

Urchin count and size surveys in St. Andrew Bay and St. Joseph Bay, Florida from May to Jul 2023

Website: <https://www.bco-dmo.org/dataset/1006613>

Data Type: Other Field Results

Version: 1

Version Date: 2026-08-28

Project

» [RUI: The role of ecological memory in nearshore seagrass beds affected by multiple stressors](#) (EcoMem Project)

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Abstract

Seagrass beds are important coastal habitats, providing critical habitat for a wide-range of associated taxa, stabilizing shorelines, and acting as biogeochemical hotspots. Due to their location in shallow coastal systems, seagrasses are exposed to myriad anthropogenic threats leading to seagrass loss at a global scale. Two threats that seagrasses face are mechanical damage (e.g., propellor scarring) and overgrazing during population booms of herbivores. Here we surveyed seagrass systems in St. Andrew Bay and St. Joseph Bay, Florida to quantify seagrasses, propellor scars, and urchins throughout the system. St. Andrew bay was divided into 3 segments: North Bay, West Bay, St. Andrew Bay. Between May 4th and July 12th, 2023 we surveyed 95 randomly selected sites, 26 in St. Andrew Bay, 26 in North Bay, 19 in West Bay, and 24 in St. Joseph Bay. Sixteen sites were revisited to assess repeatability of sampling protocols. This data file presents urchin (*Lytechinus variegatus*) counts. Urchin size data is available as a Supplemental File. Related data files for these surveys include seagrass canopy height, seagrass and macroalgae percent cover, seagrass shoot density, and propellor scar prevalence. Water quality data may also be added at a later date. See the Related Datasets section for more information on currently available data.

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Coverage

Location: St. Andrew Bay (30N 85W depth < 2m) and St. Joseph Bay (29N 85W depth < 2m)

Spatial Extent: N:30.29058 E:-85.30953 S:29.68175 W:-85.79214

Temporal Extent: 2023-05-04 - 2023-07-12

Methods & Sampling

Survey sites were randomly selected from points generated in ArcGIS by overlaying a 300 x 300 m grid on the continuous seagrass shapefile obtained from the Florida Department of Environmental Protection. Initially 30 sites per bay segment were randomly selected from the intersection of the grid. Due to safety concerns and logistical constraints some sites were not surveyed.

At each site urchins (*Lytechinus variegatus* (urn:lsid:marinespecies.org:taxname:367850)) were quantified along a 50m transect run perpendicular to shore. All urchins occurring within a 1m band centered on the transect were enumerated and the first ten were measured with a ruler (diameter of the test; See Supplemental Files).

Data Processing Description

Data was recorded on paper datasheets in the field and manually entered. A different person reviewed the data entry. No other data processing was completed.

BCO-DMO Curation Notes

This section documents curation actions performed prior to publication review with the submitter, and additional information relevant to understanding and reusing this dataset. It distinguishes changes made to the submitted (meta)data from unresolved issues and/or enhancements that improve future reuse and interoperability.

CURATION ACTIONS PERFORMED ON DATA

- Loaded survey_urchincount.csv from source files, using comma-delimited CSV format with headers on row 1; set missing value indicators to include empty string, "nd", and "NA" (the latter added because the raw urchin.count column used the literal string "NA" as a missing-value sentinel)
- Renamed column "urchin.count" to "urchin_count" to comply with BCO-DMO parameter guidelines
- Converted date_time_UTC from M/D/YYYY H:MM format to an ISO 8601 UTC datetime string (YYYY-MM-DDThh:mmZ), overwriting the original column
- Converted date_time_local from M/D/YYYY H:MM format to a datetime
- Created new column date_time_local_CDT, populated with date_time_local values only for rows where local_timezone equals "America/Chicago"
- Created new column date_time_local_EDT, populated with date_time_local values only for rows where local_timezone equals "America/New_York"
- Deleted columns date_time_local and local_timezone
- Reordered columns to: uID, date_time_UTC, date_time_local_CDT, date_time_local_EDT, siteID, general_location, latitude, longitude, urchin_count
- Output as 1006613_v1_urchin_count.csv

CURATION ACTIONS PERFORMED ON METADATA

- BCO-DMO's standard metadata entry and text formatting steps were performed.
- Scientific names in the data were checked using World Register of Marine Species (WoRMS) Taxon Match. All scientific names in the data are valid and accepted names as of 2026-08-28.

ISSUES POTENTIALLY IMPACTING REUSE

- N/A

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Data Files

File
1006613_v1_urchin_count.csv (Comma Separated Values (.csv), 9.85 KB) MD5:5b81681f0032f540d3bd83ffd102dde9
Primary data file for dataset ID 1006613, version 1

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Supplemental Files

File
survey_urchin_size.csv (Comma Separated Values (.csv), 11.53 KB) MD5:6cdbafa2735d1972698cf5280030751b column name,description,units uID,A unique identifier that links survey occurrences across data sets and data tables. All data records that share a uID were recorded during the same survey of the site.,unitless date_time.UTC,date and time of the beginning of the survey in UTC,unitless date_time_local,date and time of the beginning of the survey in the local time zone,unitless local_timezone,the local time zone,unitless siteID,a project-assigned site ID,unitless latitude,"Latitude of the sampling location, south is negative. WGS84",decimal degrees longitude,"Longitude of the sampling location, west is negative. WGS84",decimal degrees general_location,The bay segment the site is located within,unitless urchin.count,The total number of urchins (Lytechinus variegatus) observed in a 1m x 50m band transect,count

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Related Datasets

IsRelatedTo

Archer, S. K., Stoner, E., Whitman, E. R., Johnson, E., Schlachter, K., McPherson, B. (2026) **Propeller scar damage recorded in seagrass bed surveys in St. Andrew Bay and St. Joseph Bay, Florida from May to Jul 2023**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2026-08-31 doi:10.26008/1912/bco-dmo.1006664.1 [\[view at BCO-DMO\]](#)
Relationship Description: Data collected during the same surveys

Archer, S. K., Stoner, E., Whitman, E. R., Johnson, E., Schlachter, K., McPherson, B. (2026) **Seagrass and macroalgae surveys of St. Andrew Bay and St. Joseph Bay, Florida from May to Jul 2023**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2026-09-02 doi:10.26008/1912/bco-dmo.1006527.1 [\[view at BCO-DMO\]](#)
Relationship Description: Data collected during the same surveys

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Parameters

Parameter	Description	Units
uID	A unique identifier that links survey occurrences across data sets and data tables. All data records that share a uID were recorded during the same survey of the site.	unitless
date_time_UTC	Date and time of the beginning of the survey in UTC	unitless
date_time_local_CDT	Date and time of the beginning of the survey in the local time zone, Central Daylight Saving Time	unitless
date_time_local_EDT	Date and time of the beginning of the survey in the local time zone, Eastern Daylight Time	unitless
siteID	Project-assigned site ID	unitless
general_location	The bay segment the site is located within	unitless
latitude	Latitude of the sampling location, North is positive. WGS84	decimal degrees
longitude	Longitude of the sampling location, West is negative. WGS84	decimal degrees
urchin_count	The total number of urchins (<i>Lytechinus variegatus</i>) observed in a 1m x 50m band transect	count

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Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	Manual Biota Sampler
Dataset-specific Description	At each site urchins (<i>Lytechinus variegatus</i>) were quantified along a 50m transect run perpendicular to shore. All urchins occurring within a 1m band centered on the transect were enumerated and the first ten were measured
Generic Instrument Description	"Manual Biota Sampler" indicates that a sample was collected in situ by a person, possibly using a hand-held collection device such as a jar, a net, or their hands. This term could also refer to a simple tool like a hammer, saw, or other hand-held tool.

Dataset-specific Instrument Name	ruler
Generic Instrument Name	ruler
Dataset-specific Description	All urchins occurring within a 1m band centered on the transect were enumerated and the first ten were measured with a ruler.
Generic Instrument Description	A device used for measuring or for drawing straight lines, consisting of an elongated piece of rigid or semi-rigid material marked with units for measurement. Device that allows one or more physical dimensions of a sample or specimen to be determined by visible comparison against marked graduations in units of measurement of dimension length.

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Project Information

RUI: The role of ecological memory in nearshore seagrass beds affected by multiple stressors (EcoMem Project)

Coverage: Florida Panhandle

NSF Award Abstract:

This project seeks to determine how ecological memory, shaped by an extreme disturbance, informs the response of coastal ecosystems to multiple stressors at population, community, and ecosystem levels. Seagrass ecosystems are among the most highly productive ecosystems on earth, yet are vulnerable to disturbance by both human activity and natural processes. Hurricane Dorian was a Category 5 hurricane that hit the Bahamas in 2019. By comparing seagrass communities in the direct path of the storm with neighboring areas that were less impacted, this project is evaluating how ecological memory might affect responses of seagrass ecosystems to common human-caused and natural stressors. The investigators are early-career scientists, and results from this study are likely to inform conservation, management, and restoration of seagrass ecosystems. They are providing substantial educational opportunities for students in the United States and in the Bahamas, including virtual and hands-on field research experiences for undergraduate students, some from groups traditionally underrepresented in science. Facilitated by Friends of the Environment, a local NGO on Abaco Island, virtual reality videos and curricula will also enhance STEM educational opportunities for Bahamian high school students

Seagrass ecosystems, a widespread and ecologically important nearshore system, may be shaped by the ecological memory of past disturbances. These legacies may influence how seagrass ecosystems respond to environmental change. The investigators will conduct new research that complements seven years of existing data in a study system in the path of Hurricane Dorian in the Bahamas to assess how ecological memory shapes the response of coastal seagrass beds at multiple levels of biological organization. They are using a combination of modeling, field observations, field experiments, and laboratory analyses to compare highly and minimally hurricane-impacted sites to determine: the distribution and relative abundance of three seagrass species; the relative abundance and species diversity of naturally occurring invertebrate and vertebrate grazers; overall species richness, functional diversity, and habitat complexity of each field site; seagrass growth rates and primary productivity; and abiotic environmental characteristics — irradiance, temperature, and nutrient content— of ambient seawater. They will sample twenty plots per site each quarter—including unaltered controls and experimental plots simulating mechanical damage, increased grazing pressure, and both mechanical damage and grazing. The goal is to provide a better understanding of how ecological memory drives the outcome of current ecological processes, which in turn will inform conservation and restoration efforts as seagrasses continue to decline globally.

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.

This award is funded in whole or in part under the American Rescue Plan Act of 2021 (Public Law 117-2).

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-2045212

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