

# Density of adult and juvenile octocorals on shallow reefs in St. John, US Virgin Islands from 2010 (St. John LTREB project, VI Octocorals project)

**Website:** <https://www.bco-dmo.org/dataset/565056>

**Version:** 2015-08-31

## Project

- » [LTREB Long-term coral reef community dynamics in St. John, USVI: 1987-2019](#) (St. John LTREB)
- » [Collaborative research: Ecology and functional biology of octocoral communities](#) (VI Octocorals)

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|--|--|---------------------------|
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## Coverage

**Spatial Extent:** N:18.31705 E:-64.71 S:18.3025 W:-64.73152

**Temporal Extent:** 2013 - 2014

## Dataset Description

To evaluate the possibility that density-associated effects modulate octocoral abundance on a Caribbean coral reef, we tested the hypothesis that the density of octocoral recruits (colonies  $\leq 4$  cm tall) and adult colonies are positively associated on shallow reefs ( $\leq 14$  m depth) in St. John, US Virgin Islands. Both life stages were censused for density at 8-10 sites along 7 km of shore in 2013 and 2014, and a correlative approach was used to evaluate the extent to which the densities were associated using sites as replicates. (from Privitera-Johnson, K., et al., JEMBE, 2015)

Data used in Privitera-Johnson et al., 2015

Original submitted excel file in data file section.

## Data Processing Description

### BCO-DMO Processing Notes:

- original file: 'MetaData\_KPJetal\_JEMBE2015\_STJ\_Octocorals.xlsx'
- added conventional header with dataset name, PI name, version date, citation
- renamed parameters to BCO-DMO standard
- replaced spaces with underscores
- replaced blank cells with 'nd' (no data)
- reformatted data from columns to rows to conform with database practices
- added lat, lon, and depth columns
- sorted resulting flat file by year, taxon, site, stage

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## Data Files

| File  |  |
|---|--|
| <b>MetaData_KPJetal_JEMBE2015_STJ_Octocorals</b><br>filename: MetaData_KPJetal_JEMBE2015_STJ_Octocorals.xlsx<br><br>Original excel file for dataset 562570,562595, 565056. File has also been reworked and submitted in the bco-dmo system. | (ZIP Archive (ZIP), 40.26 KB)<br>MD5:0f8038fbe2489be506fa3a4c4a058597              |
| <b>octocoral_densities_KPJ_flat_sort_latlon.csv</b><br><br>Primary data file for dataset ID 565056  | (Comma Separated Values (.csv), 331.24 KB)<br>MD5:8332a8ea20db6c7647590bbe1a8a87e8 |

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## Related Publications

Privitera-Johnson, K., Lenz, E. A., & Edmunds, P. J. (2015). Density-associated recruitment in octocoral communities in St. John, US Virgin Islands. *Journal of Experimental Marine Biology and Ecology*, 473, 103-109. <https://doi.org/10.1016/j.jembe.2015.08.006> <https://doi.org/http://dx.doi.org/10.1016/j.jembe.2015.08.006>  
*Results*

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## Parameters

| Parameter | Description  | Units           |
|-----------|--|-----------------|
| year      | year of sampling   | YYYY            |
| taxon     | soft coral group   | unitless        |
| site      | sampling site  | unitless        |
| lat       | latitude; north is positive  | decimal degrees |
| lon       | longitude; east is positive  | decimal degrees |
| depth     | depth  | meters          |
| stage     | whether coral is juvenile (less than or equal to 4 cm height) or adult | unitless        |
| abundance | coral density  | colonies ^m-2   |

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## Deployments

### Edmunds\_VINP

|                    |   |
|--------------------|---|
| <b>Website</b>     | <a href="https://www.bco-dmo.org/deployment/523357">https://www.bco-dmo.org/deployment/523357</a> |
| <b>Platform</b>    | Virgin Islands National Park  |
| <b>Start Date</b>  | 1987-01-01  |
| <b>End Date</b>    | 2016-09-01  |
| <b>Description</b> | Studies of corals and hermit crabs  |

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## Project Information

**LTREB Long-term coral reef community dynamics in St. John, USVI: 1987-2019 (St. John LTREB)**

**Website:** <http://coralreefs.csun.edu/>

**Coverage:** St. John, U.S. Virgin Islands; California State University Northridge

### Long Term Research in Environmental Biology (LTREB) in US Virgin Islands:

*From the NSF award abstract:*

In an era of growing human pressures on natural resources, there is a critical need to understand how major ecosystems will respond, the extent to which resource management can lessen the implications of these responses, and the likely state of these ecosystems in the future. Time-series analyses of community structure

provide a vital tool in meeting these needs and promise a profound understanding of community change. This study focuses on coral reef ecosystems; an existing time-series analysis of the coral community structure on the reefs of St. John, US Virgin Islands, will be expanded to 27 years of continuous data in annual increments. Expansion of the core time-series data will be used to address five questions: (1) To what extent is the ecology at a small spatial scale (1-2 km) representative of regional scale events (10's of km)? (2) What are the effects of declining coral cover in modifying the genetic population structure of the coral host and its algal symbionts? (3) What are the roles of pre- versus post-settlement events in determining the population dynamics of small corals? (4) What role do physical forcing agents (other than temperature) play in driving the population dynamics of juvenile corals? and (5) How are populations of other, non-coral invertebrates responding to decadal-scale declines in coral cover? Ecological methods identical to those used over the last two decades will be supplemented by molecular genetic tools to understand the extent to which declining coral cover is affecting the genetic diversity of the corals remaining. An information management program will be implemented to create broad access by the scientific community to the entire data set.

The importance of this study lies in the extreme longevity of the data describing coral reefs in a unique ecological context, and the immense potential that these data possess for understanding both the patterns of comprehensive community change (i.e., involving corals, other invertebrates, and genetic diversity), and the processes driving them. Importantly, as this project is closely integrated with resource management within the VI National Park, as well as larger efforts to study coral reefs in the US through the NSF Moorea Coral Reef LTER, it has a strong potential to have scientific and management implications that extend further than the location of the study.

### **Collaborative research: Ecology and functional biology of octocoral communities (VI Octocorals)**

**Website:** <http://coralreefs.csun.edu/>

**Coverage:** St. John, US Virgin Islands: 18.3185, 64.7242

The recent past has not been good for coral reefs, and journals have been filled with examples of declining coral cover, crashing fish populations, rising cover of macroalgae, and a future potentially filled with slime. However, reefs are more than the corals and fishes for which they are known best, and their biodiversity is affected strongly by other groups of organisms. The non-coral fauna of reefs is being neglected in the rush to evaluate the loss of corals and fishes, and this project will add on to an on-going long term ecological study by studying soft corals. This project will be focused on the ecology of soft corals on reefs in St. John, USVI to understand the Past, Present and the Future community structure of soft corals in a changing world. For the Past, the principal investigators will complete a retrospective analysis of octocoral abundance in St. John between 1992 and the present, as well as Caribbean-wide since the 1960's. For the Present, they will: (i) evaluate spatio-temporal changes between soft corals and corals, (ii) test for the role of competition with macroalgae and between soft corals and corals as processes driving the rising abundance of soft corals, and (iii) explore the role of soft corals as "animal forests" in modifying physical conditions beneath their canopy, thereby modulating recruitment dynamics. For the Future the project will conduct demographic analyses on key soft corals to evaluate annual variation in population processes and project populations into a future impacted by global climate change.

This project was funded to provide an independent "overlay" to the ongoing LTREB award (DEB-1350146, co-funded by OCE, PI Edmunds) focused on the long-term dynamics of coral reefs in St. John.

Note: This project is closely associated with the project "RAPID: Resilience of Caribbean octocorals following Hurricanes Irma and Maria". See: <https://www.bco-dmo.org/project/749653>.

### **The following publications and data resulted from this project:**

2017 Tsounis, G., and P. J. Edmunds. Three decades of coral reef community dynamics in St. John, USVI: a contrast of scleractinians and octocorals. *Ecosphere* 8(1):e01646. DOI: [10.1002/ecs2.1646](https://doi.org/10.1002/ecs2.1646)

[Rainfall and temperature data](#)

[Coral and macroalgae abundance and distribution](#)

[Descriptions of hurricanes affecting St. John](#)

2016 Gambrel, B. and Lasker, H.R. *Marine Ecology Progress Series* 546: 85–95, DOI: [10.3354/meps11670](https://doi.org/10.3354/meps11670)

[Colony to colony interactions](#)

[Eunicea flexuosa interactions](#)

[Gorgonia ventalina asymmetry](#)  
[Nearest neighbor surveys](#)

2015 Lenz EA, Bramanti L, Lasker HR, Edmunds PJ. Long-term variation of octocoral populations in St. John, US Virgin Islands. Coral Reefs DOI [10.1007/s00338-015-1315-x](#)  
[octocoral survey - densities](#)  
[octocoral counts - photoquadrats vs. insitu survey](#)  
[octocoral literature review](#)  
[Download complete data for this publication \(Excel file\)](#)

2015 Privitera-Johnson, K., et al., Density-associated recruitment in octocoral communities in St. John, US Virgin Islands, J.Exp. Mar. Biol. Ecol. DOI: [10.1016/j.jembe.2015.08.006](#)  
[octocoral density dependence](#)  
[Download complete data for this publication \(Excel file\)](#)

Other datasets related to this project:  
[octocoral transects - adult colony height](#)

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## Funding

| Funding Source  | Award                       |
|---|-----------------------------|
| <a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>        | <a href="#">OCE-1332915</a> |
| <a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>        | <a href="#">OCE-1334052</a> |
| <a href="#">NSF Division of Environmental Biology (NSF DEB)</a> | <a href="#">DEB-1350146</a> |

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