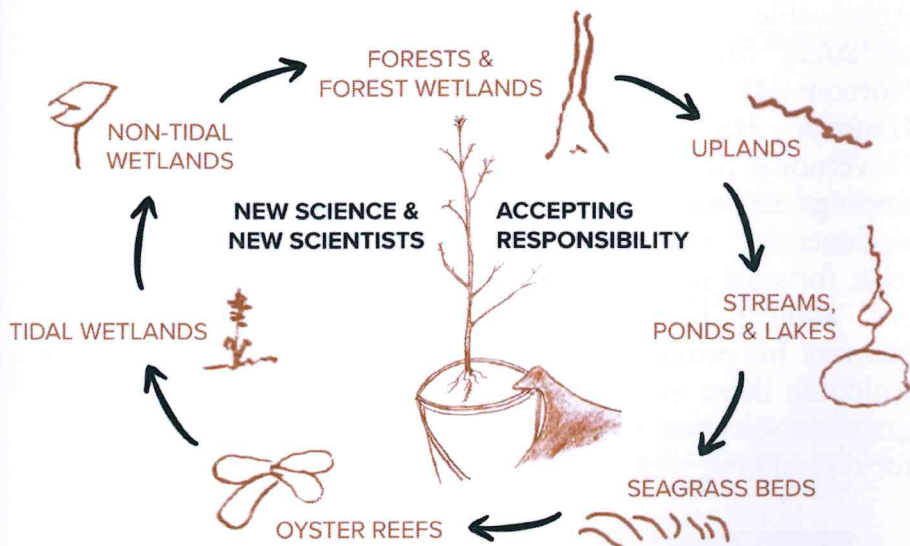


Fear to Hope: Coastal Resiliency Symposium

Fostering climate and ecosystem conversations



June 2, 2022 | 1:00pm-6:00pm
Peebles Theater, Christopher Newport University

Concept

CNU Masters in Environmental Science student Mitchell Doyle identified salt as the likely stressor causing Ghost Forests of Atlantic White Cedar by analyzing tree rings, his work was published in the international journal *Forests* (Doyle et al., 2021). We began to design a vast array of variables and treatments for salt tolerance experiments on AWC seedlings. To broaden the scope and scale of the experiment, we moved the experiment from the confines of the growth chamber and established CNU's first public science project. In the fall of 2021, we welcomed our flagship collaborators, Ms. Potts' 9th grade class at An Achievable Dream Academy in Newport News. In the spring of 2022, four more schools joined our research team: Norcom HS in Portsmouth, Warhill HS in Williamsburg, Hanover HS in Hanover, and the Chesapeake Bay Governor's School in Glenss. This symposium debuts the findings of our research-active students. We thank these students for their experimental design assistance, and we look forward to the array of questions that their successors will address in fall 2022. We also thank Garland Grey Nursery for providing the seedlings for this research. Please welcome these students, their college student mentors, and graduate students as a new generation accepts responsibility for researching local solutions to address climate change.

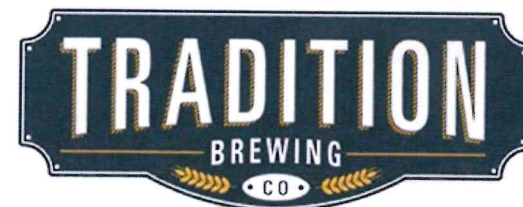


Schedule

- 1:00**– high school and CNU student colloquy
- 1:45**– presentations begin in theater for high school students
- 2:30**– poster and table setup for environmental professionals
- 3:00**– registration and small group communication around Lobby
- 3:30**– high school students emerge from theater, symbiotically welcomed by lobby of environmental professionals
- 4:30**– keynote speakers in theater
- 5:15**– small group conversations continue in lobby and awards are given to HS students
- 6:00-8:00**– reception at Tradition Brewing Company (700 Thimble Shoals Blvd)

MS ENVS student Chris Balog has generated molecular profiles for 3 grain cultivars used in brewing beer. He will provide a behind-the-scenes tasting opportunity with results viewable in poster-presentation form. All are welcome!

Characterization of Aroma and Flavor Profiles as a Function of Malt Growth Region in Craft Brewing.⁴⁰
Chris Balog (CNU)



Keynote Speakers

Dr. Greg Noe

US Geological Survey and President Society of Wetland Scientists

Greg Noe has been a Research Ecologist with the U.S. Geological Survey in Reston, VA, since 2002, where he leads the Wetland Ecosystem Ecology & Biogeochemistry Laboratory (WEEBL) in the Florence Bascom Geoscience Center. Dr. Noe's research centers on wetland ecosystem ecology and watershed processes. His dissertation research identified the complex controls on annual plant germination in the salt marshes of southern California. This was followed by post-doctoral research on phosphorus biogeochemistry and enrichment effects in the Florida Everglades. When joining the USGS, he started research programs on nutrient cycling, transport, and retention in wetlands associated with floodplains, and the factors determining the resilience of tidal freshwater rivers and wetlands to sea-level rise. He is currently the Immediate Past President of the Society of Wetland Scientists, serves on the Science and Technical Advisory Committee of the Chesapeake Bay Program, and serves on the editorial board of Wetlands.

D.A. Brown

U.S. Diplomat- Deputy Environment, Science & Technology, and Health Chief

D.A. holds an undergraduate degree in Economics and, in 1998, became the first student to complete CNU's Master of Environmental Science program, focusing on Atlantic White Cedar forested wetland restoration. D.A. then oversaw conservation planning for over 500,000 acres of USFWS land in North Carolina. D.A. joined the U.S. foreign service and moved to India in 2005, where he facilitated meetings between President Bush and Prime Minister Singh, which culminated in the formal signing of the U.S.-India Civil Nuclear Agreement. In 2007, the U.S. Department of State sent D.A. to Tunisia to recruit Fulbright Scholars for research programs in the United States. From 2008 to 2011, D.A. managed science threat reduction programs in Libya, Iraq, and the former Soviet Union. From 2012 to 2018, D.A. served at both the Organization for Economic Cooperation and Development in France and the U.S. Mission to the European Union in Belgium. Currently, D.A. Brown is a U.S. diplomat serving as Deputy Environment, Science & Technology, and Health Chief in Beijing, China, where he advocates U.S. government policy on climate, energy, and emerging technologies.

Poster Titles

*numbers correspond to numbers found on posters

Atlantic White Cedar and Salt

Atlantic White Cedar (*Chamaecyparis thyoides*) Growth Response to Salinity Changes on a North Carolina Peninsula^{1*}

J. Mitchell Doyle and Robert B. Atkinson (CNU)

Assessment of Salinity Effects on *Chamaecyparis thyoides* Seedlings and Physiological Response that Follows²

Samuel Dickinson, Ryo Murasaki, Lucas Sharrett (CNU); Angel Delapaz-Vasquez, Amaya Dixon, Tayden Rollins, Catherine Aguilar-Flores, Taliyah Norman, Trinity Vanderhorst, Raymond Vann, Giovanni Jackson, Brianna Horton, & Jayda Morris (An Achievable Dream)

The Effects of Salinity on the Growth of Atlantic White Cedar³

Azrael Roulds, Takeara Atkins, Caleb Liggins, Joel Artis (I.C. Norcom High School)

The Effects of Salinity on the Growth of Atlantic White Cedar⁴

Ian Lindo, Ava Parada, Sydney Sampson (I.C. Norcom High School)

What is the Impact of Salt Concentrations on Stem Height in *Chamaecyparis thyoides* (Atlantic White Cedar) Seedlings?⁵

Adrianna Randall, Kay Degarmo, Sophie Johnson, Evie Keener, Tristan Burton, Abbie Malpass, Christinn Lampkins, and Cordelia Crawford (Hanover HS)

Study on Salinity Stress Affecting *Chamaecyparis thyoides* Seedlings' Fitness, Growth, Physiological Response, and Photosynthetic Rate⁶

Rebecca Litt and Nicholas Ascolese (CNU)

Atlantic White Cedar on a College Campus: An Assessment of Salt Water Treatments on Morphometry of Seedlings⁷

Selena Dajani and Robert B. Atkinson (CNU)

Investigating the Antimicrobial Properties of Cedars⁸

Ryo Murasaki (CNU)

Forests and Forested Wetlands

Post-Fire Regeneration of Atlantic White Cedar in the Great Dismal Swamp National Wildlife Refuge⁹

Emily Foster, James Cook, Catherine Lavagnino, Jackie Roquemore, Bryan Poovey, Robert Atkinson (CNU)

Survival and growth rates for three Atlantic White Cedar restoration strategies in the Great Dismal Swamp National Wildlife Refuge¹⁰

B. Poovey, C. Lowie, E. Foster, J. B. Cook, J. Roquemore and R. Atkinson(CNU)

Forests and Forested Wetlands Cont.

Developing Hydrologic Restoration Targets for the Great Dismal Swamp using Atlantic White Cedar Tree Rings¹¹

Abigail Weaver, Mitchell Doyle, and Dr. Robert Atkinson (CNU)

Forest Community Response to Hydrologic Restoration within the Great Dismal Swamp National Wildlife Refuge, VA and NC¹²

Stephen Bendele and Dr. Robert Atkinson (CNU)

Using Ecological Niche Modeling (ENM) to Determine the Response of *Callophrys hesseli* to Climate Change¹³

Lucas Sharrett and Dr. Janet Steven (CNU)

The Effect of Water Levels on Carbon Dioxide Emissions from Soil Microcosms from the Cavalier Wildlife Management Area¹⁴

Alyssa Robinson and Dr. Robert Atkinson (CNU)

Effects of Herbicide Application and Weir Installation on Plant Community at the Cavalier Wildlife Management Area¹⁵

Sofia Marino and Ella Metzger (CNU)

Survivorship and Condition of Oaks in a Forested Wetland Restoration Effort¹⁶

Seleña Dajani, Dylan Bryant, Robert Atkinson (CNU)

The Effect of Weir Installations on Atlantic White Cedar at CWMA¹⁷

Molly Barcalow and Cole Loveman (CNU)

Examination of Historic Hydrologic Regime Changes through the Dendrochronological Analysis of Bald Cypress Shingles and Investigation of Bald Cypress's Historical Significance¹⁸

Matthew Martwinski (CNU)

Considering Logs in Calculating Carbon Budgets for Drained and Undrained Atlantic White Cedar Swamps¹⁹

Jonathon Russo, Dahria Kalmbach, Allison Burbach, Lucas Sharrett, Sofie Marino, Samuel Dickinson, Dr. Robert Atkinson, and Dr. Janet Steven (CNU)

The Importance of Seed Sources in Restoration of Forested Wetlands²⁰

Stephanie L. Hurley, Herman W. Hudson III, Robert B. Atkinson (CNU)

Survival and Growth of Seven Tree Species from Three Stocktypes Planted in Created Wetlands in Loudoun County, Virginia²¹

Herman W. Hudson III, Jacqueline D. Roquemore, Robert B. Atkinson, James E. Perry (CNU)

Tidal and Non-Tidal Wetlands

Ground Quadrat and Aerial Spectral Drone Methodologies for Vegetative Sampling at 3-year-old New Mill Creek Tidal Wetland Mitigation Bank²²

Walter I. Priest III, Joshua P. Priest, Jonathan W. Priest, Brant M. Priest, A. Taylor Priest, P. Reid Anderson, Adam T. Priest (Wetland Design and Restoration)

***Spartina alterniflora* and *Spartina patens* Establishment at a Restored Salt Marsh in Gloucester, VA²³**

Allison Burbach, Krista Reed, Maggie Monroe (CNU)

Ragged Island Shoreline Stabilization Project²⁴

A partnership of CNU, Chesapeake Bay Restoration Fund, and VA Department of Wildlife Research

Conservation Values of Native and Introduced Plant Species in Ragged Island Wildlife Management Area²⁵

Katherine Ransone and Dr. Janet Steven (CNU)

Characterization of Wet Mineral Flat Ecology and Wetland Delineation Indicators²⁶

Jane Oswalt, Samantha Raines, Sarah Edmonds, Cadence Belsky (CNU)

Oyster Reefs and Seagrass Beds

Mitigating Shoreline Erosion with Artificial Oyster Reefs in the Lower James River²⁷

Casey Attallah (CNU)

The Effect of Reef Height and Oyster Addition on Persistence of Experimental Restoration Reefs in the York river, VA²⁸

Nihal Guennouni, Gabrielle G. Saluta, Romuald N. Lipcius, Rachel Wilson (Virginia Institute of Marine Science)

Streams, Ponds, and Lakes

Hot Fish, Cold Fish, Fast Fish, Slow Fish: Impact of Temperature and Salinity on Fast-Starters of Mummichogs²⁹

Tyler C. Ralston, David Collar, Jessica S. Thompson (CNU)

Investigating the Impact of Storm Events in the Availability of Terrestrial Insect Prey to Mummichog (*Fundulus heteroclitus*)³⁰

Cade P. Cobbs, Emma S. Dryden, Jessica S. Thompson, Heather D. Harwell (CNU)

Streams, Ponds, and Lakes Cont.

Using Photographic Data for Identification of *Myocastor coypus* Presence in Freshwater Habitats in Southeast Virginia³¹

Kelsie Smith, Ke'alani Sison, Ethan Barnes, Ethan Caldwell (CNU)

Weir-Influenced Effects on Aquatic Habitats in Brinson Inlet Lake³² Savannah Hall, Quentin Watts, Benjamin Selby, Samuel Ruth (CNU)

Impacts of the Weir at Lake Tecumseh on the Tree Ring Growth of Bald Cypress Trees³³

Jessica Hazlett, Elliana Stratton, Lyndsey McCauley (CNU)

Investigating *Faxonius Virginiensis*: A Life History Study of the Chowanoke Crayfish³⁴

William Kissner (Dinwiddie High School), Chloe Ampy (Dinwiddie High School), Sujana Henkanaththege-dara (Longwood University)

Uplands

Revegetation Test Plot at Riverview Farm Park, Newport News, VA: A Community Effort³⁵

Autumn Tilghman, Cynthia Morris, Julie Slater, Kelsey Smith, Sharell Stewart (CNU)

Moving the Story Inland: Studies of Climate Change Impacts on Reptiles & Amphibians³⁶

Dylan Bryant, Dane Conley, Madison McCann, Matthew Lattanzio (CNU)

Preliminary Results: The Success of Direct Seeding of Oaks Using Repurposed Agricultural Seeding Equipment in the Rappahannock River Valley National Wildlife Refuge³⁷

Stephanie Dahlem, Sara LaFrance, Nancy Reid (CNU)

Education

Connecting to the Bay: Preparing Secondary Teacher and Facilitating Meaningful Watershed Educational Experiences for Teachers and Students in Newport News, Virginia³⁸

Jessica Campo, Crystal Levenson, Jacqueline D. Roquemore, Dr. Rob Atkinson (CNU)

Solving Tomorrow's Problems Today Through Science and Sustainability³⁹ Virginia Beach Public Schools

Artists

Carolyn Thompson Dudley

Carolyn Thompson Dudley's art and life are grounded in Virginia. Raised in Southwest Virginia, the landscape of forms and fields, the land itself, and its people are imprinted in her memory. Painting plein air allows Carolyn to choose colors and compositions that represent the quiet complexity of nature. Carolyn received her BFA in Painting and Printmaking at Virginia Commonwealth University and Master of Science degree in Art Psychotherapy at Eastern Virginia Medical School. For six years, Carolyn worked in private psychiatric hospitals as an Art Therapist, where she helped others express their stories and emotions through their own artwork. Carolyn currently works in her Gloucester, VA studio near the Poropotank Creek.

Anne Yoncha

Anne Yoncha is Assistant Professor of Art at East Central University in Ada, Oklahoma. Born and raised in Wilmington, Delaware, she earned her MFA at the University of Montana and recently completed a Fulbright fellowship at the Natural Resources Institute Finland, working with restorationists to make collaborative art-science work about former peat extraction sites outside Oulu. Her practice combines digital sensing technology, such as bio-data sonification, and analog, traditional processes including painting with ink she makes from locally-sourced plant matter. Her ongoing research with the HAB (High Altitude Bioprospecting) working group began in fall 2019 at Field Notes, a residency of Finland's BioArt Society at Kilpisjärvi Biological Station in subarctic Finnish Lapland, where she worked with artists, biologists, and programmers to detect high-altitude microbes using a heli-kite. She is currently an artist-in-residence at Gloucester's Arts on Main. She has also been awarded residencies at Cedar Point Biological Station in Ogallala, Nebraska, and Flathead Lake Biological Station in Polson, Montana; and her work has been shown nationally and internationally, including the CICA Museum in South Korea, Finland's Art Ii Biennial, the Budapest Environmental Project, and Codex Foundation's international artistic exploration "Extraction: Art on the Edge of Abyss".

Fear to Hope Projects

Growth Chamber Study

AWC seedlings were exposed to 0.75ppt salt to assess how seedlings respond to and, hopefully, recover from salt intrusion.

60 trees were divided into three treatments:

- Control (no salt)
- 2 week exposure
- 4 week exposure

Public Science Study

49 AWC seedlings reside on CNU's campus as a reminder that ghost forests are forming all along the Atlantic Coast due to climate change.

Inspiration for this project was taken from artist Maya Lin's public ghost forest display. She erected 49 dead 40+ foot tall AWC trees in Madison Square Park, NYC.

Events for CNU Student Engagement

Great Dismal Swamp Planting

In December 2021, 11 CNU students accompanied by Dr. Atkinson ventured to the Great Dismal Swamp National Wildlife Refuge where they planted 750 seedlings of Atlantic White Cedar.

Adopt-A-Seedling

CNU student groups had the opportunity to 'adopt' and name a seedling in order to raise awareness about Fear to Hope. While adopters do not get to keep the seedlings, they receive periodic updates about the project and invitations to assist in gathering measurements of the seedlings.



Flagship Partnership

In fall 2021, CNU began its flagship partnership with An Achievable Dream (AAD), a school in Newport News that provides a unique and disciplined academic environment to level the playing field for students in under-served communities.

Under the mentorship of CNU students, AAD students collected height, width, stem count, and color data of their seedlings, and they continued these measurements twice a week.

In February, nine AAD students visited CNU's campus where they began analyzing their data, attended a lecture by Dr. Atkinson, took a tour of CNU's campus, and ate lunch in the dining halls.



HS Student Quotes

"It was something new and fun! It gave us a small look into more serious experiments"

Sophie Johnson, Hanover HS

"I learned more about our environmental problems and how I as an engineer could help solve some of those problems."

Caleb Liggins, Norcom HS

"This helped me understand more about plant life and why they're so important to us and impact our lives."

Ava Parada, Norcom HS

"It was fun taking care of the trees; I hope we can plant them in our campus' retention pond."

Ian Lindo, Norcom HS

"I loved seeing our trees grow each week!"

Azrael Roulds, Norcom HS

"This project enlightened me as to the importance of this tree."

Sydney Sampson, Norcom HS

Donors



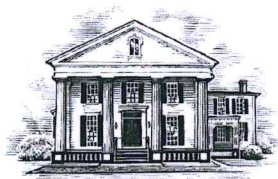
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