LTR - Physical Characteristics

Website: https://www.bco-dmo.org/dataset/645114
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Project
» Cryptic density dependence: the effects of spatial, ontogenetic, and individual variation in reef fish (CDD_in_Reef_Fish)

Contributors	Affiliation	Role
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Dataset Description

Reef morphological dimensions (physical characteristics) were measured for each of 192 reefs in 2003, 2004 (reefs marked be letters only in this year), 2007, and 2009, 2012 and 2014. Beginning in 2012, reefs 129-144 and the added reefs 193-198 were manipulated for a project studying the effects of vermetid removals; information pertaining to this manipulation can be found in the project “Spatial patterns of coral-vermetid interactions: short-term effects and long-term consequences.” All data collected on reefs 129-144 and 193-198 beginning in 2012 can also be found under that project. In 2003, percent cover of nearest neighbor reefs were also estimated. Physical characteristic surveys are meant to characterize the size dimensions of each reef. We ultimately hope to use these data to inform how reef size and shape influence benthic composition and *Thalassoma* populations.

Location: Moorea, French Polynesia (17.48 degrees S, 149.82 degrees W)

Methods & Sampling

Sampling and Analytical Methodology:

Data were collected for reefs 1-192, in 2003, 2004, 2007, 2009, 2012, and 2014. In 2004, letter-marked reefs were monitored. A diver swims up to one of the reefs. If the reef has two distinct sections they are labeled A and B randomly. Using a transect tape, the diver determines the maximum length and perpendicular width. Three height measurements are taken. After 2003, measurements were made by dropping a weighted transect tape from the water surface to an average high point on the reef (typical height), to the highest point on a reef (max height), and to the seafloor (H20 max height). In 2003, a diver measured from the sea floor to an average high point on the reef (typical height) and a high point on the reef (max height) with transect tape. In 2003, H20MHeight was the distance from the maximum height to the surface, measurements were made with a transect tape. 2003 data were converted to be congruent with 2004 onward. The percent cover and direction of the nearest neighbor reefs were also measured. These “Nearest Neighbor (NN)” estimates are

conducted by visually estimating the percent area within 2 meters of the edge of the sampled reef that is comprised of hard/other substrate (in other words, it is the percent hard/other substrate cover surrounding the sampled reef within a 2 meter radius).

Materials: transect tape

Data Processing Description

Data Processing:
“NNAVGEST” was calculated as the average of each observer’s estimate (NNJEST, NNCWOEST, NNJSWETS, NNTAEST). When only one observer who was not originally listed in a column heading ((i.e., JS, CWO, JSW, TA) made observations, data was recorded directly into the NNAVGEST column.

NA- Not applicable (never recorded) to this data set
NR- Not recorded at certain times throughout the data set

BCO-DMO Processing Notes
- Generated from original file "LTR_PhysicalCharacteristics.csv" contributed by Rebecca Atkins
- Parameter names edited to conform to BCO-DMO naming convention found at Choosing Parameter Name
- Any blank rows removed

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Data Files

File
LTR_PhysicalCharacteristics.csv (Comma Separated Values (.csv), 92.87 KB) MD5:249970133f223f8f510fb1ade9bc6e80 Primary data file for dataset ID 645114

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Parameters

Parameter	Description	Units
DATE	Date Data Collected (2003-2005)	DD-MMM-YYYY
OBSERV	Name of observer (Jada S. White; Tom Adam; Jeff Shima; Chris McDermot; Craig W. Osenberg; Rose Terborg; Tom Frazer) (JSW; TA; JS; CmcD; CWO; Rose; TF)	text
SITE	Name of site (1-192; LETTERS A-X)	text
REEF_let	Letter corresponding to reef ID	text
REEF_NUMBER	Number corresponding to reef ID	dimensionless
TREATMENT	Treatment (does not apply to this data set)	text

COMPON	Component of the reef (individual bommies all joined to form a larger patch reef)	text
LENGTH	Max Length	meters
WIDTH	Perpendicular Width	meters
THEIGHT	Typical height of reef; from water to reef (except in 2003; from reef base to the typical height of reef; this was changed in the spreadsheet to reflect the typical height measured from 2004 onward by substracting the H20MHEIG or depth by the measurement recorded by the observer)	meters
MHEIGHT	Maximum Height from top of water to reef (except in 2003; measurements were made from reef base to the maximum height of reef so these data were manipulated to match the rest of the data by subtracting the depth from the number measured by the observer. Data in the spreadsheets have already been converted to reflect the same type of measurement from 2004 onward)	meters
H20MHEIG	Water depth (except in 2003: raw measurementers were distance between the top of the water to the maximum height of the reef. These data were converted in the spreadsheet to depth by adding max height to the number measured by the observer.)	meters
NNAVGEST	Average of Nearest Neighbor Estimate (% cover of “donut” from reef edge out 2 meters)	percentage
NNJSEST	Jeff Shima’s estimate of Nearest Neighbor Cover; 0-100 or NA (= did not estimate)	number of individuals
NNCWOEST	Craig Osenberg’s estimate of Nearest Neighbor Cover; 0-100 or NA (= did not estimate)	number of individuals
NNJSWEST	Jada White’s estimates of Nearest Neighbor Cover; 0-100 or NA (= did not estimate)	number of individuals
NNTAEST	Tom Adam’s estimate of Nearest Neighbor Cover; 0-100 or NA (= did not estimate)	number of individuals
DEPTH	Depth	meters
NOTES	Notes	text

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Instruments

Dataset-specific Instrument Name	Mask and snorkel
Generic Instrument Name	Diving Mask and Snorkel
Generic Instrument Description	A diving mask (also half mask, dive mask or scuba mask) is an item of diving equipment that allows underwater divers, including, scuba divers, free-divers, and snorkelers to see clearly underwater. Snorkel: A breathing apparatus for swimmers and surface divers that allows swimming or continuous use of a face mask without lifting the head to breathe, consisting of a tube that curves out of the mouth and extends above the surface of the water.

Dataset-specific Instrument Name	Transect Tape
Generic Instrument Name	Measuring Tape
Dataset-specific Description	Materials: transect tape and slates
Generic Instrument Description	A tape measure or measuring tape is a flexible ruler. It consists of a ribbon of cloth, plastic, fibre glass, or metal strip with linear-measurement markings. It is a common tool for measuring distance or length.

Dataset-specific Instrument Name	Slate
Generic Instrument Name	Underwater Writing Slate
Dataset-specific Description	Materials: transect tape and slates
Generic Instrument Description	Underwater writing slates and pencils are used to transport pre-dive plans underwater, to record facts whilst underwater and to aid communication with other divers.

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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

Cryptic density dependence: the effects of spatial, ontogenetic, and individual variation in reef fish (CDD_in_Reef_Fish)

Coverage: Moorea, French Polynesia (-17.48, -149.82)

Description from NSF award abstract:
Ecologists have long been interested in the factors that drive spatial and temporal variability in population density and structure. In marine reef systems, attention has focused on the role of settlement-the transition of pelagic larvae to a benthic stage-and on density-dependent processes affecting recently settled juveniles. Recent data suggest that co-variance in settlement and subsequent density-dependent survival can obscure the patterns of density dependence at larger scales, a phenomenon called cryptic density dependence. This research will explore the mechanisms that underlie the spatial covariance of settlement and site quality - a process that has received little attention in the standard paradigm. These mechanistic studies of cryptic density dependence will facilitate the development of new frameworks for fish population dynamics that incorporate larval ecology, habitat quality, density dependence, life history, and the patterns and implications of spatial covariance among these factors. More generally, the work provides a specific empirical context, and a general theoretical treatment, of cryptic heterogeneity (hidden individual variation in demographic rates).

Note: Drs. Craig W. Osenberg and Ben Bolker were 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). Dr. Bolker moved to McMaster University in 2010 (current contact information).

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0242312

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