Background fish community at the start of the experimental run in the experiment at Moorea, French Polynesia from April to May 2008 (CDD_in_Reef_Fish project)

Website: https://www.bco-dmo.org/dataset/726945
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
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Abstract
This dataset is from a manipulative experiment investigating the independent and combined effects of priority effects and habitat complexity on the strength of intraspecific competitive interactions among recently settled individuals of a coral reef fish.

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Coverage

Spatial Extent: **Lat**:-17.5 **Lon**:-149.8333333
Temporal Extent: 2008-04-17 - 2008-05-01

Dataset Description

This dataset is from a manipulative experiment investigating the independent and combined effects of priority effects and habitat complexity on the strength of intraspecific competitive interactions among recently settled individuals of a coral reef fish (Thalassoma quinquevittatum: Labridae).

This file is dataset 4 of 4 and describes the background fish community at the start of the experimental run. For additional data, please see files listed in Related Datasets.

Related Datase

- Geange_and_Stier_2010 Priority Effects: https://www.bco-dmo.org/dataset/726890
- Geange_and_Stier_2010 Priority Effects Area: https://www.bco-dmo.org/dataset/726929
- Geange_and_Stier_2010 Priority Effects Length: https://www.bco-dmo.org/dataset/727007

- Geange_and_Stier_2010 Priority Effects Background Community: https://www.bco-dmo.org/dataset/726945 (current page)

Methods & Sampling

This dataset contains a description of the background fish community at the start of each experimental run.

We used an array of 30 isolated live-coral patch reefs separated by approximately 10 meters in water 2–4 meters deep. Reefs were located within a sand-flat, separated from each other, and from nearby natural reefs, by a minimum of 15 m. We constructed reefs to minimize habitat variation by standardizing size, rugosity, and water depth. Each reef consisted of a base of live *Porites lobata* coral with an average area of 2.23 m2 (SD = 0.56), and a mean height of 0.59 m (SD = 0.10). We controlled habitat complexity by manipulating the availability of the branching coral *Pocillopora verrucosa*. This was achieved by drilling holes into the upper surface of patch reefs. Into these holes, we inserted stainless steel pins attached to *P. verrucosa* colonies with Z-Spar Splash Zone Compound (Kopcoat, Pittsburgh, PA, USA). Mean colony surface area was 0.2 m^2 (SD = 0.07). We crossed the availability of *P. verrucosa* (two levels: two, or four colonies) with the presence of three tagged *T. quinquevittatum* competitors (three levels: absent, introduced simultaneously with (0 days), or 5 days earlier than the focal individuals). To each reef, we simulated settlement by introducing three tagged *T. quinquevittatum* focal individuals. Thus, our design had six treatments: (1) focal individuals without competitors, with two *P. verrucosa* colonies; (2) focal individuals and competitors introduced simultaneously, with two *P. verrucosa* colonies; (3) focal individuals with competitors introduced 5 days previously, with two *P. verrucosa* colonies; (4) focal individuals without competitors, with four *P. verrucosa* colonies; (5) focal individuals and competitors introduced simultaneously, with four *P. verrucosa* colonies; and (6) focal individuals with competitors introduced 5 days previously, with four *P. verrucosa* colonies. We ran the experiment in two temporal blocks (17–23 April and 1–7 May 2008), yielding ten replicates (five in each temporal block) for each of the six treatments. We surveyed reefs twice daily (approximately 0800 and 1600 hours) for 5 days after the introduction of focal individuals.

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 fromat was converted from dd-mon-yy (eg. 17-Apr-08) to yyyymmdd (20080417).

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Data Files

File	
GeangeandStier_2010_PriorityEffects_BackgroundCommunity.csv	(Comma Separated Values (.csv), 6.53 KB) MD5:5911a9a6b3926078888360013c715205
Primary data file for dataset ID 726945	

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Related Publications

Geange, S. W., & Stier, A. C. (2010). Priority effects and habitat complexity affect the strength of competition. Oecologia, 163(1), 111–118. doi:10.1007/s00442-009-1554-z
General

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Parameters

Parameter	Description	Units
date	start date of experimental run (in yyyymmdd format)	unitless
run	experimental run identifier	unitless
reef	Unique identifier for each reef	unitless
Acanthurus_olivaceus	count of genus and species	unitless
Acanthurus_triostegus	count of genus and species	unitless
Apogon_fraenatus	count of genus and species	unitless
Arothron_hispidus	count of genus and species	unitless
Balistapus_undulatus	count of genus and species	unitless
Canthigaster_bennetti	count of genus and species	unitless
Canthigaster_solandri	count of genus and species	unitless
Canthigaster_sp	count of genus and species	unitless
Canthigaster_valantini	count of genus and species	unitless
cardinal	count of genus and species	unitless
Centropyge_flavissimus	count of genus and species	unitless
Chaetodon_citrinellus	count of genus and species	unitless
Cheilodipterus_quinquelineatus	count of genus and species	unitless
Chrysiptera_brownriggii	count of genus and species	unitless
Coryphopterus_neophytus	count of genus and species	unitless
Dascylus_aruanus	count of genus and species	unitless
Dascylus_flavicaudus	count of genus and species	unitless
Diodon_hystrix	count of genus and species	unitless
Echnidna_nebulosa	count of genus and species	unitless
flame	count of genus and species	unitless
Gnatholepis_anjerensis	count of genus and species	unitless
Halichoeres_trimaculatus	count of genus and species	unitless
Monotaxis_grandoculis	count of genus and species	unitless
Gymnothorax_javanicus	count of genus and species	unitless
Mulloidichthys_flavolineatus	count of genus and species	unitless
Naso_annulatus	count of genus and species	unitless
Neocirrhitus_armatus	count of genus and species	unitless
Neoniphon_argenteus	count of genus and species	unitless
Neoniphon_sammara	count of genus and species	unitless
Parapercis_millepunctata	count of genus and species	unitless
Parupeneus_multifasciatus	count of genus and species	unitless
Pomacanthus_imperator	count of genus and species	unitless
Pomacentrus_pavo	count of genus and species	unitless
Rhinecanthus_aculeutus	count of genus and species	unitless

Chromis_viridus	count of genus and species	unitless
Scarus_psittacus	count of genus and species	unitless
Scarus_sordidus	count of genus and species	unitless
Scorpaenodes_guamensis	count of genus and species	unitless
Scorpaenopsis_diabolus	count of genus and species	unitless
Stethojulius_bandensis	count of genus and species	unitless
Thalassoma_ambycaphalum	count of genus and species	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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