one summer to gather preliminary data for the submission on an NSF proposal in the future.

[table of contents | back to top]

Funding

Funding Source	Award
NSF Office of International Science and Engineering (NSF OISE)	OISE-1344214

[table of contents | back to top]