Lab experiment to determine survival and mortality of Ceraesignum (formerly Dendropoma) maximum after 3, 6, 9, 12, 15 and 18 days depending on food in Moorea, French Polynesia (Vermetids_Corals project)

Website: https://www.bco-dmo.org/dataset/725276
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
Biddle, Mathew	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Table of Contents

Coverage

Spatial Extent: **N**:-17.47279 **E**:-149.78277 **S**:-17.48365 **W**:-149.84698
Temporal Extent: 2009-09-24 - 2009-10-12

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 (Current page)
- 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
- 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, larvae were placed into feeding treatments with different types of phytoplankton to determine larval nutritional strategies.

Larvae hatched on Sept 24, 2009 and were distributed into tubs on 500mL filtered sea water (FSW). Three larval feeding treatments with different species of phytoplankton, all at 10 x 104 cells mL-1: Isochrysis galbana (‘‘Iso’’ treatment), Dunaliella tertiolecta (‘‘Dun’’ treatment), a 1:1 ratio of I. galbana and D. tertio- lecta (‘‘Mixed’’ treatment), 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 four treatments had three replicate containers; 45 larvae were placed into each container initially except for the Unfed treatment which had 40 larvae per container. Every 3 days for 18 days starting on Sept 24, 2009, larvae were counted in each container to quantify survival. Water and food were also replenished. On days 3, 6, 9 and 18, six larvae per container were haphazardly sampled and preserved them in 70% ethanol for later measurement of protoconch height. On day 10, 15 larvae were transferred for the settlement challenge experiment. On day 18, the remaining larvae were transferred.

Data Processing Description

For days 6 and 9, the 6 that were removed were considered alive, so added into the analysis for day 12, the number alive are the number remaining after 15 were removed for the settlement challenge.

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).

[table of contents | back to top]

Data Files

File
Phillips_2011_Expt1_LarvalMortality.csv (Comma Separated Values (.csv), 1.66 KB) MD5:069770a069c624a691c253c9b1c24cc1 Primary data file for dataset ID 725276

[table of contents | back to top]

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

[table of contents | back to top]

Parameters

Parameter	Description	Units
Food_treatment	type of food given to larvae(Isochrysis galbana = Iso; Dunaliella tertiolecta = Dun; 1:1 ratio of Iso and Dun = Mixed)	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_day_3	number of dead larvae found on day 3	unitless
number_missing_day_3	number of missing larvae day 3 (calculated by the total number alive and dead subtracted from the previous sample alive)	unitless
number_alive_day_6	number of alive larvae found on day 6	unitless
number_dead_day_6	number of dead larvae found on day 6	unitless
number_missing_day_6	number of missing larvae day 6 (calculated by the total number alive and dead subtracted from the previous sample alive)	unitless
number_alive_day_9	number of alive larvae found on day 9	unitless
number_dead_day_9	number of dead larvae found on day 9	unitless
number_missing_day_9	number of missing larvae day 9 (calculated by the total number alive and dead subtracted from the previous sample alive)	unitless
transferred_to_settlement_challenge_and_sampled	number of larvae transfered to settlement challenge	unitless
number_remaining	number of larvae remaining for mortality experiment	unitless
number_alive_day_12	number of alive larvae found on day 12	unitless
number_dead_day_12	number of dead larvae found on day 12	unitless
number_missing_day_12	number of missing larvae day 12 (calculated by the total number alive and dead subtracted from the previous sample alive)	unitless
number_alive_day_15	number of alive larvae found on day 15	unitless
number_dead_day_15	number of dead larvae found on day 15	unitless
number_missing_day_15	number of missing larvae day 15 (calculated by the total number alive and dead subtracted from the previous sample alive)	unitless
number_alive_day_18	number of alive larvae found on day 18	unitless
number_dead_day_18	number of dead larvae found on day 18	unitless
number_missing_day_18	number of missing larvae day 18 (calculated by the total number alive and dead subtracted from the previous sample alive)	unitless
survival_day_3	percent survival from day 1 to 3 (number alive on day of sampling/ number alive on the preceding sample date)*100	unitless (percent)
survival_day_6	percent survival from day 3 to 6 (number alive on day of sampling/ number alive on the preceding sample date)*100	unitless (percent)
survival_day_9	percent survival from day 6 to 9 (number alive on day of sampling/ number alive on the preceding sample date)*100	unitless (percent)
survival_day_12	percent survival from the ones number remaining day 10 (number alive on day of sampling/ number alive on the preceding sample date)*100	unitless (percent)
survival_day_15	percent survival from day 12 to 15 (number alive on day of sampling/ number alive on the preceding sample date)*100	unitless (percent)

survival_day_18	percent survival from day 15 to 18 (number alive on day of sampling/ number alive on the preceding sample date)*100	unitless (percent)

[table of contents | back to top]

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.

[table of contents | back to top]

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

[table of contents | back to top]

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).

[table of contents | back to top]

Funding

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

[table of contents | back to top]