

# Survey to quantify habitat association for juvenile *T. hardwicke* in Moorea, French Polynesia from 2005-2007 (CDD\_in\_Reef\_Fish project)

**Website:** <https://www.bco-dmo.org/dataset/726717>

**Data Type:** Other Field Results

**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
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## Abstract

This dataset is from a study examining the influence of structural refuge, competition and their interaction on the early post-settlement survival of transplanted *Thalassoma hardwicke* (the sixbar wrasse).

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## Coverage

**Spatial Extent:** Lat:-17.5 Lon:-149.8333333

**Temporal Extent:** 2005 - 2007

## Dataset Description

This dataset is from a study examining the influence of structural refuge, competition and their interaction on the early post-settlement survival of transplanted *Thalassoma hardwicke* (the sixbar wrasse).

This dataset specially refers to a survey used to quantify habitat association for juvenile *T. hardwicke*. Please see Related Datasets below for additional data associated with this project.

## Related Datasets:

- Geange\_2010 Larger Heterospecifics Factorial Experiment: <https://www.bco-dmo.org/dataset/726353>
- Geange\_2010 Larger Heterospecifics Field Assay Experiment: <https://www.bco->

[dmo.org/dataset/726693](https://www.bco-dmo.org/dataset/726693)

- Geange\_2010 Larger Heterospecifics Habitat Association: <https://www.bco-dmo.org/dataset/726717> (Current page)
- Geange\_2010 Larger Heterospecifics Habitat Availability: <https://www.bco-dmo.org/dataset/726732>

## Acquisition Description

Three transects within Moorea's northern lagoon were established. Each transect was approximately 800 m in length, and ran from shore to the barrier reef crest. Along each transect, five approximately equally spaced sites were identified (90 (SE = 3), 180 (SE = 7), 289 (SE = 7), 409 (SE = 7) and 508 (SE = 11) m from the reef crest). Within each site, 16 patch reefs (hereafter reefs) of similar size (n = 240 reefs: average surface area = 7.98 m<sup>2</sup>, SE = 0.24; average height = 0.83 m, SE = 0.01) were haphazardly selected. For each reef, and a one-meter halo surrounding the reef, percent cover of 16 substrate categories was visually estimated: *Porites* massive; *Porites* rus; *Montipora* spp.; *Pocillopora* spp.; *Acropora* spp.; other live coral; *Turbinaria* spp.; *Dictyota* spp.; *Halimeda* spp.; turf (a mixed filamentous red algal assemblage consisting predominately of *Polysiphonia* spp.); sponge; bare; other; sand; coral rubble; and pavement). For a subset of 45 reefs, the accuracy of visual estimates of percent cover against Fixed Point Contact (FPC) estimates of percent cover (a commonly accepted standard; Floyd & Anderson 1987) was evaluated. Visual estimates of percent cover were 84.8% accurate relative to FPC estimates and include better estimates of rare habitat than FPC (Meese & Tomich 1992). Habitat surveys were conducted between 7 March and 29 April 2005. On each reef and the surrounding one-meter halo, the identity of all juvenile labroids was recorded and their Standard Length (SL; to the nearest mm) visually estimated. The substrate directly below each individual at the time it was first observed was also recorded. Juveniles were defined as individuals less than 25mm SL. The accuracy of visual estimates of SL made in the field were evaluated by capturing a subset of fish (n = 298 from 8 different species) and comparing visual estimates of SL for these individuals to SL measured in the lab with callipers. Based on mean absolute error (MAE), visual estimation of SL was 94.7% accurate. Fish surveys were conducted between 0800 and 1600 hours (peak activity time for diurnal benthic fishes: Galzin 1987) from 27 May to 6 June 2005.

## Processing Description

This is raw data.

### BCO-DMO Processing:

- added conventional header with dataset name, PI name, version date
- modified parameter names to conform with BCO-DMO naming conventions

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## Related Publications

Floyd, D. A., & Anderson, J. E. (1987). A Comparison of Three Methods for Estimating Plant Cover. The Journal of Ecology, 75(1), 221. doi:10.2307/2260547 <https://doi.org/https://doi.org/10.2307/2260547>  
*Methods*

Geange, S. (2010). Effects of larger heterospecifics and structural refuge on the survival of a coral reef fish, *Thalassoma hardwicke*. Marine Ecology Progress Series, 407, 197–207. doi:[10.3354/meps08569](https://doi.org/10.3354/meps08569)  
*General*

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## Related Datasets

### IsRelatedTo

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Geange, S. (2021) **Survey to quantify habitat availability for juvenile *T. hardwicke* in Moorea, French Polynesia from 2005-2007 (CDD\_in\_Reef\_Fish project)**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2017-10-05 doi:10.26008/1912/bco-dmo.726732.1 [[view at BCO-DMO](#)]

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### Parameters

Parameter	Description	Units
site	unique identifier for each reef in survey	unitless
id	unique identifier for each wrasse counted	unitless
species	Genus and species	unitless
habitat	Habitat type (BARE POC - Pocillopora spp.; PRUS - Porites rus; MONTIP - Montipora spp.; SAND TURBINAR- Turbinaria ornata; PSPMASSIVE- Porites massive; ACROP- Acropora spp.; TURF PAVEMENT)	unitless

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### Deployments

#### Osenberg\_et\_al\_Moorea

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/644752">https://www.bco-dmo.org/deployment/644752</a>
<b>Platform</b>	Osenberg et al Moorea
<b>Start Date</b>	2003-05-19
<b>End Date</b>	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
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-0242312</a>

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