

St. Joseph Bay Urchin survey

Website: <https://www.bco-dmo.org/dataset/986917>

Version: 1

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Project

» [RAPID: Species on the Move: Tropicalization of Western Atlantic Seagrass Beds](#) (Tropicalization in seagrass)

| Contributors | Affiliation | Role |
|--------------------------------------|-------------------------------|---------------------------|
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Coverage

Spatial Extent: Lat:0 Lon:0

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Parameters

Parameters for this dataset have not yet been identified

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Project Information

RAPID: Species on the Move: Tropicalization of Western Atlantic Seagrass Beds (Tropicalization in seagrass)

Coverage: St. Joseph Bay (29.76N, 85.34W)

NSF Award Abstract:

This project builds on an ongoing project that studies the tropicalization of seagrass beds in the northern Gulf of Mexico (NSF award OCE-1737144, <https://www.bco-dmo.org/project/750843>) where native species are prevented from moving north as temperature rises because of the continental land mass. Hurricane Michael opened a new pass from the Gulf of Mexico to St Joseph Bay, enabling elevated immigration of tropical species (e.g. parrotfish), and the associated winds and storm surge likely decimated green turtle populations. This project takes advantage of the hurricane's passage to study the interplay of turtles and parrotfish as consumers of the dominant seagrass and will support new and complementary sampling to evaluate the storm's effect on the ongoing tropicalization of St Joseph Bay. Seagrass communities provide major ecosystem services and their resilience to changing climate has consequences for coastal communities. This project will expand on the NSF-funded network to capture critical environmental information during this hurricane-induced natural experiment of increased species access. Training of two female early career scientists (one from an underserved group) will take place in addition to mentoring through collaborations with the partners of the network.

The recent passage of Major Hurricane Michael directly over the northernmost site (St. Joe Bay, FL) of the NSF collaborative project "Collaborative Research: The tropicalization of Western Atlantic seagrass beds" has raised additional questions regarding the trajectory and speed of the influx of tropical grazers along the northern Gulf of Mexico. Hurricane Michael produced numerous overwash areas along Cape San Blas and opened a new pass from the Gulf of Mexico to St. Joseph Bay. This will likely alter salinities and water temperatures and bring additional larval and adult recruits to the Bay. Hurricanes have been documented to move species large distances from their low-latitude home ranges and while these can be only short-lived range shifts, there is potential for enhanced establishment in locations where tropicalization is already occurring owing to the decreasing frequency of cold winter temperatures. This study investigates to what extent these newly formed passes allow elevated immigration of tropically-associated species, such as the seagrass consuming emerald parrotfish into St. Joe Bay. Supporting new and complementary field activities, and leveraging the 12 year record of fish abundance and species composition in St. Joe Bay and the 2017 population estimate of green turtle abundance in the Bay are used to evaluate the storm's effects on the on-going tropicalization of St. Joe Bay that could dramatically affect the overall conclusions of our collaborators in other locations of the NSF funded network of sites.

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.

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Funding

| Funding Source | Award |
|--|-----------------------------|
| NSF Division of Ocean Sciences (NSF OCE) | OCE-1916989 |

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