

Percent cover of coral and other sessile invertebrates at Caribbean reefs determined using the point-intercept method along transects in 2009 and 2011

Website: <https://www.bco-dmo.org/dataset/4005>

Data Type: Other Field Results

Version: 1

Version Date: 2013-09-06

Project

» [Impact of the 2010 Caribbean Coral Bleaching Event: Assessing Changes in Coral Immune Function](#)

(Climate_Corals_Bleach_Disease)

Contributors	Affiliation	Role
Weil, Ernesto F.	University of Puerto Rico - Mayaguez (UPRM)	Principal Investigator, Contact
Rauch, Shannon	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract

This dataset includes percent cover of coral and other sessile invertebrates at Caribbean reefs determined using the point-intercept method along transects in 2009 and 2011.

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Coverage

Spatial Extent: N:19.3775 E:-61.75907 S:12.02697 W:-81.3835

Temporal Extent: 2009-09-12 - 2011-12-01

Dataset Description

Percentages of live cover of corals, octocorals, zoanthids, hydrocorals and sponges in reefs studied in 2009 and 2011 at Curacao, Grand Cayman, Genada, and Puerto Rico.

Methods & Sampling

The point-intercept method was used along the same transects (N=15 per reef) to assess the percentage of live cover of corals, octocorals, zoanthids, hydrocorals and sponges in each habitat and reef.

Data Processing Description

BCO-DMO Processing Notes:

- Modified parameter names to conform with BCO-DMO naming conventions.

- Added lat and lon from the metadata provided.
- Replaced abbreviated reef names with full names.

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Data Files

File
Percent_Cover.csv (Comma Separated Values (.csv), 638.09 KB) MD5:5816c1586d4ffb08e2e4fe9c7fb58ff7 Primary data file for dataset ID 4005

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Supplemental Files

File
group_codes.csv (Comma Separated Values (.csv), 199 bytes) MD5:898b6c1f4d38981afad0115afd704544 Group Codes From project: Impact of the 2010 Caribbean Coral Bleaching Event: Assessing Changes in Coral Immune Function PI: Ernesto Weil Version date: 30 July 2013

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Parameters

Parameter	Description	Units
location	Name of the country where the reefs are located.	text
reef	Name of the reef.	text
year	4-digit year when reefs were surveyed.	unitless
habitat	Description of the habitat: Deep, Intermediate (INT), or Shallow (SHA).	text
lat	Latitude of the reef.	decimal degrees
lon	Longitude of the reef.	decimal degrees
transect	Transect identification number.	integer
depth	Sampling depth.	meters
rep	Replicate number.	integer
date	Date when the transect was surveyed.	mm/dd/YYYY
person	Initials of the scientific investigator.	text
group	Type of coral or invertebrate. See Supplemental File "group_codes.csv"	text
genera	Genus name or abbreviation.	text
species	Species name or abbreviation.	text
line_cover	Length of the portion of the transect line surveyed.	centimeters
cover_pcmt	Percent cover of the species in the "line_cover" area.	percent
intercept	Point intercept position along the transect.	centimeters

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Deployments

Coral Bleaching Dives Weil

Website	https://www.bco-dmo.org/deployment/59046
Platform	Caribbean_Coral_Reefs
Start Date	2008-01-01
End Date	2011-12-31
Description	Coral reef surveys as part of the project "Impact of the 2010 Caribbean Coral Bleaching Event: Assessing Changes in Coral Immune Function".

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Project Information

Impact of the 2010 Caribbean Coral Bleaching Event: Assessing Changes in Coral Immune Function (Climate_Corals_Bleach_Disease)

Coverage: Puerto Rico, Grenada, Caracao, Grand Cayman

The investigators requested RAPID funding to assess the impact of the 2010 Caribbean bleaching event on coral gene expression, immune function and coral reef communities. 2010 is currently tracking as the warmest year ever on record, potentially creating one of the largest thermal anomalies in the Caribbean basin and in the southeastern Caribbean, exceeding the previous record-breaking temperatures of 2005. These investigators will perform coral surveys at selected sites in the southeastern Caribbean and sample collections in Puerto Rico during and after this transient event to compare coral health measures with previously collected pre-event data. The study will integrate several levels of data, from remote temperature sensing satellite records, to coral health, cover and diversity surveys, to studies of individual coral immune function and microbial assemblages. The scale of this thermal event is significant enough that the investigators hypothesize levels of disease will increase following this event, as was observed after the 2005 Caribbean bleaching event and the 2002 Australian bleaching event. The RAPID study will also test the hypothesis that this large scale thermal anomaly will stress corals in Puerto Rico and down-regulate immune gene expression in thermally sensitive species (*Montastrea* spp), but potentially up-regulate expression in a thermally resilient species (*Gorgonia ventalina*). The investigators also hypothesize that this expected level of coral bleaching will change the surface microbial communities of both species toward more *Vibrio*-based communities, and this is the first step in increased disease susceptibility to opportunistic pathogens.

This project is relevant to an understanding of the resilience of marine ecosystems and the impact of ocean warming events on coral physiology and biodiversity. Current understanding of the impacts of warm thermal anomalies is largely restricted to the bleaching response of the corals themselves, with much less known about how warm temperatures change the functioning of the coral holobiont via the microbial constituents and/or the immune responses of corals. There is tremendous value in following the physiology and gene expression of corals in the field through an extreme and transient event like this. Laboratory studies could never truly duplicate these field conditions, particularly with respect to disruptions to the natural resident microbial community that is so critical to the coral holobiont.

This RAPID project will focus on objectives for which pre-event data/samples exist:

- (1) Monitoring levels of coral disease, coral species diversity and coral cover in Puerto Rico, Grenada, Trinidad, the Mexican Yucatan, and Panama.
- (2) Assessment of coral immune responses and immune gene expression in a resilient gorgonian (*Gorgonia ventalina*) and a susceptible scleractinian (*Montastraea* spp). Sampling will occur pre-bleaching, during the heating event and after recovery.
- (3) Assessment of changes in total microbial community before, during and after the heating event in the two above mentioned species.

This project is associated with the project titled "[Influence of Temperature and Acidification on the Dynamics of Coral Co-Infection and Resistance](#)" (OCE-0849776).

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1105143

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