Lab experiment to test settlement of Caerasignum maximum larvae to live coral from Porites lobata, Pocillopora sp., Porites rus, and Millepora after 2-6 hours (Vermetids_Corals project)

Website: https://www.bco-dmo.org/dataset/722118
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
Phillips, Nicole	Victoria University of Wellington	Principal Investigator, Contact
Osenberg, Craig	University of Georgia (UGA)	Co-Principal Investigator
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Dataset Description

These datasets all provide data for the settlement of *Ceraesignum* (previously *Dendropoma*) *maximum* to live coral.

Related Datasets:

- Experiment 1 day: https://www.bco-dmo.org/dataset/722097
- Experiment 2 hours: https://www.bco-dmo.org/dataset/722118 (The current page.)
- Experiment 3 minutes: https://www.bco-dmo.org/dataset/722135
- Settlement to Quadrats: https://www.bco-dmo.org/dataset/722208
- Settlement to Rubble: https://www.bco-dmo.org/dataset/722226

Methods & Sampling

Ceraesignum maximum larvae were obtained from field- collected adults. Individual adult *C. maximum* were chiseled from the coral matrix intact in their tubes, transported to the laboratory in coolers of seawater, and their brooding status ascertained by gently poking each snail until it retracted deep into its shell. If late-stage capsules were observed attached to the inside of the shell, a mesh-sided cage (mesh = 150 µm) was secured around the tube with cable-ties, and the adult (with mesh enclosing the openings to their tubes) was then placed in a large tank with flowing seawater. Swimming larvae were released by females after 1–3 days.

Fragments (approximately 2x3 cm) of live coral were collected from the lagoon on the morning of each experiment and left for 2 h in flowing ambient seawater to recover. Fragments were examined under a

microscope prior to each experiment to ensure that polyps were extended.

For this experiment:

A single coral fragment was placed into each of ten replicate plastic containers of each treatment with approximately 200 ml FSW. To each container, we added 1 larva (1-day post-hatch). Of the ten larvae for each treatment, five were from each of two females. We examined larvae after 4–6 hours, and they were scored as live or dead and the number of empty dead shells were counted.

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
- blank values replaced with no data value 'nd'.

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Data Files

File
Phillipsetal_2014_Expt2hours.csv (Comma Separated Values (.csv), 197 bytes) MD5:6673d5d401ec2ab8c3810a1f29e21ef1 Primary data file for dataset ID 722118

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Related Publications

Phillips, N. E., Shima, J. S., & Osenberg, C. W. (2014). Live coral cover may provide resilience to damage from the vermetid gastropod Dendropoma maximum by preventing larval settlement. Coral Reefs, 33(4), 1137–1144. doi:10.1007/s00338-014-1198-2
General

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Parameters

Parameter	Description	Units
female	id of female that produced larvae for experiments	unitless
treatment	coral that larvae were exposed to: Pocilllopora = Pocillopora sp; P.lobata = Porites lobata; P.rus = Porites rus; Millepora = Millepora sp	unitless
number_live	number of live snails in the treatment	unitless
number_dead	number of dead snails in a treatment	unitless
number_shells	number of empty shells in a treatment	unitless

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Instruments

Dataset-specific Instrument Name	dissecting microscope
Generic Instrument Name	Microscope - Optical
Dataset-specific Description	Tubs were maintained in a flowthrough seawater table and examined after 24 h under a dissecting microscope.
Generic Instrument Description	Instruments that generate enlarged images of samples using the phenomena of reflection and absorption of visible light. Includes conventional and inverted instruments. Also called a "light microscope".

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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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