Effect of distance between coral lesions on tissue regeneration and skeletal growth at two sites on the backreef on either side of Cook's Bay in Moorea, French Polynesia from May, 2012 through July, 2012

Website: https://www.bco-dmo.org/dataset/777110
Data Type: Other Field Results
Version: 1
Version Date: 2019-09-19

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

Contributors	Affiliation	Role
Hamman, Elizabeth	University of Georgia (UGA)	Principal Investigator
Atkins, Rebecca	University of Georgia (UGA)	Contact
Biddle, Mathew	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
Experimental corals were artificially damaged using a waterpik with lesion centroids separated by 1.2cm, 3.5cm, and 6cm (or no damage for the control), and buoyantly weighed. After 20 and 39 days, corals were re-weighed to determine buoyant mass and skeletal growth. Coral lesions were also photographed and images analyzed to assess the % of lesion with regenerated tissue.

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Coverage

Spatial Extent: **Lat**:-17.48 **Lon**:-149.82
Temporal Extent: 2012-05 - 2012-07

Methods & Sampling

Experimental corals were artificially damaged using a waterpik with lesion centroids separated by 1.2cm, 3.5cm, and 6cm (or no damage for the control), and buoyantly weighed. After 20 and 39 days, corals were re-weighed to determine buoyant mass and skeletal growth. Coral lesions were also photographed and images analyzed to assess the % of lesion with regenerated tissue. Buoyant weight was determined by hanging the coral beneath a balance suspended in seawater and using equations factoring in skeletal density, seawater temperature, and a reference weight to determine the skeletal weight.

Data Processing Description

BCO-DMO Processing Notes:
- added conventional header with dataset name, PI name, version date
- modified parameter names to conform with BCO-DMO naming conventions
- added lat, lon columns.

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Data Files

File	
LesionDistance_GrowthHealing.csv	(Comma Separated Values (.csv), 3.16 KB) MD5:86f431ff90ad3e0d0d84ded974c036c5
Primary data file for dataset ID 777110	

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Related Publications

Davies, P.S. (1989). Short-term growth measurements of corals using an accurate buoyant weighing technique. Marine Biology, 101(3), 389–395. doi:10.1007/bf00428135 https://doi.org/10.1007/BF00428135
Methods

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Parameters

Parameter	Description	Units
Coral	Coral ID Number	unitless
Treatment	Experimental Treatment - A (control – no lesions) Bcentroids separated by 1.2cm); C (lesion centroids separated by 3.5cm); and D (lesion centroids separated by 6cm)	unitless
Block	Experimental Block	unitless
Initial_Mass	Skeletal initial mass	grams (g)
Halfway_Mass	Skeletal mass after 20 days	grams (g)
Final_Mass	Skeletal mass after 39 days	grams (g)
Growth_Midpoint	Skeletal growth after 20 days	grams (g)
Growth_Final	Skeletal growth after 39 days	grams (g)
Healing_Mid	% of lesion regenerated after 20 days	unitless
Healing_Final	% of lesion regenerated after 20 days	unitless
lat	Latitude of sampling. Positive values indicate North.	decimal degrees
lon	Longitude of sampling. Negative values indicate West.	decimal degrees

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Instruments

Dataset-specific Instrument Name	photographed
Generic Instrument Name	Camera
Dataset-specific Description	Coral lesions were also photographed and images analyzed to assess the % of lesion with regenerated tissue.
Generic Instrument Description	All types of photographic equipment including stills, video, film and digital systems.

Dataset-specific Instrument Name	weighted
Generic Instrument Name	scale or balance
Dataset-specific Description	buoyantly weighed
Generic Instrument Description	Devices that determine the mass or weight of a sample.

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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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