Minnow trap data obtained in the Corpus Christi Bay and Mission-Aransas Bays, Texas, USA between July and August, 2018.

Website: https://www.bco-dmo.org/dataset/813563
Data Type: Other Field Results
Version: 1
Version Date: 2020-05-30

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

Contributors	Affiliation	Role
Yeager, Lauren	University of Texas - Marine Science Institute (UTMSI)	Principal Investigator, Contact
Dunton, Kenneth	University of Texas - Marine Science Institute (UTMSI)	Co-Principal Investigator
Soenen, Karen	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
Minnow trap data obtained in the Corpus Christi Bay and Mission-Aransas Bays, Texas, USA between July and August, 2018.

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Coverage

Spatial Extent: **N**:27.9774 **E**:-97.09258 **S**:27.188541 **W**:-97.1544
Temporal Extent: 2018-07-26 - 2018-08-09

Dataset Description

Minnow trap data obtained in the Corpus Christi Bay and Mission-Aransas Bays, Texas, USA between July and August, 2018.

Methods & Sampling

Targeted sampling of seagrass nekton was conducted at 8 sites along seagrass edges and interiors to determine whether seagrass edges may function differently than seagrass interiors as habitat. At each sites, we set 2 pairs of minnow traps. For each pair, one trap was set directly along the seagrass edge and the second was set within seagrass habitat at least 2 m from the edge. Eat trap was baited with a small handful of dry dogfood. The traps were left to soak for ~24 hours. Upon collection, fishes and invertebrates were placed into a bucket of seawater, identified and measured to the nearest mm. Each site was sampled once in July and once in August 2018.

Data Processing Description

BCO-DMO processing notes:

- Adjusted column headers to comply with database requirements
- Added ISO datetime (Set + Retrieved datetimes) fields
- Changed , to ; in field column to comply with database requirements

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Data Files

File
nekton.csv (Comma Separated Values (.csv), 91.67 KB) MD5:7f2fb7a2c4b4720e70621df386030e8c Primary data file for dataset ID 813563

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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
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
Methods

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Parameters

Parameter	Description	Units
Unique_id	Unique trap identifier: Site_replicate_position_month_sampling.gear	unitless
Site	Site name where traps set	unitless
Checked	Y	unitless
Latitude	Latitude, south is negative. Taken at trap with handheld GPS	decimal degrees
Longitude	Longitude, west is negative. Taken at trap with handheld GPS	decimal degrees
Site_rep	Replicate pair at site (1 or 2)	unitless
Trap_label	Unique label on minnow trap, helps with retrieval	unitless
Month	Month full name.	unitless
Date_set	Date (mm-dd-yy) the trap was set in US Central Time	unitless
Date_retrieved	Date (mm-dd-yy) the trap was retrieved in US Central Time	unitless
Time_set	Time (hh:mm) of day the trap was set in US Central Time	unitless

Time_retrieved	Time (hh:mm) of day the trap was retrieved in US Central Time	unitless
Depth_set_cm	Depth where the trap was set, measured with meter stick to closest cm	centimeters (cm)
Position_set	Was the trap set at the edge of interior of a seagrass bed	unitless
Notes	Field notes	unitless
Common_name	Species of fauna in trap	unitless
Scientific_name	Species of fauna in trap	unitless
Total_N	Total abundance for this species	count
L1	Length (SL or CW) of each individual recorded	millimeters (mm)
L2	Length (SL or CW) of each individual recorded	millimeters (mm)
L3	Length (SL or CW) of each individual recorded	millimeters (mm)
L4	Length (SL or CW) of each individual recorded	millimeters (mm)
L5	Length (SL or CW) of each individual recorded	millimeters (mm)
L6	Length (SL or CW) of each individual recorded	millimeters (mm)
L7	Length (SL or CW) of each individual recorded	millimeters (mm)
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L129	Length (SL or CW) of each individual recorded	millimeters (mm)
L130	Length (SL or CW) of each individual recorded	millimeters (mm)
ISO_DateTime_Set_UTC	Datetime of trap setting in ISO format (YYYY-mm-ddTHH:MMZ) in UTC time zone.	unitless
ISO_DateTime_Retrieved_UTC	Datetime of trap retrieved in ISO format (YYYY-mm-ddTHH:MMZ) in UTC time zone.	unitless

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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
NSF Division of Ocean Sciences (NSF OCE)	OCE-1807143

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