Seagrass weights from biomass sampling conducted at several sites in the Western Atlantic during April-May 2018 and August-September 2018

Website: https://www.bco-dmo.org/dataset/754403
Data Type: Other Field Results
Version: 1
Version Date: 2021-05-24

Project
» Collaborative Research: The tropicalization of Western Atlantic seagrass beds (Tropicalization Seagrass Beds)

Contributors	Affiliation	Role
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Abstract
This dataset includes seagrass weights from biomass sampling collected immediately after experimental deployment (April - May 2018) and four months after deployment (August - September 2018). Western Atlantic sampling sites include the following locations: Bocas del Toro, Panama; Bonaire; Little Cayman, Cayman Islands; Carrie Bow, Belize; Puerto Morelos, Mexico; Andros, Bahamas; Eleuthera, Bahamas; Corpus Christi, Texas; Galveston, Texas; Naples, Florida; Crystal River, Florida; St. Joes, Florida; and Bermuda.

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Coverage

Spatial Extent: **N**:32.264 **E**:-64.831 **S**:9.352 **W**:-97.035
Temporal Extent: 2018-04-16 - 2018-10-11

Dataset Description

Seagrass biomass sampling was conducted in the Western Atlantic at the following locations: Bocas del Toro, Panama; Bonaire; Little Cayman, Cayman Islands; Carrie Bow, Belize; Puerto Morelos, Mexico; Andros, Bahamas; Eleuthera, Bahamas; Corpus Christi, Texas; Galveston, Texas; Naples, Florida; Crystal River, Florida; St. Joes, Florida; and Bermuda.

Methods & Sampling

Field collection procedures:
Haphazardly select 10 locations to sample with a PVC core. At each location, carefully place the PVC core (15cm diameter) on the sediment surface. It is extremely important to check both the inside and outside edges of the PVC ring to ensure that seagrass leaves are not trapped underneath. If there are leaves inside the ring that originate from shoots outside the PVC ring, carefully pull these leaves out. Conversely, if there are leaves outside the PVC ring that originate from shoots inside the ring, carefully pull these leaves inside. Only after this has been completed, insert the ring 10cm into the sediment while simultaneously twisting the core to sever belowground rhizomes. Carefully remove the core and place all captured aboveground and belowground vegetative biomass into a mesh bag. Gently shake the bag underwater to remove loosely attached sediment.

Lab processing procedures for weight data:
Separate the aboveground green leaf material (*Thalassia* blades) with a razor blade from the belowground sheath. Arrange the green leaf material on a glass plate, and gently slide a razor blade down the length of both sides of each leaf of the shoot to remove attached epiphytes. Make sure you have removed all epiphytic material (including calcareous algae). Set aside the epiphytic material. Place the scraped leaves into a single foil tare, and label the foil. Now turn your attention to the belowground biomass. Rinse to remove all sediment. Carefully separate live root and rhizome biomass and place each into a separate foil tare. This material will be dried and used for estimating initial seagrass biomass and nutrient content. Any additional vegetative biomass (macroalgae and other seagrass species), including the epiphytic algae scraped off the seagrass can be placed in separate aluminum tares for drying. After samples are dry (48 hours) record weights.

Data Processing Description

BCO-DMO Processing:
version 1 (2021-05-24):
- converted date format to YYYY-MM-DD;
- replaced "NA" with "nd" to indicate "no data";
- added latitude, longitude, and site_name fields from the site coordinates data file;
- converted latitude and longitude to decimal degrees;
- removed commas from the site_name column.

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Data Files

File	
biomass_weights.csv	(Comma Separated Values (.csv), 20.41 KB) MD5:fdf9636399c4c69fedec076a48974d8c
Primary data file for dataset ID 754403	

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Related Datasets

IsRelatedTo

Campbell, J., Altieri, A., Douglass, J., Heck, K., Paul, V. J. (2021) **Seagrass morphometric data from biomass sampling conducted at several sites in the Western Atlantic during April-May 2018 and August-September 2018.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2021-05-24 doi:10.26008/1912/bco-dmo.851924.1 [view at BCO-DMO]

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Parameters

Parameter	Description	Units
site_code	site code	unitless
site_name	site name	unitless
latitude	site latitude	degrees North
longitude	site longitude	degrees East
recorder	first and last name of the person who recorded the data	unitless
season	season and year in which cores were collected	unitless
date_collected	date the cores were collected; format: YYYY-MM-DD	unitless
plot	plot/core number	unitless
greenleaf_drywt	dry weight of Thalassia leaves (complete shoots and unattached leaves)	grams
sheath_drywt	dry weight of Thalassia sheaths	grams
root_drywt	dry weight of Thalassia roots	grams
rhizome_drywt	dry weight of Thalassia rhizomes	grams
root_rhizome_drywt	dry weight of Thalassia roots and rhizomes	grams
otherveg	types (common names) of other vegetative biomass found in core	unitless
otherveg1_spp	scientific name of species of other vegetation found in sample	unitless
otherveg1_drywt	dry weight otherveg1_spp	grams
otherveg2_spp	scientific name of species of other vegetation found in sample	unitless
otherveg2_drywt	dry weight otherveg2_spp	grams
otherveg3_spp	scientific name of species of other vegetation found in sample	unitless
otherveg3_drywt	dry weight otherveg3_spp	grams
otherveg4_spp	scientific name of species of other vegetation found in sample	unitless
otherveg4_drywt	dry weight otherveg4_spp	grams
otherveg5_spp	scientific name of species of other vegetation found in sample	unitless
otherveg5_drywt	dry weight otherveg5_spp	grams
otherveg6_spp	scientific name of species of other vegetation found in sample	unitless
otherveg6_drywt	dry weight otherveg6_spp	grams
notes	notes about the row of data	unitless

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Instruments

Dataset-specific Instrument Name	PVC core
Generic Instrument Name	Push Corer
Generic Instrument Description	Capable of being performed in numerous environments, push coring is just as it sounds. Push coring is simply pushing the core barrel (often an aluminum or polycarbonate tube) into the sediment by hand. A push core is useful in that it causes very little disturbance to the more delicate upper layers of a sub-aqueous sediment. Description obtained from: http://web.whoi.edu/coastal-group/about/how-we-work/field-methods/coring/

Dataset-specific Instrument Name	
Generic Instrument Name	scale
Generic Instrument Description	An instrument used to measure weight or mass.

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Project Information

Collaborative Research: The tropicalization of Western Atlantic seagrass beds (Tropicalization Seagrass Beds)

Website: https://marinegeo.si.edu/research/research-in-action/underwater-meadows-and-resilient-seas

Coverage: Western Atlantic

NSF Award Abstract:
The warming of temperate marine communities is becoming a global phenomenon, producing new biotic interactions that can result in a series of cascading effects on ecosystem structure. For example, the poleward expansion of herbivore populations can lead to the consumption of habitat-forming vegetation, which alters the ecological services provided by coastal environments (a phenomenon known as tropicalization). Many of the habitats at risk, such as kelp forest and seagrass beds, provide foundational habitat that supports complex food webs. Seagrass meadows along the Gulf of Mexico are currently experiencing an influx of tropical grazers, however a integrated understanding of how these communities might ultimately respond is lacking. This project describes the first experiment to quantify the disruptive effect of tropicalization on the ecology of a widely-distributed seagrass. A major contribution of this project will be the development of a seagrass research collaborative network to serve as a platform for broader scientific inquiry and future collaboration. The collaboration spans a total of 11 institutions, and this network will foster extensive collaborations among junior and senior scientists, as well as many undergraduate and graduate students. Given the geographic scope of this work, the research team will further pursue outreach opportunities across the network by hosting a series of public lectures and science café events promoting topics in marine ecology and conservation.

This study will develop a large-scale manipulative experiment across the Caribbean, premised upon a comparative network of 15 marine sites, which will quantify how temperature and light interact with grazer effects on the dominant tropical seagrass, Thalassia testudinum. Sites have been selected along a latitudinal gradient (from Bermuda to Panama), such that light and temperature vary, allowing the investigators to test for the effects of abiotic factors on the ecological effects of increased grazing (tropicalization simulated via artificial leaf clipping). At each of the 15 marine sites, grazing treatments will be crossed with nutrient manipulations in a factorial design for 18 weeks, after which seagrass structure and functioning will be assessed via measurements of areal productivity, shoot density, aboveground biomass, and carbohydrate storage. Experiments will be conducted both in the summer and winter seasons, when abiotic gradients are at their weakest and strongest, respectively. Emerging statistical techniques in hierarchical mixed modeling and structural equation modeling will further allow for integration of experimental and observational data.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1737247

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