Size distribution of Thalassoma quinquevittatum standard length in the experiment at Moorea, French Polynesia from April to May 2008 (CDD_in_Reef_Fish project)

Website: https://www.bco-dmo.org/dataset/727007
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
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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 3 of a 4 and describes the size distribution of Thalassoma quinquevittatum standard length used in the experiment. For additional data, please see 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 (current page)

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

Methods & Sampling

This dataset describes the size distribution of *Thalassoma quinquevittatum* stand length used in the experiment.

We examined the effects of habitat complexity and timing of arrival in the context of the survival of focal *Thalassoma quinquevittatum* settlers. We used an array of 30 isolated live-coral patch reefs separated by *10 m in water 2–4 m 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 m2 (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_Length.csv	(Comma Separated Values (.csv), 5.90 KB) MD5:e3d6e85030da3d2176c542235e9362a1
Primary data file for dataset ID 727007	

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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
poc	Number of Pocillopora colonies	unitless
priority	Treatment level for priority effect	unitless
standard_length	standard length of Thalassoma quinquevittatum in mm	millimeters (mm)

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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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