Settlement of Ceraesignum (previoulsy Dendropoma) maximum to rubble within plots where the amount of live coral is manipulated in Moorea, French Polynesia (Vermetids_Corals project)

Website: https://www.bco-dmo.org/dataset/722226
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
Phillips, Nicole	Victoria University of Wellington	Principal Investigator, Contact
Osenberg, Craig	University of Georgia (UGA)	Co-Principal Investigator
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Coverage

Temporal Extent: 2008-04-02 - 2008-10-02

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
- 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 (The current page.)

Methods & Sampling

On 02 October 2008, ten pairs of small focal patch reefs (2–6 m2 in area) were selected that were predominately (80 %) live Porites lobata and separated from nearest neighbouring reefs by at least 0.5 m of

sand. One member of each pair of reefs lacked populations of adult C.maximum; the other member of the pair had C.maximum adults present. Although these were not quantified, densities appeared approximately similar to densities on P. lobata reefs reported elsewhere (e.g., Shima et al. 2010). These reefs also had corresponding morphological differences: i.e., reefs without vermetids were rounded, and those with vermetids were flattened (see Shima et al. 2010).

Pieces of coral rubble, approximately elliptical in shape and similar in size (average maximum length 9 width 9 height±SD=12±1.298±1.697±1.7cm),were collected from the lagoon in Moorea, French Polynesia on 01 October 2008. Rubble was soaked in freshwater overnight, scrubbed with brushes to remove fouling organisms, and dried in full sun for 3 d.

A single piece of rubble (whose surface area was estimated using the equation for an ellipsoid) was attached to each reef on 04 October 2008 with cable-ties that were affixed to the reef using marine epoxy. The pieces of coral rubble were collected from the reefs after 6 months (in April 2009, n = 17 due to three rubble pieces missing) and examined in the laboratory, where vermetid settlers were counted and identified to species.

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
- empty values were replaced with 'nd' (no data).

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Data Files

File
Phillipsetal_2014_Settle2Rubb.csv (Comma Separated Values (.csv), 744 bytes) MD5:90cadbc588bdb00e75a6eb7e8b0b984c Primary data file for dataset ID 722226

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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

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
Methods

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Parameters

Parameter	Description	Units
Reef_number	identification of reef where manipulations were made	unitless
Reef_type	presence or absence of C. maximum adults	unitless
number_of_settlers_on_rock	Number of settlers of C.maximum to rubble	unitless
number_of_settlers_on_marine_epoxy	Number of settlers of C.maximum to marine epoxy attaching rubble	unitless
rock_surface_area	surface area estimated using the equation for an ellipisoid	square centimeters (cm2)
settlers_per_cm2	number of settlers per area of rubble	individual per square centimeter (individuals/cm2)

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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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