



NORTH
CAROLINA



Quick Links:

[NOAA Sentinel Site Program](#)

[North Carolina Sentinel Site Cooperative](#)

Greetings from the NC Sentinel Site Cooperative!

Greetings, partners and stakeholders, we hope you all are doing well in these difficult times. We would like to say a special thank you to our partners and those in our communities who are on the frontlines as essential workers. And Happy Thanksgiving to all!

NCSSC Transitioning after Pilot Program

It has been a while since we last communicated. As you know, the North Carolina Sentinel Site Cooperative (NCSSC) was established in 2012 as part of a [National Oceanic and Atmospheric Administration \(NOAA\) initiative](#) to provide coastal communities and resource managers with information on the potential impacts of sea level rise on coastal habitats and communities.

This year marks the end of the pilot phase of the NOAA Sentinel Site Program. Since 2012, the program has been supported by many line items and offices across NOAA and broadly has been a NOAA-funded effort.

Given the clearly demonstrated benefit of the Sentinel Site Program to its partners and stakeholders, NOAA's National Sea Grant Office, North Carolina Sea Grant and NOAA's Office for Coastal Management have provided two additional years of funding to support the transition of the NCSSC to N.C. Sea Grant. Recently, Sarah Spiegler shifted from her role as NCSSC coordinator to become N.C. Sea Grant's coastal resilience specialist (read more below). N.C. Sea Grant is now [accepting applications for a climate resilience extension associate](#) to fill the NCSSC coordinator role, and to support the transition of the NCSSC.

We are extremely grateful for our partners' support since the beginning of the NCSSC, and we remain committed to building resilience and addressing the impacts of sea level rise on our coastal habitats and communities in North Carolina.

Please read more about the NCSSC's transition below.

Archived NCSSC quarterly newsletters are available on the [N.C. Sentinel Site Cooperative website](#).

Contact N.C. Sea Grant coastal resilience specialist [Sarah Spiegler](#) if you have articles or events that you would like to include in the next quarterly issue.

Research and Updates from the NCSSC

In this issue:

**Sarah Spiegler's
New Position with
NC Sea Grant**

**New NCSSC
Webpage**

NCSSC Transition

**New Interactive NC
SET Map**

**Governor Cooper's
Executive Order 80**

**NWS Expands
Virtual Classes**

**NFWF-Funded
Resilient Coastal
Communities
Program**

**NC ESLR Project
Examining
Beneficial Use of
Dredge Sediments**

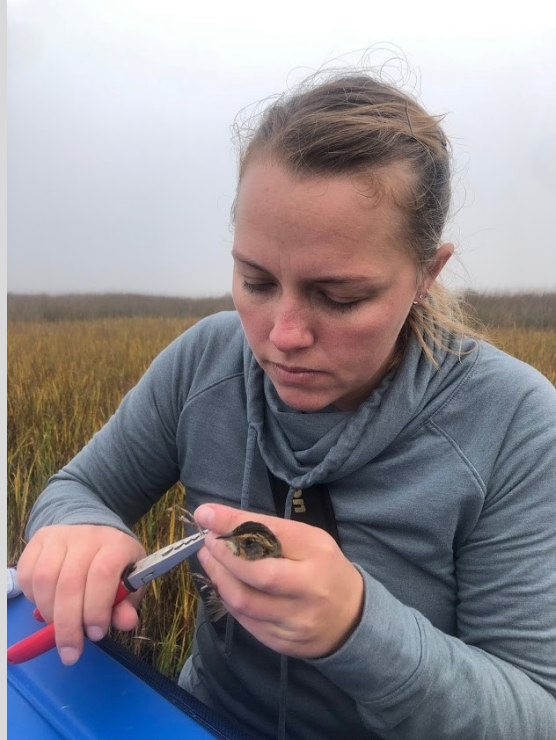
**New Virtual Water
Level Training**

**New Website
localSLR.org**

**Publications and
News Features**

Products

**Funding/Job
Opportunities**



Marae Lindquist, a UNCW Ph.D. student and the [2019 joint NCSSC/N.C. Sea Grant graduate fellow](#), has received the prestigious [Margaret Davidson fellowship](#) to continue her [research investigating the impacts of sea level rise on saltmarsh and seaside sparrows](#). Read her [final report](#) as the 2019-2020 NCSSC fellow.

Sarah Spiegler Takes on New Role as Coastal Resilience Specialist for NC Sea Grant

Sarah Spiegler, the coordinator of the N.C. Sentinel Site Cooperative since 2018, moved into a new position with N.C. Sea Grant as coastal resilience specialist, starting this past August.

Sarah's various roles with the NCSSC since 2012, which also

included NCSSC contractor and outreach specialist, have allowed her to form a network of partnerships throughout the state and gain extensive knowledge about North Carolina's research and activities related to sea level rise and coastal resilience. Sarah is thrilled to continue working with communities, researchers, resource managers and decision makers to implement strategies for a more resilient North Carolina.



[Read more in the N.C. Sea Grant news release.](#)

New Webpage for the NC Sentinel Site Cooperative

The N.C. Sentinel Site Cooperative has a [new webpage](#) on the N.C. Sea Grant website that includes links to [cooperative resources](#), the [quarterly newsletter](#), [core management team members](#), [partner organizations](#), [NCSSC graduate fellowship information](#), and the [N.C. Surface Elevation Table map](#).



North Carolina Sea Grant

[About](#) [Program Areas](#) [Funding Opportunities](#) [Products](#) [News & Events](#) [Donate](#) [Contact Us](#) [Quick Links](#) [Q](#)

North Carolina Sentinel Site Cooperative

[About](#) | [Resources](#) | [Core Management Team](#) | [Partners](#) | [Newsletter](#) | [Fellowship](#) | [Contact](#)



An aerial view of the N.C. coast. Photo by NOAA Beaufort Lab

Check out the new website here: go.ncsu.edu/ncssc.

Transition of the NC Sentinel Site Cooperative after Pilot Phase

NOAA conducted an evaluation of the [NOAA Sentinel Site Program](#) over the course of 2018-2019. The intent was to determine if the program achieved its intended goals at the five locations where it has been implemented (Chesapeake Bay, North Carolina, Northern Gulf of Mexico, San Francisco and Hawaii) in order to guide future program decisions.

NOAA conducted a series of workshops and site visits at each of the five cooperatives to gather information about its goals and objectives; how the



**NORTH
CAROLINA**

needs of regional partners and stakeholders were met; where local partners found the greatest value; how NOAA programs worked closely together and formed partnerships; and what opportunities existed for sustaining these efforts past the pilot phase.

The final report from the overall NOAA Sentinel Site Program evaluation became available in January 2020. The five cooperatives received preliminary guidance in April 2020 from the National Sea Grant office (Sea Grant) and the NOAA Office of Coastal Management (OCM) about the continuation of the Sentinel Site Program. In short, the final report found considerable value in, and positive impacts from, the program's work with partners and communities.

Specifically, OCM and Sea Grant lauded the Sentinel Site coordinators' efforts to build partnerships and capacity. The final report noted that, "Nationally, the program was identified as one of the best examples of coordination within the [National Ocean Service](#) and perhaps within NOAA, with significant contributions from offices across NOAA resulting in cross-line office coordination and collaboration."

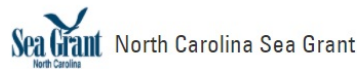
To ensure the North Carolina Sentinel Site Cooperative's continued effectiveness, Sea Grant and North Carolina Sea Grant are providing two-year funding to support a [new coordinator/climate resilience extension associate](#) with the NCSSC.

Thank you to all our partners for your participation in the NCSSC. We look forward to your engagement and support during this transition period. With your involvement, we can continue building on the NCSSC's legacy of fostering partnerships and coordination efforts to address climate resilience challenges in coastal North Carolina.

For more information, please contact [Sarah Spiegler](#).

New Interactive NC Surface Elevation Table (SET) Map

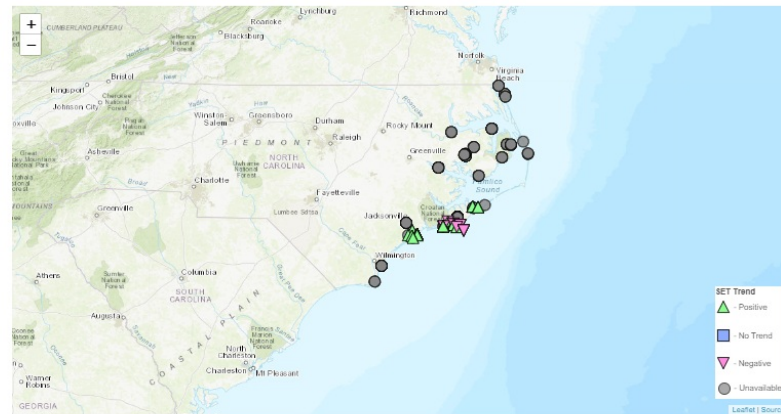
The development of the N.C. Surface Elevation Table (SET) map was completed in 2020 and is now [available online](#).



[← Back to Previous Page](#)

Surface Elevation Table (SET) Map

Use the controls below to filter the data set and update the map display. Use the "Download" button to download a CSV file containing the data set.



Affiliation: [Any] Type Of Institution: [Any]
Geomorphic Setting: [Any] Salinity: [Any]
Marker Horizons: [Any] Year Installed Range- Start: 1992 End: 2018
Annual Data Available?: [Any] SET Trend Rate: [Any]
Elevation Data: [Any] Hydrologic Zone: [Any]
SET Type: [Any] Vegetation Community Type: [Any]
[Query] [Reset] [Download]

In 2019, the members of the N.C. SET Community of Practice requested an interactive map modeled after the [Chesapeake Bay Sentinel Site Cooperative SET map](#) that would include the location of all known SETs and associated metadata in North Carolina.

The new [N.C. SET map](#) illustrates the location of SETs installed throughout the N.C. coastal zone and provides [links to descriptive data about the location](#) in which each device is installed. The map depicts SET sites that show changes in elevation over time — both positive (gain) and negative (loss) trends. Trends are not reported for SETs that have been installed for less than 5 years.

Sarah Spiegler (N.C. Sea Grant) and Jenny Davis (NOAA National Centers for Coastal Ocean Science, or NCCOS) worked closely with Jay Howard (NOAA and the National Geodetic Survey in Silver Spring, Maryland) to adapt the Chesapeake Bay SET map for use in North Carolina. The N.C. SET Community of Practice members contributed metadata from past and active SET sites. These partners include the U.S. National Park Service, the U.S. Fish and Wildlife Service, NOAA NCCOS, the N.C. National Estuarine Research Reserve (NC NERR), The Nature Conservancy, the University of North Carolina at Chapel Hill's Institute for Marine Sciences, NC State University and the City of Jacksonville.

The N.C. SET Community of Practice is facilitated by Sarah Spiegler, Jenny Davis and Anna Hilting (NOAA NCCOS).

To learn more about the N.C. SET Community of Practice, read "[Land Versus Sea](#)," published in [N.C. Sea Grant's Coastwatch magazine](#).

For more information, please contact [Sarah Spiegler](#).



Brandon Puckett (NC NERR) takes measurements at a SET site.

Addressing Climate Change in NC with Executive Order 80

In 2018, N.C. Governor Roy Cooper signed [Executive Order 80 \(EO80\), North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy](#).

EO80 instructs the state to accomplish specific climate-related goals, such as reducing greenhouse gas emissions to 40% below 2005 levels by the year 2025, integrating climate change mitigation and adaptation practices into all cabinet agency programs and operations, and preparing the [NC Climate Risk Assessment and Resilience Plan](#), published in June 2020.

The [N.C. Natural and Working Lands \(NWL\) stakeholder group](#), which includes members of the NCSSC core management team and NCSSC partners, contributed expertise to the final report. Read the [final NWL Action Plan](#), included as an appendix in the report.



North Carolina

Climate Risk Assessment and Resilience Plan

Impacts, Vulnerability, Risks, and Preliminary Actions

A Comprehensive Strategy for Reducing North Carolina's Vulnerability to Climate Change

June 2020



This [N.C. Sea Grant Coastwatch](#) story "[Capturing the Culprit: Carbon Sequestration and the Battle Against Climate Change](#)" also features the work of the NWL coastal habitats subcommittee.

National Weather Service Newport/MHC Reaches Students through Expanded Virtual Classes

The [National Weather Service \(NWS\) Weather Forecast Office in Newport/Morehead City \(MHC\)](#) expanded its virtual class offerings for students this past spring.

The new schedule offers three more SKYWARN classes (Flood, Tropical, and Advanced), which cover how to accurately report severe weather, [CoCoRaHS](#) training and hurricane

preparedness. The classes, hosted on GoToWebinar, are interactive and free to anyone who registers.

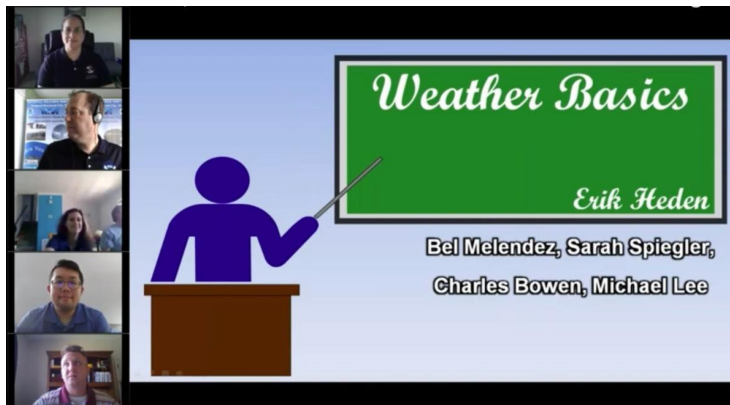
Warning coordination meteorologist Erik Heden has been pleased with the success of the classes. "By conducting these classes virtually, we are still continuing to reach students with a similar number of presentations, just through a different method," he says. "These classes have also allowed many in the MHC office to participate and grow in outreach skills while teleworking from home. These virtual classes truly represent making lemonade out of lemons, and show what we are capable of achieving if we remain flexible and adaptable." Other NWS staff participating in the virtual classes included Bel Melendez, Michael Lee and Charles Bowen.

In the past, Heden partnered with Sarah Spiegler of N.C. Sea Grant to host virtual outreach programs for 4th and 5th grade N.C. students on topics related to weather and climate. Spiegler again joined the MHC office this spring on many of the virtual classes, including a new course called "What Is Climate Change?" developed by Heden and Spiegler, which focuses on the impacts of climate change and sea level rise in North Carolina.

The MHC office serves a rural section of North Carolina, and most spring virtual class participants were from in state. But students also joined from as far away as Hawaii, Texas, Wisconsin, Maine, and Massachusetts!

Class schedules and offerings can be found on the [NWS Newport/MHC](#) website, and can also be viewed on the office's [YouTube channel](#).

For more information, please contact [Erik Heden](#).



NC Resilient Coastal Communities Program

In 2020 the [N.C. Department of Environmental Quality's Division of Coastal Management](#) (DCM) received over \$1 million in grant funding to support resilience-building in coastal communities. Awarded by the National Fish and Wildlife Foundation, the funding will support the N.C. project [Overcoming Local Barriers to Implementation and Getting to Shovel Readiness](#).

As part of the project, DMC is creating the [N.C. Resilient Coastal Communities Program](#). The program will [provide technical and financial assistance to local governments](#) to support adaptation planning and boost local government capacity. Communities interested in participating must [submit an application](#) by Jan. 15, 2021; selection notices will be sent out in February 2021. Twenty communities will be chosen to be part of the program. Another part of the project will help strengthen ecosystem resilience at the [Rachel Carson Reserve](#) in Beaufort.



DCM hosted informational [webinars](#) this past summer for communities and contractors interested in applying to be part of the program. Project partners include the [NC Office for Recovery and Resilience](#), [The Nature Conservancy](#) and N.C. Sea Grant.

For more information, please contact [Samantha Burdick](#) and [Mackenzie Todd](#).

New NOAA-Funded Project Examines Beneficial Use of Dredged Sediment

In 2020, NCSSC partners lead by Susan Cohen (UNC Institute for the Environment), received funding from the [NOAA Effects of Sea Level Rise Program \(ESLR\)](#) for the project [Keeping It in the System: Beneficial Use of Dredged Sediment to Increase Resiliency of Coastal Marshes in the Southeast](#).

Project partners, including NOAA NCCOS, the U.S. Army Corps of Engineers, and EA Engineering, Science and Technology, will develop a coordinated approach for linking dredge operations with beneficial sediment reuse projects. Depositing dredged sediment in local marshes can help them keep pace with rising sea levels while continuing to provide ecosystem services. The project will focus on marshes in Beaufort, North Carolina, and Jacksonville, Florida.



Read more in the [project two-pager](#). For more information, please contact [Susan Cohen](#).

New Water Level Training: Using the NOAA Tidal Analysis Datums Calculator

The first of four NOAA virtual training modules, [Using the NOAA Tidal Analysis Datums Calculator](#), is now available. The training modules are adapted from an in-person training course called Working with Water Level Data, which was piloted in 2018 through collaboration across NOAA's National Ocean Service

Program offices, including the NOAA Sentinel Site Program.

This training module will be useful for those working with water level data and calculating tidal datums. The training uses the [Tidal Analysis Datums Calculator \(TAD\)](#), an open-source tool from [NOAA's Center for Oceanographic Operational Products and Service's \(CO-OPS\)](#) that helps users produce tidal datums for non-NOAA data.

The training provides step-by-step instruction using TAD data and metadata requirements; TAD's processes to compute datums; and the information contained in the output files. After completing the training, the user will be able to determine tidal datums using TAD.

These trainings are published by the [Cooperative Program for Operational Meteorology, Education, and Training](#) (COMET). The next three training modules will be available in 2021 and 2022.

For more information, please contact [Anna Hilting](#).

New Website for Local Sea Level Rise Two-Pager

Sea level rise affects communities across the country, but levels aren't rising the same everywhere. [Relative \(local\) sea level rates](#) differ from global rates due to local factors. To effectively respond and prepare for coastal hazards, communities need local information about changes in sea level rise.

A new website, [localSLR.org](#), offers an interactive map that provides sea level rise data and projections based on U.S. geographic location. Users will need to fill out a two-page document in order to generate data for their specific location.

Available data include projected increases in mean sea level for six scenarios; the current rate of sea level rise at a given location; the number of days of future high-tide flooding associated with different sea level rise scenarios; and more. A printable version of the two pager is available via the [SLR Two Pager tab](#) on [ngomssc.org](#).

The website and two-pager were developed in partnership by the [NOAA Sentinel Site Program](#), [NOAA CO-OPS](#), the [Northern Gulf of Mexico Sentinel Site Cooperative](#) and [Mississippi-Alabama Sea Grant](#) using data from NOAA Technical Reports [083](#) and [086](#).

For more information, please contact [Renee Collini](#) and [Sarah Spiegler](#).

Publications and News Features

N.C. Sea Grant's *Coastwatch* magazine: "[Capturing the Culprit: Carbon Sequestration and the Battle Against Climate Change](#)," Spring 2020

Land Use Policy: "[Uncovering Climate \(In\)justice with an Adaptive Capacity Assessment: A Multiple Case Study in Rural Coastal North Carolina](#)," February 2020

Living Bird magazine: "[Sea Change: As Sea Levels Rise, Can Saltmarshes Be Saved?](#)" April 2, 2020

The Washington Post: "[Climate Change Turns the Tide on Waterfront Living](#)" April 13, 2020

Nature Scientific Reports: "[Sea Level Rise Exponentially Increases Coastal Flood Frequency](#)," April 2020

NRDC: "[As Sea Level Rise Threatens Their Ancestral Village, a Louisiana Tribe Fights to Stay Put](#)" April 2020

Coastal Review Online: "[Where Storms Are Lore, Folks See Change](#)" May 2020

Yale Climate Connections: "[Sea Level Rise Likely to Swallow Many Coastal Mangrove Forests](#)" June 2020

Coastal Management: "[Patterns of Adaptation Response by Coastal Communities to Climate Risks](#)," June 2020

National Wildlife Federation: "[Rebuilding Stronger: 12 Priority Policies to Better Protect our Nation from Extreme Storms](#)," August 2020

Mississippi-Alabama Sea Grant: "[Wilmington Adapts Urban Fabric During Time of Pandemic](#)" Aug. 20, 2020

The New York Times: "[How Decades of Racist Housing Policy Left Neighborhoods Sweltering](#)" Aug. 24, 2020

The New York Times: "[U.S. Flood Strategy Shifts to 'Unavoidable' Relocation of Entire Neighborhoods](#)" Aug. 26, 2020

Yale Climate Connections: "[Climate Change Is Causing More Rapid Intensification of Atlantic Hurricanes](#)," Aug. 27, 2020

Center for American Progress: "[Building a Just Climate Future for North Carolina](#)," Sept. 9, 2020

Star News Online: "[2 Years ago, Florence Walloped Wilmington. Is Recovery Done? Are We Better Prepared for Next Big Hurricane?](#)" Sept. 11, 2020

Coastal Review Online: "[Florence's Financial Toll Clearer Two Years On](#)" Sept. 22, 2020

Pulitzer Center: "[Flooding Intensifies Charleston Region's Racial and Wealth Inequalities](#)" Sept. 23, 2020

N.C. Sea Grant's *Coastwatch Currents*: "[Sparrows and Rising Seas](#)," November 2020

Pew Trusts: "[Pew Joins Project to Boost U.S. Military Base Resiliency through Conservation: Defense Department Funds Oyster Reef and Shoreline Restoration in Virginia and North Carolina](#)," Nov. 18, 2020

Pew Trusts: "[Inside the Plan to Protect North Carolina's Coastal Habitat](#)," Nov. 20, 2020

The Post and Courier: "[Repeat Flooded Property Near Folly Underscores Sea Rise Threat to Land Slated for Homes](#)," Nov. 22, 2020

Products

N.C. Sentinel Site Cooperative/N.C. Sea Grant joint graduate fellow Marae Lindquist: "[Predicting the Effects of Sea Level Rise on Marsh Birds of Conservation Concern in Coastal North Carolina](#)"

Chesapeake Bay Sentinel Site Cooperative: "[Turning the Tide: New Film Highlights Work of the Chesapeake Bay Sentinel Site Cooperative](#)"

- [Watch the film "Turning the Tide"](#)

NOAA Office for Coastal Management and NERTO graduate intern Karla Lopez: "[Enhanced Engagement and Risk Communication for Underserved Communities: Research Findings and Emerging Best Practices](#)"

NOAA Sentinel Site Program and Northern Gulf of Mexico Sentinel Site Cooperative: "Local Sea Level Rise Two-Pager and Locally Relevant Sea Level Rise Projections," available at [localSLR.org](#)

Northern Gulf of Mexico Sentinel Site Cooperative: "[Sea Level Rise 101 Films](#)"

Georgetown Climate Center: "[Managing the Retreat from Rising Seas: Lessons and Tools from 17 Case Studies](#)"

Funding/Job Opportunities

N.C. Sea Grant, rolling application deadline

- [Climate Resilience Extension Associate](#)

Department of the Interior, deadline Dec. 2

- [Interdisciplinary Geographer/Physical Scientist](#)

Natural Hazards Center, *deadline Dec. 2*

- [Weather-Ready Research](#)

N.C. Sea Grant and N.C. Coastal Reserve, *deadline Dec. 7*

- [N.C. Coastal Research Fellowship](#)

N.C. Coastal Reserve and N.C. National Estuarine Research Reserve [Science Collaborative](#)

- [Collaborative Research Grants](#), *deadline Dec. 8 for pre-proposals*
- [Science Transfer Grants](#), *deadline Feb. 25, 2021*

Extension Disaster Education Network Development Grants Program, *deadline Dec. 4*

- [Advancing Disaster Education Initiatives in Rural America](#)

NOAA's National Centers for Coastal Ocean Science, *deadline Jan. 7, 2021*

- [Effects of Sea Level Rise Program](#)

N.C. Sea Grant, *pre-proposal deadline Jan. 11, 2021*

- [Core Funding](#)

N.C. Division of Coastal Management, *deadline Jan. 15, 2021*

- [Resilient Coastal Communities Program](#)

FEMA, *deadline Jan. 29, 2021*

- [Building Resilient Infrastructure and Communities \(BRIC\)](#)

N.C. Association of Floodplain Managers (NCAFPM), *deadline Jan. 31, 2021*

- [NCAFPM Berry Williams Scholarship](#)

National Sea Grant Office and NOAA Fisheries, *deadline Feb. 17, 2021*

- [NOAA Fisheries-Sea Grant Joint Fellowship Program](#)

National Sea Grant Office and N.C. Sea Grant, *deadline Feb. 19, 2021*

- [2022 John A. Knauss Marine Policy Fellowship](#)

The NOAA Sentinel Site Program leverages existing research and monitoring resources to ensure resilient coastal communities and ecosystems in the face of changing conditions. The program's place-based approach focuses on issues of local, regional and national significance that impact habitats and species managed by NOAA and surrounding coastal communities.