



Southeast Coast Inventory and Monitoring Network

August 2025

Internal Newsletter of the SECN

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Welcome Megan!

SIP Intern to Assist the SECN Veg Team

Megan Herrmann is the new Scientists in the Parks (SIP) intern for the Southeast Coast Network. She joined the SECN Vegetation Team at Congaree National Park in June and will continue to assist with fieldwork at other parks for the rest of the field season. She is duty-stationed at Congaree National Park, where she will work as a member of the Resources Stewardship and Sciences Division.

Originally from Atlanta, Georgia, Megan earned a Bachelor of Arts in Biology and Geology from Oberlin College and a Master's degree in Environmental Science from Cleveland State University. Her M.S. thesis research investigated plant and soil microbial diversity in vacant lots across levels of urbanization.

Her work focuses on plant community ecology, particularly factors influencing plant community composition such as plant-soil feedback, human disturbance, and climate change. Megan has held a range of research and field positions, including Biological Science Aid with the U.S. Forest Service in Dillon, Montana; Graduate Teaching Assistant at Cleveland State University; and Lead Field Technician for the National Ecological Observatory Network (NEON) in Fairbanks, Alaska.



New SIP Intern Megan Herrmann. NPS / SECN

She has also completed two AmeriCorps terms with the American Conservation Experience (ACE) Individual Placement Program at Ocmulgee Mounds National Historical Park, serving as both an Invasive Plant Management Team Member and a Natural Resources Team Member. These positions provided valuable hands-on experience in natural resource management and using monitoring data to inform land management decisions. When she's not working, Megan enjoys reading, drawing, playing soccer, hiking, and rock climbing.

SECN Veg Team Surveys Plots Across Three Parks



Botanist Forbes Boyle, Biological Technician Mallorie Davis, and SIP Intern Megan Herrmann conducted the second round of monitoring on long-term vegetation plots at Congaree National Park, Moores Creek National Battlefield, and Kennesaw Mountain National Battlefield Park in June and July. Data was collected from 29 plots, including eight plots in upland pine habitat at Congaree NP; four plots in upland pine and three plots in wet meadow habitat at Moores Creek NB; along with 10 plots in upland forest and four plots in upland woodland glade habitat at Kennesaw Mountain NBP.

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Left, fieldwork at Moores Creek National Battlefield. NPS / SECN

29 Plots at CONG, MOCR and KEMO

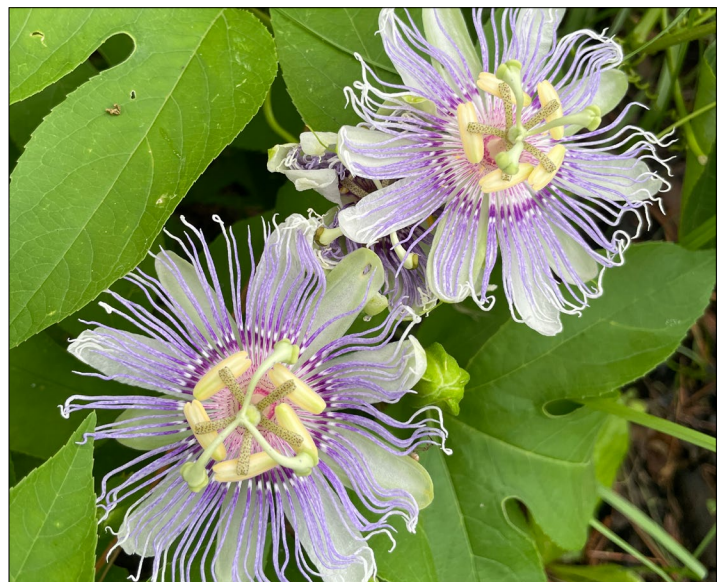
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The wet meadow of Moores Creek NB and woodland glades of Kennesaw Mountain NBP are home to several rare and unique plants with very narrow ecological ranges and distributions. These plots represent some of the highest species diversity within the entire Southeast Coast Network's plot database. The number of native species almost doubled between 2021 and 2025 in most of the Congaree plots, likely due to repeated, successful application of prescribed fire within these management units.

The SECN Veg Team was assisted at all three parks including Rob Heins and Arie Oosterom (CONG staff); Wylie Paxton, Cynthia Worthington, and Kacey Russo (APC Zone Fire Effects staff); and Bob Dellinger (US Forest Service) at Congaree NP. Kari Lumsden (MOCR staff) and Scott Ward (NC Botanical Garden) assisted at Moores Creek and Scott and Kacey joined the team at Kennesaw Mountain NBP.

Update: Data was collected at four floodplain forest plots at Moores Creek NB in early August to complete this round for the park. Floodplain forest plots at Congaree NP will be surveyed next summer. Data collected are being processed by Forbes and Mallorie.

Clockwise from top right, Megan and Scott at Moores Creek NB; the team at Congaree NP; posing for a group photo is Mallorie, Megan, Kacey Russo (APC Zone Fire Effects staff), Cynthia Worthington (APC Zone Fire Effects staff), Forbes, Arie Oosterom (CONG staff) and Rob Heins (CONG staff); passion flower/maypop (*Passiflora*) at Moores Creek NB; view from a plot at Kennesaw Mountain National Battlefield Park; the team surveys a plot at Kennesaw Mountain NBP. NPS / Mallorie Davis and M. Forbes Boyle

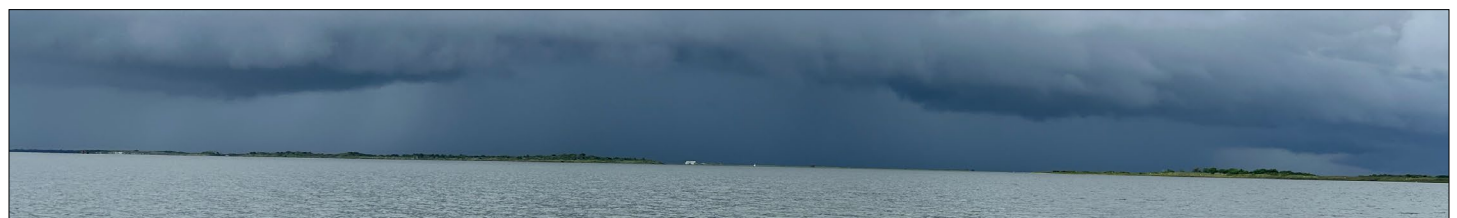
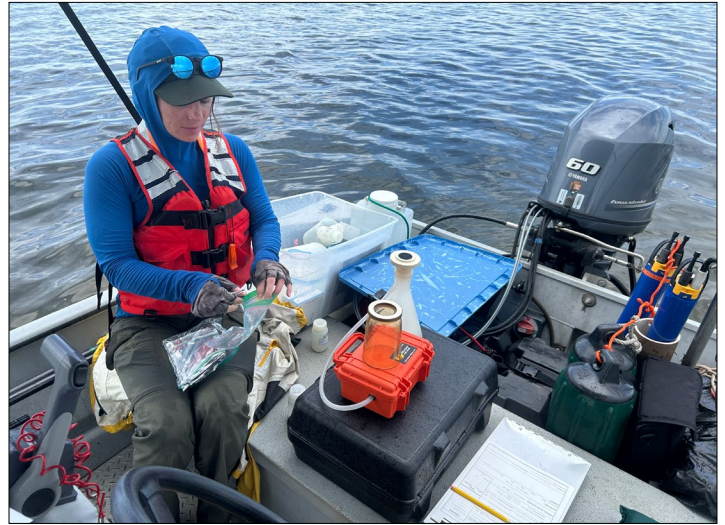


Assessing the Water Quality at the Outer Banks

SECN surveys estuarine waters of Cape Hatteras and Cape Lookout National Seashores

Aquatic Ecologist Eric Starkey and Hydrologic Technician Katie Dagastino recently collected water-quality data at 30 locations between Cape Hatteras National Seashore and Cape Lookout National Seashore. This year's random draw included 13 sites at Cape Hatteras NS and 17 sites at Cape Lookout NS. Eric and Katie took water temperature, pH, dissolved oxygen, salinity, and water clarity (using a Secchi disk) along with water samples for lab analysis of chlorophyll *a*, and concentrations of total and dissolved nitrogen and phosphorus. Parkwide assessments, done every five years complement fixed-station water-quality monitoring.

Clockwise from top right, Katie prepares a sample for analysis; a sonde is used for nutrient sampling; Eric at the wheel; storm on the horizon; the lighthouse at Cape Lookout; and sunrise on the ferry. NPS / Katie Dagastino and Eric Starkey.





SECN Coastal Ecologist Ches Vervaeke collects elevation data at Cumberland Island National Seashore in July. NPS / SECN

SECN and USGS Partner to Study Wetlands

Project Will Address Elevation Model Errors

Coastal wetlands are increasingly threatened by the impacts of climate change and rising sea levels. These ecosystems have the potential to adapt through vertical development and upslope migration, although certain barriers can inhibit this natural process, particularly in areas with steep gradients or developed infrastructure.

A collaborative project has been initiated by SECN Coastal Ecologist William “Ches” Vervaeke alongside USGS researchers Nicholas Enwright, Michael Osland, and Davina Passeri. It aims to address the issues surrounding elevation errors in digital elevation models, which can significantly underestimate the effects of sea-level rise. It also builds upon a Natural Resources Preservation Program that recently developed a model for reducing elevation error and assessing potential wetland migration space for coastal wetlands in and around Timucuan Ecological and Historic Preserve.

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Right, measuring mangroves at Fort Matanzas National Monument last month. NPS / SECN



Work started last month with field data collection and reconnaissance at five SECN parks: Canaveral National Seashore, Fort Matanzas National Monument, Cumberland Island National Seashore, Fort Frederica National Monument, and Fort Pulaski National Monument. Cape Lookout National Seashore and Cape Hatteras National Seashore are included along with Timucuan Ecological and Historic Preserve.



Findings from this project will assist NPS managers with evaluating and making resource management decisions concerning important historic and natural resources in and around each park in the context of climate change.

More Monitoring Updates:

Water Quality

Fixed-station monitoring, paused since the spring, resumed with the redeployment of sondes to parks the week of August 4. This includes Congaree National Park, Fort Pulaski National Monument, Cumberland Island National Seashore, Canaveral National Seashore, Fort Matanzas National Monument, Timucuan Ecological and Historic Preserve, and Cape Hatteras and Cape Lookout National Seashores.

Coastal Elevation and Shoreline Change

Shoreline surveys will be conducted this fall at Cape Hatteras National Seashore, Cape Lookout National Seashore, Fort Matanzas National Monument and Canaveral National Seashore. Surface Elevation Tables (SETs) will be read at those parks and Fort Pulaski National Monument, Fort Frederica National Monument, Cumberland Island National Seashore and Timucuan Ecological and Historic Preserve.

Landbirds and Anurans

Automated recording devices were deployed at Congaree National Park, Moores Creek National Battlefield, Canaveral National Seashore, Fort Frederica National Monument and Ocmulgee Mounds National Historical Park, collecting data from March to June. ARDs from three parks have been retrieved with Fort Frederica NM scheduled for August and Congaree NP in October. Assistance with the ARDs included Jimi Sadle at Canaveral NS, Kari Lumsden and the SECN Veg Team at Moores Creek NB, and Greg Luna Golya at Ocmulgee Mounds NHP.

Wadeable Stream Habitat

Surveys at Congaree National Park scheduled for June were postponed due to high stream flow from rainfall. A reschedule date has not been established.

Hydrological position may confer resilience to major freeze events at mangroves' northern range limit
 Miles Tuckey¹, William C. Vervaeke², Scott F. Jones¹
¹University of North Florida, Department of Biology, Jacksonville, FL, USA
²National Park Service, Southeast Coastal Inventory and Monitoring Network, Jacksonville, FL, USA

Why are mangroves in NE FL?
 Warming temperatures from climate change have led to the northern spread of red and black mangroves. Mangroves are sensitive to freeze events, which are lethal below temperatures of -4.5°C (red mangroves) or -6.5°C (black mangroves). Due to higher tolerance to cold, black mangroves should be more common at their limit in northeast Florida. However, red mangroves are still abundant, even though recent freeze events were below lethal thresholds.

How are red mangroves surviving "lethal" freeze events in NE FL?

3 major freeze events for red mangroves in last 15 years, and 2014 was most lethal

Year	Min (°C)	Max (°C)	Avg (°C)	Duration (hr)	Frequency (per year)	Average (per year)
2014	-1	-2	-1.50	0.00	0.00	-0.00
2016	-1	-2	-1.50	0.00	0.00	-0.00
2021	-1	-2	-1.50	0.00	0.00	-0.00

Discussion
 Red mangroves typically grow closer to the water and at lower elevations (0.56 m) than black mangroves (0.76 m). Large red mangroves, which likely experienced a lethal freeze in 2014, were significantly lower in elevation from the modern average. Black mangroves, which have not experienced a lethal freeze in the period of report, showed no differences in elevation. These differences suggest that red mangroves can overcome freeze-sensitive physiological thresholds by growing at lower, more often flooded elevations. This provides a potential mechanism explaining why red mangroves are as abundant as more freeze-tolerant black mangroves at their northern limit. Results suggest that understanding species expansion with climate change requires ecological data, as on-the-ground interactions can expand the effective environmental tolerance of organisms beyond that expected from physiological tolerances alone.

Old, large red mangroves that may have survived the lethal 2014 freeze are ~20 cm lower in elevation compared to young, small red mangroves

Hydrological position may enhance effective red mangrove freeze tolerance above physiological limits

Methods
 We conducted land- and boat-based surveys to document mangroves in Duval and Nassau counties. We identified all freeze events since 2010 using NOAA climate datasets from Mopnet (station ID: 8720218) and Ferdinand Beach (station ID: 8720030). For each of the most severe freeze events (2014, 2016, and 2022), we summarized water levels using NOAA tide gauge datasets from the same stations as above. We compared water levels to the elevation of ~600 mangroves in our database to calculate submergence of each individual mangrove during recent freeze events.

Acknowledgements:
 I would like to thank the UNF Biology Department for providing the facilities needed to conduct this research study, along with the UNF COAS SURF program for funding. I also appreciate the WE + ECO lab and all its members for their help and guidance.

Ches Co-Authors Poster at UNF

Coastal Ecologist William “Ches” Vervaeke recently co-authored a poster presented at the Advancements in Research, Inquiry and Scholarship Exhibition (ARISE) Symposium held July 25 at the University of North Florida in Jacksonville. Hosted by the UNF Office of Undergraduate Research, it is held annually in summer semesters as a venue for students to present their research projects in poster format. Lead author Miles Tuckey presented data that helps explain why red mangroves are as abundant as black mangroves at their northern limit, despite recent surveys that show black mangroves have a higher freeze tolerance and should be more prevalent.

Welcome to IRMA

The Integrated Resource Management Applications (IRMA) Portal provides easy access to National Park Service applications that manage and deliver resource information to parks, partners and the public.

Recent Publications

The Southeast Coast Network recently published the following reports:

Landbirds

- Landbird Community Monitoring: 2022 Data Summary for Congaree National Park. Available at: <https://doi.org/10.57830/2313657>
- Landbird Community Monitoring at Congaree National Park 2022 Data Summary Species Detection Maps. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2313658>

Wadeable Stream Habitat

- Wadeable Stream Habitat Monitoring at Kennesaw Mountain National Battlefield Park 2023 Change Report. Available at: <https://doi.org/10.36967/2313926>

Terrestrial Vegetation

- Terrestrial Vegetation Monitoring at Timucuan Ecological and Historic Preserve: 2023 Data Summary—Cycle 2 and Newly Established Cycle 1 Plots Narrative. Available at: <https://doi.org/10.36967/2314675>
- Terrestrial Vegetation Monitoring at Timucuan Ecological and Historic Preserve: 2023 Data Summary—Cycle 2 and Newly Established Cycle 1 Plots Supplemental Materials. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2314299>

Anurans

- Anuran Community Monitoring: 2023 Data Summary for Cape Hatteras National Seashore. Available at: <https://doi.org/10.57830/2315061>
- Anuran Community Monitoring at Cape Hatteras National Seashore 2023 Data Summary Species Detection Maps. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2315062>

For More About the SECN: <https://www.nps.gov/im/secn/index.htm>