Size of sea hares effect on predation risk in Moorea, French Polynesia from May 2008 (CDD_in_Reef_Fish project)

Website: https://www.bco-dmo.org/dataset/726832
Data Type: experimental
Version: 1
Version Date: 2017-10-05

Project
» Cryptic density dependence: the effects of spatial, ontogenetic, and individual variation in reef fish (CDD_in_Reef_Fish)

Contributors	Affiliation	Role
Geange, Shane	Victoria University of Wellington	Principal Investigator, Contact
Shima, Jeffrey	Victoria University of Wellington	Co-Principal Investigator
Stier, Adrian	University of Washington (UW)	Co-Principal Investigator
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Abstract
This dataset is part of a manipulative experiment to investigate how nudibranchs and sea hares alter cyanobaterica production through a trophic cascade.

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Coverage

Spatial Extent: **Lat**:-17.5 **Lon**:-149.8333333
Temporal Extent: 2008-05-18

Dataset Description

This dataset is from a manipulative experiment to investigate how nudibranchs and sea hares alter cyanobaterica production through a trophic cascade. This particular dataset focuses on how the size of sea hares effect predation risk at the Gump Biological Research Station. For additional data, please see files listed in Related Datasets.

Related Dataset

- Geange_and_Stier_2010 Charismatic Microfauna Functional Response: https://www.bco-dmo.org/dataset/726813
- Geange_and_Stier_2010 Charismatic Microfauna Sea Hare Size: https://www.bco-dmo.org/dataset/726832 (current page)
- Geange_and_Stier_2010 Charismatic Microfauna Trophic Cascade: https://www.bco-dmo.org/dataset/726851

Methods & Sampling

All experiments were conducted in plastic containers (190 mm x 190 mm x 90 mm; W x L x H). To allow the exchange of fresh seawater, approx. 80% of the surface area of the lids, and two opposing sides of containers were cut away and covered with 0.5 mm mesh screening. Containers were placed within large (2,670 l) outdoor flow-through seawater tanks (10 containers per tank). In each experiment, sea hares (*Stylocheilus striatus*), nudibranchs (*Gymnodoris ceylonica*), and cyanobacteria (*Lyngbya* spp.) were collected from the field. Prior to experiments, nudibranchs were starved for 3 days, and cyanobacteria were rinsed with filtered seawater, which removed associated flora or fauna.

Using a fully factorial design, the presence of nudibranchs (one individual present [mean length 40.5 mm ± 9.4 SD] vs. absent) and the size of sea hares (small [mean length 20.3 mm ± 1.98 SD]; medium [mean length 32.9 mm ± 2.5 SD]; or large [mean length 61.7 mm ± 5.4 SD]) were manipulated. The six treatments were randomly assigned to 30 containers, each containing a * 75 g tuft of cyanobacteria and 10 sea hares. Survival of sea hares was recorded after 15 h.

Data Processing Description

BCO-DMO Processing:

- added conventional header with dataset name, PI name, version date
- modified parameter names to conform with BCO-DMO naming conventions
- date converted from dd-Mon-yy (eg, 8-May-08) to yyyymmdd (eg. 20080508)

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Data Files

File	
GeangeandStier_2010_Charismaticmicrofauna_SeaHareSize.csv	(Comma Separated Values (.csv), 1.26 KB) MD5:022c54f165b544172fe109f227bf6994
Primary data file for dataset ID 726832	

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Related Publications

Geange, S. W., & Stier, A. C. (2010). Charismatic microfauna alter cyanobacterial production through a trophic cascade. Coral Reefs, 29(2), 393–397. doi:10.1007/s00338-010-0606-5
General

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Parameters

Parameter	Description	Units
Date	Date of Experiment (in yyyymmdd format)	unitless
OBS	Name of observers (SWG (Shane Geange) or ACS (Adrian Stier))	unitless
treatment	Unique identifier for each treatment	unitless
initial_num	Initial number of sea hares at the start of the experiment in each container	unitless
final_num	final number of sea hares at the end of the experiment in each container	unitless
size	Size class of sea hare (S; M; L)	unitless
pred	presence or absence of Nudibranchs	unitless
prop_surv	Proportional survival of sea hares after 15 hours	unitless

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Deployments

Osenberg_et_al_Moorea

Website	https://www.bco-dmo.org/deployment/644752
Platform	Osenberg et al Moorea
Start Date	2003-05-19
End Date	2015-07-12

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Project Information

Cryptic density dependence: the effects of spatial, ontogenetic, and individual variation in reef fish (CDD_in_Reef_Fish)

Coverage: Moorea, French Polynesia (-17.48, -149.82)

Description from NSF award abstract:
Ecologists have long been interested in the factors that drive spatial and temporal variability in population density and structure. In marine reef systems, attention has focused on the role of settlement-the transition of pelagic larvae to a benthic stage-and on density-dependent processes affecting recently settled juveniles. Recent data suggest that co-variance in settlement and subsequent density-dependent survival can obscure the patterns of density dependence at larger scales, a phenomenon called cryptic density dependence. This research will explore the mechanisms that underlie the spatial covariance of settlement and site quality - a process that has received little attention in the standard paradigm. These mechanistic studies of cryptic density

dependence will facilitate the development of new frameworks for fish population dynamics that incorporate larval ecology, habitat quality, density dependence, life history, and the patterns and implications of spatial covariance among these factors. More generally, the work provides a specific empirical context, and a general theoretical treatment, of cryptic heterogeneity (hidden individual variation in demographic rates).

Note: Drs. Craig W. Osenberg and Ben Bolker were at the University of Florida at the time the NSF award was granted. Dr. Osenberg moved to the University of Georgia during the summer of 2014 (current contact information). Dr. Bolker moved to McMaster University in 2010 (current contact information).

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0242312

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