



# Coastal Wetland Elevation Monitoring Annual Report

## *Mackay Island NWR, Site MCI026*

**The Coastal Wetland Elevation Monitoring Project** (ServCat Link: <https://ecos.fws.gov/ServCat/Reference/Profile/34452>) is a network of monitoring sites designed to assess how wetland habitats in coastal National Wildlife Refuges are changing in response to sea level rise along the Atlantic and Gulf coasts. These changes can lead to wetland loss, habitat conversion, saltwater intrusion, and inland migration of marsh and forested ecosystems. Long-term monitoring of rod surface elevation tables (rSETs), marker horizon plots, and porewater salinity is needed to answer the following questions:

1. What is the overall rate of vertical accretion and elevation change?
2. Is the rate of elevation change less than or equal to local sea level rise?
3. Is the rate of elevation change the same as the rate of surface accretion?
4. Is the rate of accretion or elevation change the same across different Refuges?
5. Is the relationship between elevation change and surface accretion the same across different Refuges?

Data is being collected with common protocols and archived in a national database which will allow us to analyze changes at both the Refuge and regional scale. Ultimately the project will identify what different management options are available to enhance a wetland's sustainability in the face of sea level rise.

### CWEM Monitoring

On July 28, 2012, one site was established on Mackay Island NWR in irregularly-flooded (wind-driven), oligohaline marsh dominated by *Sporobolus pumilis*, *Schoenoplectus pungens* var. *pungens*, and *Juncus roemerianus*.



*Credit USFWS*

### Latitude, Longitude, and Elevation of Stations on Mackay Island NWR, MCI026

Name	Latitude	Longitude	Established	Elevation, m
MCI026A	36.539645	-75.953037	8/6/2012	0.472
MCI026B	36.539642	-75.953432	8/7/2012	0.394
MCI026C	36.539700	-75.953713	8/7/2012	0.450

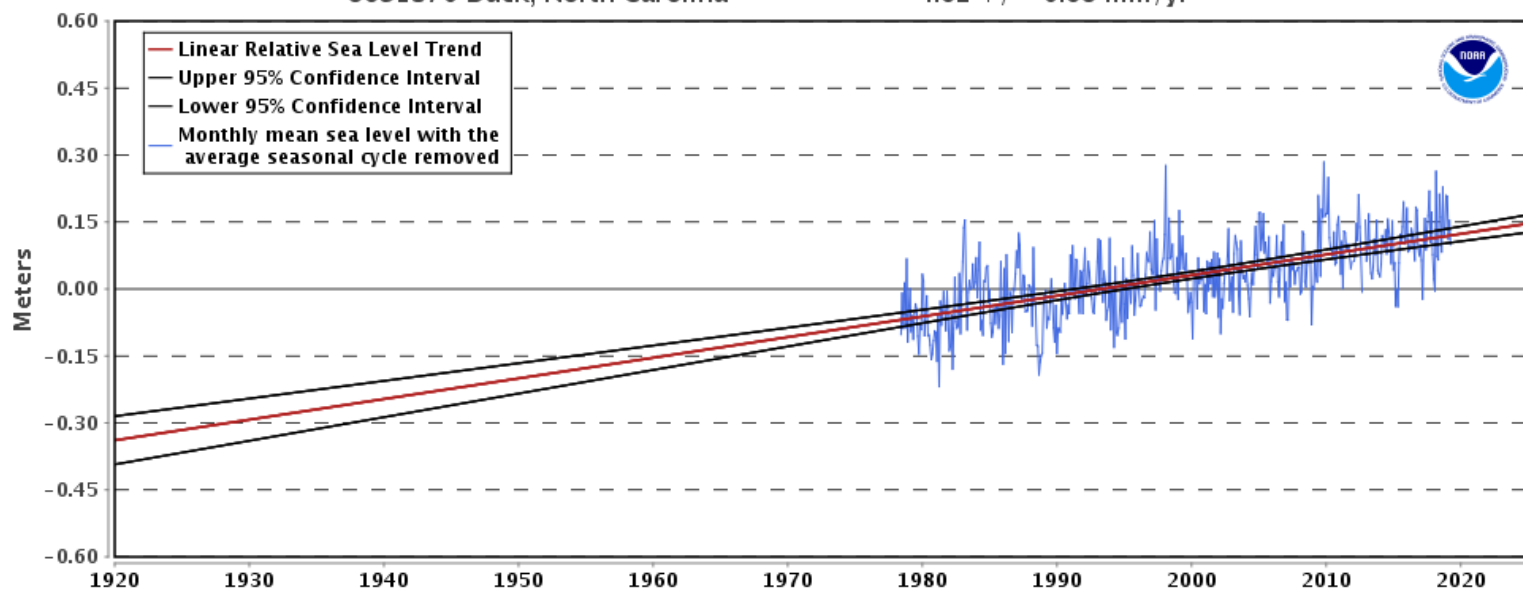
### History of Measurements on Mackay Island NWR, MCI026

Year	SET Pin Readings	Marker Horizon Obs.	Soil Porewater Salinity	Vegetation
2013	4		4	1
2014	2	1	2	
2015	1		1	
2016	1		1	1
2018	2		2	



8651370 Duck, North Carolina

4.62 +/- 0.68 mm/yr



The closest NOAA water level station reporting a sea level rise trend to Mackay Island NWR is Station 8651370, Duck, NC. This station is ~ 27 miles from Mackay Island NWR, Site MCI026. The relative sea level trend is increasing at 4.62 millimeters/year with a 95% confidence interval of +/- 0.68 mm/yr based on monthly mean sea level data from 1978 to 2018. This is equivalent to a change of 1.52 feet in 100 years. The plotted values are relative to the most recent Mean Sea Level datum.

#### Location of SET stations on Mackay Island NWR



#### For more information, contact

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