Coral colony photographs taken at four time points between April of 2015 and April of 2016 during and after a bleaching event on Ofu Island, American Samoa.

Website: https://www.bco-dmo.org/dataset/762526
Data Type: Other Field Results
Version: 2
Version Date: 2019-03-27

Project
» Ecological, evolutionary and physiological responses of corals to a mass bleaching event in American Samoa (Bleaching American Samoa)

Contributors	Affiliation	Role
Palumbi, Stephen R.	Stanford University	Principal Investigator, Contact
Thomas, Luke	University of Western Australia	Co-Principal Investigator
York, Amber D.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	Data Manager

Abstract
This dataset includes all photographs taken of individual coral colonies during and after the 2015 bleaching event on Ofu, American Samoa. Photographs were taken at four time points spanning the bleaching events: April 2015 (during bleaching), August 2015, December 2015, and April 2016. Species photographed include Acroproa gemmifera, Acropora hyacinthus and Pocillopora damicornis.

Table of Contents

Coverage

Spatial Extent: **N**:-14.18347 **E**:-169.65279 **S**:-14.18347 **W**:-169.66109
Temporal Extent: 2015-04 - 2016-04

Dataset Description

This dataset includes all photographs taken of individual coral colonies during and after the 2015 bleaching event on Ofu, American Samoa. Photographs were taken at four time points spanning the bleaching events: April 2015 (during bleaching), August 2015, December 2015, and April 2016. Species photographed include *Acroproa gemmifera, Acropora hyacinthus and Pocillopora damicornis.*

Tabular data served through this dataset landing page includes a column of links to each individual image. All images and a list of all image names, collection date, time, and image links can be downloaded from the "Data Files" section of this page.

Methods & Sampling

Photographs were taken at four time points spanning the bleaching events: April 2015 (during bleaching), August 2015, December 2015, and April 2016. Species photographed include *Acroproa gemmifera, Acropora hyacinthus and Pocillopora damicornis.*

Data Processing Description

BCO-DMO data manager processing notes:
* Metadata (tagID, lat, lon) data was submitted separately from the image files.
* Indexed all images and attached inventory as a supplemental document.
* Joined the image metadata (tagID, lat, lon) to the imagenames, at behest of data submitter, only the images that had metadata are included in the tabular dataset served from this page. The full image inventory (including ones without tags and locations) is included in the zip download of all images, and the image_inventory.csv file (supplemental document).

[table of contents | back to top]

Data Files

File
coral_photos.csv (Comma Separated Values (.csv), 72.10 KB) MD5:b876def484a7fd0797f84c81dcfa9f4a Primary data file for dataset ID 762526
Photograph inventory file filename: image_inventory.csv (Comma Separated Values (.csv), 62.89 KB) MD5:11d426e7e6bea4d09d735985554729a9 File inventory table for photographs taken before and after bleaching. Parameters (Columns): imagename,Image name TagID,Coral colony identifier (tag ID) imaged Month,Month (numeric) photograph was taken Year,Year (4 digit year) photograph was taken image_link,Direct link (URL) to the image
Photographs before and after bleaching event filename: photos.zip (ZIP Archive (ZIP), 1.55 GB) MD5:c686bc17b28eb54820432e980897497d All photographs taken of individual coral colonies during and after the 2015 bleaching event on Ofu, American Samoa. Photographs were taken at four time points spanning the bleaching events: April 2015 (during bleaching), August 2015, December 2015, and April 2016. Species photographed include Acroproa gemmifera, Acropora hyacinthus and Pocillopora damicornis.

[table of contents | back to top]

Supplemental Files

File	
Coral photo inventory list filename: image_inventory.csv List of all coral photos inluded in zip file: http://datadocs.bco-dmo.org/data/305/Bleaching_American_Samoa/762526/2/data/photos.zip	(Plain Text, 62.89 KB) MD5:11d426e7e6bea4d09d735985554729a9

[table of contents | back to top]

Parameters

Parameter	Description	Units
imagename	Coral colony image name	unitless
TagID	Coral colony identifier (tag ID)	unitless
Month	Month	unitless
Year	Year	unitless
Species	Scientific name of coral colony	unitless
Lat	Latitude	decimal degrees (DD)
Long	Longitude	decimal degrees (DD)
image_link	URL to the coral colony image	unitless

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	Olympus TG 5 Tough Digital Camera
Generic Instrument Name	Camera
Generic Instrument Description	All types of photographic equipment including stills, video, film and digital systems.

[table of contents | back to top]

Deployments

Palumbi_AmSamoa_2013-2015

Website	https://www.bco-dmo.org/deployment/676237
Platform	American_Samoa
Start Date	2013-01-04
End Date	2015-08-21
Description	Coral colony samples, temperature, DNA/RNA, bleaching metrics.

[table of contents | back to top]

Project Information

Ecological, evolutionary and physiological responses of corals to a mass bleaching event in

American Samoa (Bleaching American Samoa)

Coverage: American Samoa

Description from NSF award abstract:
The strongest coral bleaching event in nearly 20 years began in American Samoa in January 2015. Coral bleaching occurs when ocean water temperatures exceed a coral's normal heat tolerance. But bleaching events usually show an unexplained pattern - colonies next to one another can show very different levels of bleaching - from pure white to the normal tan color of a healthy coral. The investigators have observed this pattern among 280 corals on reefs in American Samoa that have been studied for years. This system will be used to test four major hypotheses about what causes some corals to bleach and some not: differences in 1) species, 2) the temperature the corals experienced, 3) the symbiont they harbor, and 4) the genotype of the coral host. In addition, the investigators will return to American Samoa at regular intervals to measure the rate of recovery of each coral colony and conduct the same tests as above for recovery rate. The stark-white reefscapes left behind by bleaching events are one of the most common signals of increased ocean warming. This work will take advantage of years of prior study and the advent of a coral bleaching event to understand the rules for survival on reefs.

The reefs of American Samoa began showing a major bleaching event starting in January 2015, including 62 corals that have been intensively studied for coral thermal resistance, field temperatures, and symbiont type. In April 2015 the investigators monitored bleaching status of these and additional corals, totaling 280 corals from four species, and uncovered marked variation in bleaching extent within and between species and within and between reef regions. The team will test the relative importance of microclimate to bleaching state by examining records of approximately 50 temperature loggers in place since before the bleaching event. They will test the influence of symbiont type and host gene expression profiles by examining samples of 60 colonies taken at four time points after bleaching. The investigators will also examine the full suite of 280 corals for genetic variation to estimate the relationship between bleaching state, recovery rate and genetic polymorphism. These data will be used to test micro-climate, symbiont, and coral genetics as determinants of bleaching and bleaching recovery. Because the investigators have samples from these 280 colonies before bleaching mortality, this study will provide the first estimate for the evolutionary impact of a bleaching event on coral populations.

[table of contents | back to top]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1547921

[table of contents | back to top]