

# Effects of vermetids on Pocillopora growth and survival

**Website:** <https://www.bco-dmo.org/dataset/717627>

**Data Type:** Other Field Results

**Version:** 2017-10-05

## Project

» [Spatial patterns of coral-vermetid interactions: short-term effects and long-term consequences](#)  
(Vermetids\_Corals)

Contributors	Affiliation	Role
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## Coverage

**Spatial Extent:** N:-17.47279 E:-149.78277 S:-17.48365 W:-149.84698

## Dataset Description

Researchers examined the effects of vermetids on Pocillopora growth and survival at different locations around Moorea, French Polynesia.

### Related Datasets:

- Reef Locations: <https://www.bco-dmo.org/dataset/645257>
- Brown 2014 Muricid snails and vermetid gastropod: <https://www.bco-dmo.org/dataset/717528>

## Methods & Sampling

Researchers chose 6 sites, and at each site, selected 10 patch reefs that had established populations of vermetids. On each reef, size (length, width, and water depth), as well as percent cover of corals and non corals were recorded. Of the 10 reefs surveyed at each site, they chose randomly chose 5 to remove vermetids using wire hooks, which removed the snail and left the shells intact. the remaining reefs were unmanipulated and contained vermetids at ambient densities.

Experimental colonies came from three distinct colonies of Pocillopora verrucosa. Colonies were chosen near the MOE site (~600m west). Within the site of collection, colonies were collected from separate patch reefs (separated by greater than 100m) to maximize the probability of different genotypes. Each colony terminal

branches were removed in segments of 5cm in length. Each fragment was attached to a plastic base and the skeletal mass was estimated using the buoyant weight technique (Davies 1989). One fragment from each reef was attached to each reef.

Coral fragments were assessed after 155 days. Corals were collected, their final buoyant mass was measured and their proportion of the coral surface area that was alive was visually estimated.

## Data Processing Description

$\text{long\_term\_growth} = ((\text{Weight\_day155\_in\_sea\_water} - \text{Weight\_day0\_in\_sea\_water})/155)/((\text{density\_aragonite} - ((\text{density\_sea\_water\_day0} + \text{density\_sea\_water\_day155})/2)))$

$\text{x\_form\_surv} = \text{calculated as: arcsine}(\text{square root}(\text{percent alive at day 155}/100))$

## 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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## Data Files

File
<b>Shima_2013_Pocillopora.csv</b> (Comma Separated Values (.csv), 11.28 KB) MD5:5bab1f077b3fadd4ee363342bf508b0f
Primary data file for dataset ID 717627

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## Related Publications

Davies, P.S. (1989). Short-term growth measurements of corals using an accurate buoyant weighing technique. *Marine Biology*, 101(3), 389–395. doi:10.1007/bf00428135 <https://doi.org/10.1007/BF00428135>  
*Methods*

Shima, J. S., Phillips, N. E., & Osenberg, C. W. (2013). Consistent deleterious effects of vermetid gastropods on coral performance. *Journal of Experimental Marine Biology and Ecology*, 439, 1–6.  
doi:[10.1016/j.jembe.2012.10.012](https://doi.org/10.1016/j.jembe.2012.10.012)  
*Results*

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## Parameters

Parameter	Description	Units
site	identifier for the 6 sites used for this study (MOE; TIE; TOE; VIW; VOE; VOW). The coordinates for each site can be found in the dataset Reef Locations, found at <a href="https://www.bco-dmo.org/dataset/645257">https://www.bco-dmo.org/dataset/645257</a> .	unitless
reef	unique reef identifier	unitless
paring	number corresponding to a "pair" of reefs of similar size depth and surface composition (pairings are within site)	unitless
genotype	qualitative identifier of genotype of coral nubbin (A; B; or C)	unitless
treatment	experimental treatment (R = vermetids removed; C = vermetids at ambient density)	unitless
pcnt_alive	percent of transplanted coral still alive at end of experiment	percent
growth	growth of transplanted coral	miligrams per day (mg/day)
coral_survival	coral nubbin survival	proportion
surface_to_top	depth of top of reef	meters (m)
surface_to_base	depth of base of reef	meters (m)
lobata	percent cover of living coral <i>Porites lobata</i>	percent
dead	percent cover of dead coral substrate (i.e. bare; crustose; coralline algae; or miscellaneous turf algae)	percent
steg	percent cover of algal turf associated with the farming damselfish ( <i>Stegastes nigricans</i> )	percent
rus	percent cover of living coral <i>Potrites rus</i>	percent
mont	percent cover of living coral <i>Montipora</i> spp.	percent
turb	percent cover of living coral <i>Pocillopora</i> spp.	percent
poc	percent cover of living coral <i>Pocillopora</i> spp.	percent
acropora	percent cover of living coral <i>Acropora</i> spp.	percent

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## Instruments

<b>Dataset-specific Instrument Name</b>	dive gear
<b>Generic Instrument Name</b>	Diving Mask and Snorkel
<b>Dataset-specific Description</b>	dive gear
<b>Generic Instrument Description</b>	A diving mask (also half mask, dive mask or scuba mask) is an item of diving equipment that allows underwater divers, including, scuba divers, free-divers, and snorkelers to see clearly underwater. Snorkel: A breathing apparatus for swimmers and surface divers that allows swimming or continuous use of a face mask without lifting the head to breathe, consisting of a tube that curves out of the mouth and extends above the surface of the water.

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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

### Spatial patterns of coral-vermetid interactions: short-term effects and long-term consequences (Vermetids\_Corals)

**Coverage:** Moorea, French Polynesia (-17.48 degrees S, -149.82 degrees W)

#### *Description from NSF abstract:*

Ecological surprises are most likely to be manifest in diverse communities where many interactions remain uninvestigated. Coral reefs harbor much of the world's biodiversity, and recent studies by the investigators suggest that one overlooked, but potentially important, biological interaction involves vermetid gastropods. Vermetid gastropods are nonmobile, tube-building snails that feed via an extensive mucus net. Vermetids reduce coral growth by up to 80%, and coral survival by as much as 60%. Because effects vary among coral taxa, vermetids may substantially alter the structure of coral communities as well as the community of fishes and invertebrates that inhabit the coral reef.

The investigators will conduct a suite of experimental and observational studies that: 1) quantify the effects of four species of vermetids across coral species to assess if species effects and responses are concordant or idiosyncratic; 2) use meta-analysis to compare effects of vermetids relative to other coral stressors and determine the factors that influence variation in coral responses; 3) determine the role of coral commensals that inhabit the branching coral, Pocillopora, and evaluate how the development of the commensal assemblage modifies the deleterious effects of vermetids; 4) determine how vermetid mucus nets affect the local environment of corals and evaluate several hypotheses about proposed mechanisms; and 5) assess the long-term implications of vermetids on coral communities and the fishes and invertebrates that depend on the coral.

**Note:** The Principal Investigator, Dr. Craig W. Osenberg, was 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](#)).

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## Funding

<b>Funding Source</b>	<b>Award</b>
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-1130359</a>

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