

Experiments to quantify the effects of vermetids on skeletal growth and survival in Moorea, French Polynesia from (Vermetids_Corals project)

Website: <https://www.bco-dmo.org/dataset/726082>

Data Type: experimental

Version: 2017-10-05

Project

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

Contributors	Affiliation	Role
Shima, Jeffrey	Victoria University of Wellington	Principal Investigator, Contact
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Coverage

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

Temporal Extent: 2006-06-02 - 2007-01-13

Dataset Description

Researchers examined the effects of vermetids on the growth and survival of three species of coral in Moorea, French Polynesia as well as the relationship between the proportion of dead coral and the number of vermetids.

Related Datasets:

- Shima et al 2010 experimental: <https://www.bco-dmo.org/dataset/726082> (current page)
- Shima et al 2010 survey: <https://www.bco-dmo.org/dataset/726107>

Methods & Sampling

Between June 2-10, 2006, six experiments were set up to quantify the effects of vermetids on skeletal growth and survival. The four focal species were: *Porites lobata*, *Porites rus*, *Pocillopora* and *Montipora*, which were at a site in the Maharepa lagoon (inshore) and two species (*Porites lobata* and *Pocillopora*) at another site (West Temae or toe). Corals were attached to plastic bases and weighed using the bouyant method (Davies 1989)

and then placed onto to the reefs in triplicate.

Reefs where corals were placed had local vermetid densities ($n=12$). Half of the reefs were then used as experimental reefs and vermetids were removed. Focal corals were collected after 47 days and re-weighed to assess growth. After weighing, corals were returned to the experimental reefs. After 217-255 days on 13 January 2007, the proportion of coral surface area that was alive was estimated.

Data Processing Description

asin_survival = estimate of survival after the end of the experiment - 217-225 days after initiation

Survival = $\arcsin(\text{square root}(\text{proportion alive}))$

delta_mass = change in mass, final-initial mass

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Data Files

File
Shimaetal_2010_experimental.csv (Comma Separated Values (.csv), 11.28 KB) MD5:4c0a55bb225e6c43a84ddab847f6ab9b
Primary data file for dataset ID 726082

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Related Publications

Shima, J. S., Osenberg, C. W., & Stier, A. C. (2010). The vermetid gastropod *Dendropoma maximum* reduces coral growth and survival. *Biology Letters*, 6(6), 815–818. doi:[10.1098/rsbl.2010.0291](https://doi.org/10.1098/rsbl.2010.0291)
General

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Parameters

Parameter	Description	Units
study	identifier of specific study (focal species of coral and location of reefs: coralid_location of reefs)	unitless
Reef	identifier of reef	unitless
Treatment	experimental treatment (Vermetids removed = Removal; not removed = Control)	unitless
Species	species of coral assessed (Montipora = Montipora spp.; Pocillopora = Pocillopora spp.; Porites = Porites lobata; Prus = Porites rus)	unitless
asin_survival	estimate of survival after end of experiment	unitless
delta_mass	change in mass of focal coral after 47d	grams (g)

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Instruments

Dataset-specific Instrument Name	Scaled
Generic Instrument Name	scale or balance
Dataset-specific Description	Corals were attached to plastic bases and weighed using the bouyant method (Davies 1989) and then placed onto to the reefs in triplicate.
Generic Instrument Description	Devices that determine the mass or weight of a sample.

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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

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

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1130359

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