

Identity and heights of Octocoral species found on transects at 6 sites on the south shore of St John, U.S. Virgin Islands in 2021 and 2022

Website: <https://www.bco-dmo.org/dataset/893615>

Data Type: Other Field Results

Version: 1

Version Date: 2023-04-18

Project

» [Collaborative Research: Pattern and process in the abundance and recruitment of Caribbean octocorals](#)

(Octocoral Community Dynamics)

Contributors	Affiliation	Role
Lasker, Howard	State University of New York at Buffalo (SUNY Buffalo)	Principal Investigator, Contact
Edmunds, Peter J.	California State University Northridge (CSUN)	Co-Principal Investigator
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Abstract

Transect surveys were conducted at 6 sites on the south shore of St John, within the U.S. Virgin Islands National Park during the summers of 2021 and 2022. Depending on the site, 3 to 6 transects were established. Identity and heights of all arborescent octocorals greater than or equal to 5 centimeters were recorded from 1 square meter quadrats on the transects. The position of colonies relative to the site, meter on the transect, and side of the quadrat are included. Surveys were conducted by Drs. Howard Lasker and Christopher Wells of the University at Buffalo.

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Coverage

Spatial Extent: N:18.73 E:-64.71 S:18.303 W:-64.73

Temporal Extent: 2021-06-25 - 2022-08-20

Methods & Sampling

To investigate community dynamics of octocorals on Caribbean coral reefs, transect surveys were conducted at 6 sites on the south shore of St John, within the Virgin Islands National Park during the summers of 2021 and 2022. Depending on the site, 3 to 6 transects were established. All sites were located at 6 to 9 meters depth and samples were collected by SCUBA from small boats. The identity and heights of all arborescent octocorals greater than or equal to 5 centimeters were recorded from 1 square meter quadrats on the transects. The position of colonies relative to the site, meter on the transect, and side of the quadrat are included.

Censuses at sites Grootpan, Europa, and Tektite were based on 50-meter x 10-meter areas that were

arbitrarily selected and permanently marked with stainless steel eyebolts at the corners of the sites. A total of six transect lines, also marked with eyebolts, were laid out at 10 m intervals. At Booby Rock, a 50-meter line running parallel to the approximately 7-meter depth contour was established, and survey transects (3 in 2021 and 6 in 2022) were positioned at random points along the line. All octocorals present in 1 x 1-meter quadrats along the 10-meter long transects were identified and their heights were measured. Small branch tip samples were collected from colonies that could not be identified in the field. Sclerites were digested from those colonies with a commercial bleach solution and sclerites were observed with a compound scope for identification. Octocoral adults were defined as individuals greater than or equal to 5 centimeters in height, with height determined to the nearest centimeter.

Known Issues:

Field identifications of *Pseudoplexaura flagellosa* and *P. wagnaari* are difficult among small colonies and for analysis purposes, the two species should be lumped as a single group.

Field identifications of *Eunicea mammosa*, *E. laxispica* and *E. succinea* are sometimes difficult, thus, for analysis purposes the three species should be lumped as a single group.

aa2 is an undescribed *Antillologorgia* sp. that is very similar to *A. americana*.

Data Processing Description

Data were collected on paper and slates and transcribed to Excel files each day of fieldwork.

BCO-DMO Processing description:

- Adjusted field/parameter names to comply with BCO-DMO naming conventions
- Added columns "Latitude" and "Longitude" based on site
- Rounded columns "Latitude" and "Longitude" to 3 decimal places

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Related Datasets

IsRelatedTo

Lasker, H. (2018) **Adult octocoral height measurements from transects conducted at St. John, US Virgin Islands between 2014-2016 (St. John LTREB project, VI_Octocorals)**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 3) Version Date 2018-04-05 <http://lod.bco-dmo.org/id/dataset/682966> [[view at BCO-DMO](#)]

Lasker, H. (2019) **Octocoral colony heights measured during transect surveys at four sites on the south shore of St. John, US Virgin Islands in June-August 2018**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2019-09-23 doi:10.1575/1912/bco-dmo.765328.1 [[view at BCO-DMO](#)]

Lasker, H., Edmunds, P. J. (2023) **Octocoral Recruitment surveys on transects at 6 sites on the south shore of St. John, U.S. Virgin Islands in 2021 and 2022**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2023-04-18 <http://lod.bco-dmo.org/id/dataset/893866> [[view at BCO-DMO](#)]

References

Lasker, H. (2019) **Octocoral species abundance during transect surveys at four sites on the south shore of St. John, US Virgin Islands from November to December 2017**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2019-11-04 doi:10.1575/1912/bco-dmo.751176.1 [[view at BCO-DMO](#)]

Lasker, H., Edmunds, P. (2020) **Octocoral colony heights measured during transect surveys at four**

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Parameters

Parameter	Description	Units
Census_Year	Year in which the data were collected	unitless
Date	Date the data were collected	unitless
Latitude	Latitude of sampling site	decimal degrees
Longitude	Longitude of sampling site (West is negative)	decimal degrees
Site	Unique identifier for sampling site	unitless
Transect_Position	Position of transects in a marked 50 x 10 meter (m) area (0m; 10m; 20m; 30m; 40m; 50m)	unitless
Meter_on_transect	From 0m to 9m. 1x1m quadrats were positioned randomly along the 10 m transect. The values refer to the position of the "shoreward" corner of the quadrat. Thus "0" refers to the quadrat placed between the 0 and 1 meter marks	meters
Side_of_transect	Side of the transect tape (Left or Right), orientation looking towards open ocean, with the nearest shore to the back	unitless
Meter_Side	Meter side	unitless
Genus	Genus of Octocoral	unitless
Species	Octocorals species acronyms	unitless
Species_code	Unique identifier for coral species	unitless
Total_height	Maximum distance from the base of the octocoral colony until the farthest tips of the longest branch regardless of whether there was living tissue on the branch. The measurement was not necessarily perpendicular to the substrate.	centimeters (cm)
Height_of_living_tissue	Maximum distance from the base of the octocoral colony to the farthest tips of the longest branch with living tissue (i.e. not necessarily perpendicular to the substrate). All measures rounded to the nearest cm with the exception of 5 cm which only includes colonies greater than or equal to 5 cm. Measures less than 5 cm reflect colonies with thick branches which could only have greater than 5 cm heights due to partial mortality.	centimeters (cm)
Basal_damage	height from the base of the colony to living tissue. This value is 0.0 for colonies that have no damage to their base.	centimeters (cm)
Damage	Damage (1 when < 25% of the colony have injuries, 2 when injuries are in > 25% but < 50% of the colony, 3 when injuries are > 50% of the colony but < 75%, 4 when a colony has injuries in > 75% of the colony)	unitless
Cyphoma_present	Number of Cyphoma spp. present on the colony. Unless noted in Comments individuals individuals are C. gibbosum per colony	unitless
Comments	Millepora indicata Millepora overgrowing naked axis, Cyanobacteria indicates Cyanobacteria growing on the colony	unitless

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Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	Measuring Tape
Dataset-specific Description	Transect tapes with 1 centimeter resolution for positioning quadrats
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	
Generic Instrument Name	Measuring Tape
Dataset-specific Description	1 meter tapes with 1 millimeter resolution for measuring colony heights
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	
Generic Instrument Name	Microscope - Optical
Dataset-specific Description	Compound microscope at 100 and 200x for identifications of colonies from which sclerite samples were obtained
Generic Instrument Description	Instruments that generate enlarged images of samples using the phenomena of reflection and absorption of visible light. Includes conventional and inverted instruments. Also called a "light microscope".

Dataset-specific Instrument Name	
Generic Instrument Name	Self-Contained Underwater Breathing Apparatus
Generic Instrument Description	The self-contained underwater breathing apparatus or scuba diving system is the result of technological developments and innovations that began almost 300 years ago. Scuba diving is the most extensively used system for breathing underwater by recreational divers throughout the world and in various forms is also widely used to perform underwater work for military, scientific, and commercial purposes. Reference: http://oceanexplorer.noaa.gov/technology/diving/diving.html

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Project Information

Collaborative Research: Pattern and process in the abundance and recruitment of Caribbean octocorals (Octocoral Community Dynamics)

Coverage: St. John, US Virgin Islands

NSF Award Abstract:

Coral reefs are exposed to a diversity of natural and anthropogenic disturbances, and the consequences for ecosystem degradation have been widely publicized. However, the reported changes have been biased towards fishes and stony corals, and for Caribbean reefs, the most notable example of this bias are octocorals ("soft corals"). Although they are abundant and dominate many Caribbean reefs, they are rarely included in studies due to the difficulty of both identifying them and in quantifying their abundances. In some places there is compelling evidence that soft corals have increased in abundance, even while stony corals have become less common. This suggests that soft corals are more resilient than stony corals to the wide diversity of disturbances that have been impacting coral reefs. The best coral reefs on which to study these changes are those that have been studied for decades and can provide a decadal context to more recent events, and in this regard the reefs of St. John, US Virgin Islands are unique. Stony corals on the reefs have been studied since 1987, and the soft corals from 2014. This provides unrivalled platform to evaluate patterns of octocoral abundance and recruitment; identify the patterns of change that are occurring on these reefs, and identify the processes responsible for the resilience of octocoral populations. The project will extend soft coral monitoring from 4 years to 8 years, and within this framework will examine the roles of baby corals, and their response to seafloor roughness, seawater flow, and seaweed, in determining the success of soft corals. The work will also assess whether the destructive effects of Hurricanes Irma and Maria have modified the pattern of change. In concert with these efforts the project will be closely integrated with local high schools at which the investigators will host marine biology clubs and provide independent study opportunities for their students and teachers. Unique training opportunities will be provided to undergraduate and graduate students, as well as a postdoctoral researcher, all of whom will study and work in St. John, and the investigators will train coral reef researchers to identify the species of soft corals through a hands-on workshop to be conducted in the Florida Keys.

Understanding how changing environmental conditions will affect the community structure of major biomes is the ecological objective defining the 21st century. The holistic effects of these conditions on coral reefs will be studied on shallow reefs within the Virgin Islands National Park in St. John, US Virgin Islands, which is the site of one of the longest-running, long-term studies of coral reef community dynamics in the region. With NSF-LTREB support, the investigators have been studying long-term changes in stony coral communities in this location since 1987, and in 2014 NSF-OCE support was used to build an octocoral "overlay" to this decadal perspective. The present project extends from this unique history, which has been punctuated by the effects of Hurricanes Irma and Maria, to place octocoral synecology in a decadal context, and the investigators exploit a rich suite of legacy data to better understand the present and immediate future of Caribbean coral reefs. This four-year project will advance on two concurrent fronts: first, to extend time-series analyses of octocoral communities from four to eight years to characterize the pattern and pace of change in community structure, and second,

to conduct a program of hypothesis-driven experiments focused on octocoral settlement that will uncover the mechanisms allowing octocorals to more effectively colonize substrata than scleractinian corals on present day reefs. Specifically, the investigators will conduct mensurative and manipulative experiments addressing four hypotheses focusing on the roles of: (1) habitat complexity in distinguishing between octocoral and scleractinian recruitment niches, (2) the recruitment niche in mediating post-settlement success, (3) competition in algal turf and macroalgae in determining the success of octocoral and scleractinian recruits, and (4) role of octocoral canopies in modulating the flux of particles and larvae to the seafloor beneath. The results of this study will be integrated to evaluate the factors driving higher ecological resilience of octocorals versus scleractinians on present-day Caribbean reefs.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1756381

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