DNERR Research and Stewardship Symposium

September 22, 2026
St. Jones Reserve

9 a.m. – 9:30 a.m.	**Check-in, Refreshments, Networking** Enjoy morning refreshments and coffee while networking with colleagues before the day begins
9:30 a.m. – 10 a.m.	**Welcome / Introduction** Opening remarks and introduction to DNERR's research and stewardship programs
10 a.m. – 10:45 a.m.	**Morning Session 1** See page 2 for session choices and locations
10:45 a.m. – 11 a.m.	**Break**
11 a.m. – 11:45 a.m.	**Morning Session 2** See page 3 for session choices and locations
11:45 a.m – 12:15p.m.	**Connection Session** Participate in conversations with colleagues and DNERR staff to connect on research and stewardship topics
12:15 p.m. – 1:15 p.m.	**Lunch & Networking** Join us for lunch in the conference room foyer
1:15 p.m. – 2 p.m.	**Afternoon Session 1** See page 4 for session choices and locations
2 p.m. – 2:15 p.m.	**Break**
2:15 p.m. – 3 p.m.	**Afternoon Session 2** See page 5 for session choices and locations
3 p.m. – 3:30 p.m.	**Closing Session** Return to conference center for closing remarks and wrap up

Morning Session 1

Conference Center

20 Minute Presentations

ACTIONS: Understanding the Impacts of Sea-Level Rise and Saltwater Intrusion in Delaware
Presenter: Dr. Yan Jin, University of Delaware

The Anticipating Threats to Natural Systems (ACTIONS) project is an interdisciplinary research initiative led by the University of Delaware in collaboration with the U.S. Army Engineer Research and Development Center (ERDC). This presentation highlights long-term monitoring efforts at the St. Jones Reserve, where researchers investigate how sea-level rise, flooding, and saltwater intrusion alter the chemical, biological, physical, and engineering properties of coastal soils. Using extensive field instrumentation, real-time environmental monitoring, and complementary laboratory studies, the project aims to improve understanding of coastal terrain hazards and their impacts on ecosystems, infrastructure, agriculture, and military operations. Findings support predictive capabilities, informed decision-making, and resilience planning for vulnerable coastal communities and critical installations facing accelerating climate-driven change.

Land Subsidence in Delaware, a Component of Relative Sea-Level Rise
Presenter: Thomas E. (Tom) McKenna, Ph.D., University of Delaware

Delaware's land surface is subsiding while global sea level is rising, resulting in relative sea-level rise. Since 2000, the rate of relative sea level rise is about 5.5 mm/yr at the tide gauge in Lewes, Delaware. Land subsidence at the gauge accounts for over half of the rate at 2.5 mm/yr of the rise. But most of the Delaware coastline does not have a nearby tide gauge for measuring relative sea level and estimating subsidence. Subsidence can vary spatially, so the risk in these areas is poorly constrained. We use historic data and new measurements from the Delaware Subsidence Network (DelSuN) to estimate land subsidence in Delaware.

Exhibit Room (Main Building)

20 Minute Presentations

Delaware Bat Program
Presenter: Rachel Teseneer, DNREC Division of Fish and Wildlife

Bat monitoring data helps support research, monitoring and conservation efforts in Delaware. Bats provide valuable ecosystem services through pest consumption, plant pollination and seed dispersal. DNREC's Division of Fish and Wildlife Nongame Mammal Biological Aide will discuss the species of bats present in Delaware, how the Delaware Bat Program monitors the impacts of white-nose syndrome and other threats, and ways you can help contribute to bat conservation.

Delaware Marsh Bird Monitoring
Presenter: Hailey Glasko, DNREC Division of Fish and Wildlife

Marsh bird surveys help with local and regional efforts to understand the status of these important species. DNREC's Division of Fish and Wildlife Marsh Bird Biologist will discuss population monitoring efforts for marsh birds in Delaware coastal marshes, including point count surveys, nest monitoring, and bird banding. Learn biological information about several marsh bird Species of Greatest Conservation Need, including the Saltmarsh Sparrow, Seaside Sparrow, and Clapper Rail; preliminary results from current monitoring efforts; and the importance of continuing to monitor marsh bird populations into the future.

Morning Session 2

Conference Center

20 Minute Presentations

How climate change is impacting tidal marshes: A national synthesis utilizing the National Estuarine Research Reserves

Presenter: Christopher Peter, Great Bay National Estuarine Research Reserve

Sea level rise and climate change present major threats to tidal marshes nationwide. To track and understand these impacts, the National Marsh Synthesis Team (NAMASTE) has synthesized vegetation data at 85 marshes across 17 coastal states within 20 National Estuarine Research Reserves. Our results show (1) the vast majority of Reserves are seeing significant shifts in plant communities, (2) sea level rise is the main factor associated with plant change, and (3) plant community change differs across region, salinity, and zone.

Trash Birds: What's in your nest?

Presenters: Christina Whiteman, DNERR
Laurel Sullivan, DNERR

As avian species adapt to changing environments, the techniques used in nest construction can give insight into how they use building materials. Anthropogenic debris in songbird nests near the DNERR visitor center inspired a project on how these two worlds interact. This project's purpose was to understand how avian species use anthropogenic debris in nests and to develop outreach materials and education programs to inspire responsible wildlife viewing through the data collected.

Exhibit Room (Main Building)

45 Minute Presentation

NERR System-wide Monitoring Program (SWMP)

Presenter: Mike Mensinger, DNERR

Visit the Aspen Landing water quality station (along the St. Jones boardwalk) to learn about the National Estuarine Research Reserve System-wide Monitoring Program (SWMP) with a focus on the abiotic components of water quality, meteorological and nutrient monitoring. See first-hand and learn about the scientific equipment critical to these efforts. Following the site visit, the presenter will demonstrate how to access SWMP data via the Centralized Data Management Office website and show various export and visualization tools available on the site. This session involves walking outside – participants should wear sturdy shoes and dress for the weather (layers are encouraged).

Afternoon Session 1

Conference Center

20 Minute Presentations

A comparative analysis of carbon sequestration potential in Delaware tidal marshes
Presenter: Faith Echiejile, 2024-2026 Delaware Maragaret A. Davidson Fellow

Tidal marshes in Delaware, such as those within the DNERR, face several challenges due to land development, reduced sediment supply, and the increasing pressures of sea-level rise. Despite this, these ecosystems can be important for mitigating climate change, particularly through carbon sequestration. This study assesses the carbon sequestration capacity of coastal marshes within the DNERR using a comparative analysis of datasets derived from historical LiDAR, sediment core analysis, and eddy covariance measurements. By examining different temporal scales, the research quantifies the role of marshes as carbon sinks and identifies key environmental and spatial factors influencing carbon accumulation. With the DNERR and state offering a wealth of data, including sediment accumulation rates, eddy covariance data, and updated LiDAR imagery, this project provides an opportunity to develop improved methods for quantifying carbon storage in coastal wetlands.

Understanding PFAS Fate in Salt Marshes: Current Research at the St. Jones Reserve
Presenter: Natalie O'Hern, University of Delaware

Per- and polyfluoroalkyl substances (PFAS), or "forever chemicals," are widely detected across coastal environments, posing risks to both human and ecological health. Within coastal watersheds, salt marshes act as filters for several contaminants like heavy metals and pesticides, but their capacity to retain PFAS is unknown. To bridge this knowledge gap, we characterize PFAS distributions across shallow and deep groundwater, surface water, and soil within the St. Jones Reserve. We also evaluate different geochemical conditions and hydrologic transport processes shaping PFAS distributions, with critical implications for future coastal modeling, management, and remediation.

Exhibit Room (Main Building)

45 Minute Presentation

Delaware Raptor Research
Presenters: Rachel Yurchisin, DNREC Division of Fish and Wildlife
Mike Mensinger, DNERR

Raptor research contributes to data collected for statewide wildlife and habitat management efforts. DNREC's Division of Fish and Wildlife Raptor, Grassland and Forest Bird Biologist will discuss two of Delaware's Species of Greatest Conservation Need: the American Kestrel and the American Barn Owl. Learn biological information about these species as well as current research efforts, tracking results, benefits of conserving these species, and also how you can get involved. DNERR Environmental Scientist, Mike Mensinger, will also discuss the addition of a wildlife tracking MOTUS tower at the Blackbird Creek Reserve.

Afternoon Session 2

Conference Center

45 Minute Presentation

Collaborative Science with DNERR
Presenters: Mollie Yacano, PhD., Research Coordinator, DNERR
Lynne Pusey, Training & Engagement Coordinator, DNERR

Collaborative Science brings together researchers, scientists, practitioners and community members to combine efforts, address management needs, and share knowledge. DNERR engages in collaborative science through its research, stewardship and education programs. In this session, participants will take a deeper dive into the collaborative science process, see examples of outputs from projects completed in Delaware and with DNERR, learn about the steps involved in conducting research at DNERR sites, and engage in brainstorming discussions.

Exhibit Room (Main Building)

20 Minute Presentations

Horseshoe Crab Epibionts Found in Delaware Bay
Presenters: Nathan Roberts, DNERR
Taylor Beck, DNREC Coastal Management Program

Horseshoe crabs have hard carapaces that become home to a community of organisms. Three DNREC summer interns (2024, 2025, and 2026) identified and quantified the organisms attached to adult horseshoe crabs found on Delaware Bay beaches during the spawning season. Epibiont abundance and frequency were analyzed based on horseshoe crab sex and size.

DNERR Demonstration Sites (Walking Tour)
Presenter: DNERR Staff

Take a walk around the St. Jones Reserve to learn about pollinator and rain gardens, a wetland septic filtration system, landscaping with native plants, and more! This session involves walking outside on an uneven surface – participants should wear sturdy shoes and dress for the weather (layers are encouraged).

The Delaware National Estuarine Research Reserve (DNERR) is one of 30 National Estuarine Research Reserves across the country whose goal is to establish, protect and manage natural estuarine habitats for research, education and coastal stewardship.

While part of a national network of reserves under the National Oceanic and Atmospheric Administration (NOAA), at the state level, Delaware's reserve is managed by the Delaware Department of Natural Resources and Environmental Control (DNREC) Division of Climate, Coastal and Energy.

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM

Learn more: coast.noaa.gov/nerrs

Presenters

Taylor Beck
Environmental Scientist IV, DNREC Coastal Programs
Taylor Beck is an Environmental Scientist researcher for Delaware Coastal Programs. Her current research projects include long-term monitoring of marsh elevation and horseshoe crab spawning activity, and horseshoe crab epibionts. As a non-native Delawarean, Taylor received her Bachelor of Science in Marine Biology from the University of West Florida and her Master of Science in Marine and Environmental Biology from Nicholls State University.

Faith Echiejile
Ph.D. Candidate | Graduate Assistant, Academy of Natural Sciences of Drexel University
Faith Echiejile is a Ph.D. candidate in Environmental Science at Drexel University whose research focuses on coastal resilience, blue carbon, and climate adaptation. She is the 2024 - 2026 Margaret A. Davidson Graduate Fellow with the Delaware National Estuarine Research Reserve (DNERR) and currently serves as a 2026 Knauss Marine Policy Fellow and Resilience Fellow in NOAA's Office of Oceanic and Atmospheric Research (OAR), Climate Program Office.

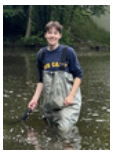
Hailey Glasko
Marsh Bird Biologist, DNREC Division of Fish and Wildlife
Hailey Glasko earned a Bachelor's degree in Wildlife and Fisheries Management from Unity College in Maine (now Unity Environmental University) and a Master's degree in Wildlife Ecology from the University of Delaware where she conducted research evaluating the effectiveness of using a thermal imaging drone to find Clapper Rail nests. Hailey has been the Marsh Bird Biologist at DNREC for a year and a half, and has ten years of experience in the wildlife field studying a variety of species from black bears to marsh birds.

Dr. Yan Jin
Edward F. and Elizabeth Goodman Rosenberg Professor of Soil Science, Department of Plant and Soil Sciences, University of Delaware
Yan Jin is the Edward F. and Elizabeth Goodman Rosenberg Professor of Soil Science and Francis Alison Professor at the University of Delaware. She earned her PhD in Environmental Toxicology from University of California, Riverside. Her research focuses on mass transport and transformation in soils, including colloid transport, virus and nanoparticle interactions, rhizosphere processes, and preferential flow. Her current work investigates how sea-level rise and coastal flooding affect soil physical, hydrological, and biogeochemical processes.

Tom McKenna, Ph.D.
Hydrogeologist, Delaware Geological Survey, University of Delaware
Tom McKenna is a hydrogeologist at the Delaware Geological Survey and an Associate Professor in the Department of Earth Sciences at the University of Delaware. His research interests are in aquifer characterization, groundwater and surface water interaction, thermal imaging of hydrologic processes, and wetland hydrology.

Mike Mensinger
Environmental Scientist III, Delaware National Estuarine Research Reserve
Mike Mensinger, Environmental Scientist III, joined the DNERR staff in 2001 and has been involved in a wide array of research and monitoring projects throughout his career. He handles all aspects of the System-wide Monitoring Program water quality, meteorological, and nutrient monitoring efforts and conducts annual technical trainings for staff throughout the National Estuarine Research Reserve. Mike also works on investigating nekton biodiversity through monthly trawl sampling in Blackbird Creek.

Presenters



Natalie O'Hern
Ph.D. Candidate, University of Delaware
Natalie is a Ph.D. Candidate in Dr. Mi-Ling Li's CHEER research group at the University of Delaware. She is an NSF GRFP Fellow and UNIDEL Distinguished Graduate Scholar currently studying the fate of PFAS in coastal environments. She holds a B.A. in Chemistry with a minor in Geoscience from Wellesley College and is interested in contaminant cycling within aquatic environments.

Chris Peter
Research Coordinator, Great Bay National Estuarine Research Reserve
Chris's expertise is rooted in coastal ecology, with a particular emphasis on coastal vegetative ecosystems. His main focus has been detecting impacts to tidal marshes at the local to national scale as well as invasion ecology and restoration science. He has also been examining other impacts of climate, tracking range expansion of multiple crab species. He also enjoys ridiculously long walks in nature and playing in the snow.

Rachael Phillos
Reserve Manager, Delaware National Estuarine Research Reserve
Rachael is the Reserve Manager for DNERR. In this role she coordinates the program with the National Oceanic and Atmospheric Administration (NOAA), and oversees the facilities, grounds, education and training programs at DNERR. She has worked for DNREC since 2006, starting in State Parks as an environmental educator and then moving to a Park Superintendent role. She started as the DNERR Reserve Manager in 2019.

Lynne Pusey
Training and Engagement Coordinator, Delaware National Estuarine Research Reserve
As the Training and Engagement Coordinator at DNERR, Lynne's role involves engaging coastal decision makers and community members by providing training opportunities, technical assistance and information on coastal resilience, management and funding opportunities. Lynne has been with DNREC for 22 years. Prior to this role, she worked with Fish and Wildlife and with Delaware State Parks.

Nathan Roberts
Coastal Research Intern, Delaware National Estuarine Research Reserve
Nathan Roberts worked as a Coastal Research Intern over the summer for the Delaware National Estuarine Research Reserve. He primarily worked on the horseshoe crab epibiont project and also participated in other projects around the reserve, such as nest box monitoring and nekton trawls. Nathan recently graduated from the University of Delaware with a Bachelor of Science in Biological Sciences.

Laurel Sullivan
Education Coordinator, Delaware National Estuarine Research Reserve
Laurel Sullivan has been the Education Coordinator at the Delaware National Estuarine Research Reserve since March 2020. In this role she coordinates and conducts public programming, K-12 student programming, teacher workshops, outreach events, and social media management. Laurel often works with students and interns and enjoys mentoring the next group of environmental stewards.

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DNERR Instagram **@delawarenerr**

DNERR Facebook **facebook.com/DNERR**

DNERR Coastal Training Program: de.gov/dectp

Presenters

Rachel Teseneer
Non-Game Mammal Biological Aide, DNREC Division of Fish and Wildlife
Rachel Teseneer, Non-Game Mammal Biological Aide, earned her Bachelor's degree in Fisheries, Wildlife, and Conservation Biology at North Carolina State University, where she assisted in researching conservation challenges and priorities as defined by state wildlife agencies. Rachel has been a Nongame Mammal Biological Aide at DNREC for two and a half years, working with both the Delmarva Fox Squirrel Project and the Delaware Bat Program.

Christina Whiteman
Stewardship Coordinator, Delaware National Estuarine Research Reserve
Christina Whiteman is the Stewardship Coordinator at the Delaware National Estuarine Research Reserve (DNERR). Her role as Stewardship Coordinator at the DNERR involves implementing long-term biological monitoring efforts (wetland plant communities, ecotone boundaries, avian studies, soundscape ecology), restoration planning, understanding cultural history of the land and habitats within the Reserve through GIS mapping and the use of demonstration sites.

Dr. Mollie Yacano
Research Coordinator, Delaware National Estuarine Research Reserve
Dr. Mollie Yacano is the Research Coordinator and Senior Environmental Scientist for Delaware's Coastal Program, including both the Delaware National Estuarine Research Reserve and the Delaware Coastal Management Program. She is responsible for overseeing DNERR's applied science and monitoring programs, serves as the primary liaison for the program with external researchers, and represents the state on regional and national workgroups. She received her B.A. in Marine Science from Boston University and her PhD in Marine Sciences from the University of North Carolina Chapel Hill.

Rachel Yurchisin
Raptor, Grassland and Forest Bird Biological Aide IV, DNREC Division of Fish and Wildlife
Rachel Yurchisin has been a biological aide for the state under Raptor, Grassland, & Forest Bird Biologist, Jordan Brown for three years. Originally from Cleveland, Ohio, she has studied and worked in many locations across the United States before settling down in Delaware. Her graduate studies were on Eastern Box Turtle movements in the western pine barrens of Massachusetts but she found a love of birding at a young age and is happy to make it her career. She one day hopes to become a Master Bander and run a MAPS banding station.

Thank you to our partners in research and stewardship!

Research conducted within the Reserve and surrounding areas promotes informed coastal management and advances efforts in climate adaptation and resilience.

Poster Abstracts

IMPACTs

Presenter: Jia Zhang

Authors: Jia Zhang1, Yao Hu1,2, Shihao Xi11Department of Geography & Spatial Sciences, University of Delaware

Tidal tributaries can alter groundwater levels and salinity in adjacent aquifers even without direct ocean connectivity. We developed a variable-density MODFLOW 6 flow and transport model for the Saint Jones Reserve, Delaware, driven by observed tidal stage, salinity, precipitation, and meteorological conditions. Model performance was evaluated against monitored groundwater levels and salinity, including tidal amplitude attenuation and phase lag. Sensitivity analyses show that tides dominate groundwater exchange, while time-varying tributary salinity strongly affects solute exchange. Although annual exchange may resemble results using mean salinity, substantial differences emerge over shorter time windows, highlighting the importance of transient salinity forcing.

Sounds of the Reserve: Trialing a Soundscape Ecology Program at the Delaware National Estuarine Research Reserve (DNERR)

Presenter: Christina Whiteman

Author: Christina Whiteman

Soundscape ecology is the study of sound dynamics in landscapes and provides a new approach to monitoring habitats. Three sound categories (Geophony, Biophony and Anthrophony) define the unique and identifiable landscape ecology of a habitat. In July 2025, the Delaware National Estuarine Research Reserve (DNERR) trialed soundscape ecology protocols established by the National Estuarine Research Reserve System to begin understanding the natural and anthropogenic processes within the landscapes of the DNERR. This trial deployed 8 Autonomous Recording Units over a 5-day period to collect data within 6 habitat types of the St. Jones and Blackbird Creek Reserve components of the DNERR.

Community Science Approach to Long-Term Monitoring of Horseshoe Crab Spawning Populations in Delaware Bay

Presenter: Taylor Beck

Authors: Taylor Beck, Laurel Sullivan, Mollie Yacano

In May and June, Atlantic horseshoe crabs (Limulus polyphemus) come up on the Delaware Bay beaches in the tens of thousands to spawn. Delaware Bay supports the highest spawning population of Atlantic horseshoe crabs in the world. However, horseshoe crab populations were historically overharvested, which prompted a standardized long-term monitoring program that began in 1999 to inform fishery management. DNERR coordinates the spawning surveys on Kitts Hummock, Ted Harvey, and North Bowers beaches. DNERR relies on volunteers to complete surveys each year. The engagement from the surveys builds community connection with the estuarine environment and increases understanding of how fishery management decisions are made.

Poster Abstracts

Monitoring Nekton Biodiversity at the Delaware National Estuarine Research Reserve

Presenter: Michael Mensinger

Authors: Michael Mensinger, Drew Faulhaber

Estuaries are susceptible to climate change pressures that may impact nekton community assemblages. The Delaware National Estuarine Research Reserve implemented a long-term Blackbird Creek nekton monitoring project to better understand short-and long-term nekton changes. Blackbird Creek was stratified into seven salinity zones and a 300-meter section of each zone was randomly sampled from April to October 2017-2019 and 2021-2024 to determine spatiotemporal nekton biodiversity patterns and to assess any long-term changes in species composition.