Lab experiment to determine survival and mortality of Ceraesignum (formerly Dendropoma) maximum after 3, 6, and 9, days depending on amount fed in Moorea, French Polynesia from October 2009 (Vermetids_Corals project)

Website: https://www.bco-dmo.org/dataset/725880
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
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Coverage

Spatial Extent: **N**:-17.47279 **E**:-149.78277 **S**:-17.48365 **W**:-149.84698
Temporal Extent: 2009-10-04 - 2009-10-13

Dataset Description

These data are from an experiment that test the nutritional strategies of Ceraesignum (Dendropoma) maximum larvae. For additional datasets see related files.

Related Datasets:

- Phillips_2011 - Experiment 1 Larval Mortality: https://www.bco-dmo.org/dataset/725276
- Phillips_2011 - Experiment 1 Larval Size: https://www.bco-dmo.org/dataset/725317
- Phillips_2011 - Experiment 1 Settlement Challenge 10: https://www.bco-dmo.org/dataset/725335
- Phillips_2011 - Experiment 1 SettlementChallenge18: https://www.bco-dmo.org/dataset/725392
- Phillips_2011 - Experiment 2 Larval Mortality: https://www.bco-dmo.org/dataset/725880 (Current page)
- Phillips_2011 - Experiment 2 Larval Size: https://www.bco-dmo.org/dataset/725943
- Phillips_2011 - Experiment 2 Larval Velum Size: https://www.bco-dmo.org/dataset/725957
- Phillips_2011 - Experiment 2 Settlement Challenge 6: https://www.bco-dmo.org/dataset/725973
- Phillips_2011 - Experiment 2 Settlement Challenge 8: https://www.bco-dmo.org/dataset/726002

Methods & Sampling

In this experiment, larval growth and metamorposis was tested using different food levels.

Larvae hatched on October 10, 2009 and ~50 were distributed into each tubs on 500mL filtered sea water (FSW). Because the greatest metamorphic success was in the *Isochrysis galbana* treatment during experiment 1, only that species was used in experiment 2.

Three food densities were created high food (4 x 104 cells mL-1), low food (4 x 103 cells mL-1) plus an Unfed treatment in which larvae were raised in FSW. Investigators used a hemocytometer to count algal cells and calculate densities of phytoplankton stocks and amount of stock to add to containers for each treatment. Each of the three treatments had three replicate containers; 50 larvae were placed into each container initially, exept two containers that had 1 extra. Every 3 days for 9 days starting on October 4, 2009, larvae were counted in each container to quantify survival. Water and food were also replenished. On days 6 and 8, fifteen larvae were transferred for the settlement challenge experiment.

Data Processing Description

For days 3 and 6: percent survival = (number alive on day of sampling/ number alive initial)*100
For day 9: percent survival = (number alive day 9/number remaining on day 8)*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	
Phillips_2011_Expt2_LarvalMortality.csv	(Comma Separated Values (.csv), 697 bytes) MD5:452f3fd69d6305e11b9f6f0c01b47f8a
Primary data file for dataset ID 725880	

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Related Publications

Phillips, N. E. (2011). Where are larvae of the vermetid gastropod Dendropoma maximum on the continuum of larval nutritional strategies? Marine Biology, 158(10), 2335–2342. doi:10.1007/s00227-011-1737-0
General

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Parameters

Parameter	Description	Units
FOOD_LEVEL	High (HI) Low (LO) or Unfed treatments	unitless
Replicate_tub	replicate number	unitless
number_alive_initial	the number larvae in treatments alive initially	unitless
number_alive_day_3	number of alive larvae found on day 3	unitless
number_dead_d3	number of dead larvae found on day 3	unitless
number_alive_d6	number of alive larvae found on day 6	unitless
number_dead_d6	number of dead larvae found on day 6	unitless
number_transferred_day_6	number of larvae transferred to settlement challenges	unitless
number_transferred_day_8	number of larvae transferred to settlement challenges on day 8	unitless
number_remain	the number of larvae still tubs after larvae for settlement challenges were removed	unitless
number_alive_d9	number of alive larvae found on day 9	unitless
number_dead_9	number of dead larvae found on day 9	unitless
percent_survival_day_3	survival from day 1 to 3	unitless (percent)
percent_survival_day_6	survival from day 3 to 6	unitless (percent)
percent_survival_day_9	survival from day 6 to 9	unitless (percent)

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Instruments

Dataset-specific Instrument Name	hemocytometer
Generic Instrument Name	Hemocytometer
Dataset-specific Description	Investigators used a hemocytometer to count algal cells and calculate densities of phytoplankton stocks and amount of stock to add to containers for each treatment.
Generic Instrument Description	A hemocytometer is a small glass chamber, resembling a thick microscope slide, used for determining the number of cells per unit volume of a suspension. Originally used for performing blood cell counts, a hemocytometer can be used to count a variety of cell types in the laboratory. Also spelled as "haemocytometer". Description from: http://hlsweb.dmu.ac.uk/ahs/elearning/RITA/Haem1/Haem1.html.

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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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