

# Benthic cover transects sampled between July 2018 and December, 2018

**Website:** <https://www.bco-dmo.org/dataset/816326>

**Data Type:** Other Field Results

**Version:** 1

**Version Date:** 2020-06-22

## Project

» [RAPID: Degradation and Resilience of Seagrass Ecosystem Structure and Function following a Direct Impact by Hurricane Harvey](#) (Harvey Seagrass)

| Contributors                    | Affiliation  | Role                            |
|---------------------------------|--|---------------------------------|
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| <a href="#">Dunton, Kenneth</a> | University of Texas - Marine Science Institute (UTMSI) | Co-Principal Investigator       |
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## Abstract

Benthic cover transects sampled between July and December, 2018.

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## Coverage

**Spatial Extent:** N:27.94371 E:-97.08205 S:27.75471 W:-97.15306

**Temporal Extent:** 2018-07-09 - 2018-12-01

## Dataset Description

Benthic cover transects sampled between July 2018 and December 2018

## Methods & Sampling

At each sampling site, two replicate, 10 m transects were placed and benthic cover was estimated along each transect in 2 m intervals. Areal percent cover of seagrass species or other benthic type was estimated by direct observation by trained observers, looking down at the seagrass canopy through the water using a 0.25 m<sup>2</sup> quadrat framer subdivided into 100 cells with monofilament line.

## Data Processing Description

BCO-DMO processing notes:

- Added site locations (lat,lon)

- Adjusted column headers to comply with database requirements

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## Data Files

| File   |
|--|
| <b>benthic_cover_transects.csv</b> (Comma Separated Values (.csv), 21.75 KB)<br>MD5:e6cafbace5b35c2724d2aea1310aeff<br>Primary data file for dataset ID 816326 |

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## Related Publications

Congdon, V. M., Bonsell, C., Cuddy, M. R., & Dunton, K. H. (2019). In the wake of a major hurricane: Differential effects on early vs. late successional seagrass species. *Limnology and Oceanography Letters*, 4(5), 155–163.

doi:[10.1002/lol2.10112](https://doi.org/10.1002/lol2.10112)

*Methods*

Duffy, J. E., Ziegler, S. L., Campbell, J. E., Bippus, P. M., & Lefcheck, J. S. (2015). Squidpops: A Simple Tool to Crowdsource a Global Map of Marine Predation Intensity. *PLOS ONE*, 10(11), e0142994.

doi:[10.1371/journal.pone.0142994](https://doi.org/10.1371/journal.pone.0142994)

*Methods*

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## Parameters

| Parameter            | Description   | Units           |
|----------------------|---|-----------------|
| Site_ID              | Site name   | unitless        |
| Date                 | Data surveyed US Central Time                                   | unitless        |
| Site_Latitude        | Latitude of site, west is negative                              | decimal degrees |
| Site_Longitude       | Longitude of site, south is negative                            | decimal degrees |
| Transect_number      | Transect replicate within a site (1-4)                          | unitless        |
| Cover_0m_Halodule    | Percent cover at the 0 m mark of Halodule benthic cover type    | percent (%)     |
| Cover_0m_Thalassia   | Percent cover at the 0 m mark of Thalassia benthic cover type   | percent (%)     |
| Cover_0m_Syringodium | Percent cover at the 0 m mark of Syringodium benthic cover type | percent (%)     |
| Cover_0m_Ruppia      | Percent cover at the 0 m mark of Ruppia benthic cover type      | percent (%)     |
| Cover_0m_Wrack       | Percent cover at the 0 m mark of Wrack benthic cover type       | percent (%)     |
| Cover_0m_Bare        | Percent cover at the 0 m mark of Bare benthic cover type        | percent (%)     |
| Cover_0m_Halophila   | Percent cover at the 0 m mark of Halophila benthic cover type   | percent (%)     |
| Cover_0m_Grassalaria | Percent cover at the 0 m mark of Grassalaria benthic cover type | percent (%)     |
| Cover_2m_Halodule    | Percent cover at the 2 m mark of Halodule benthic cover type    | percent (%)     |
| Cover_2m_Thalassia   | Percent cover at the 2 m mark of Thalassia benthic cover type   | percent (%)     |
| Cover_2m_Syringodium | Percent cover at the 2 m mark of Syringodium benthic cover type | percent (%)     |
| Cover_2m_Ruppia      | Percent cover at the 2 m mark of Ruppia benthic cover type      | percent (%)     |

|                       |  |             |
|-----------------------|--|-------------|
| Cover_2m_Wrack        | Percent cover at the 2 m mark of Wrack benthic cover type        | percent (%) |
| Cover_2m_Bare         | Percent cover at the 2 m mark of Bare benthic cover type         | percent (%) |
| Cover_2m_Halophila    | Percent cover at the 2 m mark of Halophila benthic cover type    | percent (%) |
| Cover_4m_Halodule     | Percent cover at the 4 m mark of Halodule benthic cover type     | percent (%) |
| Cover_4m_Thalassia    | Percent cover at the 4 m mark of Thalassia benthic cover type    | percent (%) |
| Cover_4m_Syringodium  | Percent cover at the 4 m mark of Syringodium benthic cover type  | percent (%) |
| Cover_4m_Ruppia       | Percent cover at the 4 m mark of Ruppia benthic cover type       | percent (%) |
| Cover_4m_Wrack        | Percent cover at the 4 m mark of Wrack benthic cover type        | percent (%) |
| Cover_4m_Bare         | Percent cover at the 4 m mark of Bare benthic cover type         | percent (%) |
| Cover_4m_Halophila    | Percent cover at the 4 m mark of Halophila benthic cover type    | percent (%) |
| Cover_6m_Halodule     | Percent cover at the 6 m mark of Halodule benthic cover type     | percent (%) |
| Cover_6m_Thalassia    | Percent cover at the 6 m mark of Thalassia benthic cover type    | percent (%) |
| Cover_6m_Syringodium  | Percent cover at the 6 m mark of Syringodium benthic cover type  | percent (%) |
| Cover_6m_Ruppia       | Percent cover at the 6 m mark of Ruppia benthic cover type       | percent (%) |
| Cover_6m_Wrack        | Percent cover at the 6 m mark of Wrack benthic cover type        | percent (%) |
| Cover_6m_Bare         | Percent cover at the 6 m mark of Bare benthic cover type         | percent (%) |
| Cover_6m_Halophila    | Percent cover at the 6 m mark of Halophila benthic cover type    | percent (%) |
| Cover_8m_Halodule     | Percent cover at the 8 m mark of Halodule benthic cover type     | percent (%) |
| Cover_8m_Thalassia    | Percent cover at the 8 m mark of Thalassia benthic cover type    | percent (%) |
| Cover_8m_Syringodium  | Percent cover at the 8 m mark of Syringodium benthic cover type  | percent (%) |
| Cover_8m_Ruppia       | Percent cover at the 8 m mark of Ruppia benthic cover type       | percent (%) |
| Cover_8m_Wrack        | Percent cover at the 8 m mark of Wrack benthic cover type        | percent (%) |
| Cover_8m_Bare         | Percent cover at the 8 m mark of Bare benthic cover type         | percent (%) |
| Cover_8m_Halophila    | Percent cover at the 8 m mark of Halophila benthic cover type    | percent (%) |
| Cover_10m_Halodule    | Percent cover at the 10 m mark of Halodule benthic cover type    | percent (%) |
| Cover_10m_Thalassia   | Percent cover at the 10 m mark of Thalassia benthic cover type   | percent (%) |
| Cover_10m_Syringodium | Percent cover at the 10 m mark of Syringodium benthic cover type | percent (%) |
| Cover_10m_Ruppia      | Percent cover at the 10 m mark of Ruppia benthic cover type      | percent (%) |
| Cover_10m_Wrack       | Percent cover at the 10 m mark of Wrack benthic cover type       | percent (%) |
| Cover_10m_Bare        | Percent cover at the 10 m mark of Bare benthic cover type        | percent (%) |
| Cover_10m_Halophila   | Percent cover at the 10 m mark of Halophila benthic cover type   | percent (%) |

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## Project Information

### **RAPID: Degradation and Resilience of Seagrass Ecosystem Structure and Function following a Direct Impact by Hurricane Harvey (Harvey Seagrass)**

**Coverage:** Corpus Christi Bay and Mission-Aransas Bays, Texas, USA

NSF Award Abstract:

Disturbance has long been recognized as a major organizing force in marine communities with the potential to shape biodiversity. Hurricanes provide a natural experiment to understand how acute physical disturbances (storm surge and wind energy) may interact with longer-term changes in environmental conditions (salinity or turbidity) to alter the structure and function of ecological communities. As models indicate that hurricane intensity and precipitation will increase with a warming climate, understanding the response and recovery of coastal ecosystems is of critical societal importance. Harvey made landfall as a Category Four hurricane on the Texas coast on August 25, 2017, bringing extreme rainfall as the storm stalled over the middle Texas coast. The heavy rainfall and freshwater run-off created a low salinity lens that continues to persist two months later. Seagrass ecosystems may be particularly vulnerable because they grow on shallow, soft-sediment bottoms (and thus are easily dislodged or buried) and because seagrasses are sensitive to changes in salinity and turbidity. The societal implications of seagrass loss are well recognized: seagrasses provide highly valuable ecosystem services of large economic value for estuarine and nearshore dependent fisheries, serve as nursery habitats, and sequester gigatons of carbon on a global scale. Using measurements of the health and function of the seagrass and of the community for which it is habitat, the PIs are assessing the impact of the hurricane and of the persistent freshwater lens. Context is provided by looking at non-impacted sites and by six prior years of data.

This project addresses the overarching question: How do intense physical disturbances in conjunction with chronic chemophysical perturbations affect loss and recovery of seagrass community structure and function, including local production, trophic linkages, and metazoan community diversity? To understand the impacts of Hurricane Harvey on seagrass ecosystems across the middle Texas coast, the investigators are (1) documenting losses in physical habitat structure, (2) teasing apart independent and interactive effects of multiple stressors associated with storm events on biodiversity and ecosystem function, and (3) identifying factors that promote resilience following disturbance. A state-wide seagrass monitoring program with six years of data from areas within Harvey's path and surrounding seagrass systems will provide invaluable context. The investigators are measuring seagrass structure, employing a Before-After-Control-Impact design at sites that experienced severe physical damage and appropriate reference sites. In situ loggers deployed after the storm track the evolution of the low salinity event together with seagrass physiological stress measurements (e.g. chlorophyll fluorescence, pigment loss, reduced growth). Changes in seagrass habitat function is assessed through measurements of faunal biodiversity within impacted and reference sites sampled via cores, benthic push nets, and seine nets. Tethering assays of seagrass blades and common invertebrate prey enables comparison trophic interactions across sites that vary in disturbance impact. These data are used to create models of ecosystem response to an extreme disturbance event and identify factors that best predict recovery of the physical structure of the habitat and of associated ecosystem functions.

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## Funding

| Funding Source   | Award                       |
|--|-----------------------------|
| <a href="#">NSF Division of Ocean Sciences (NSF OCE)</a> | <a href="#">OCE-1807143</a> |

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