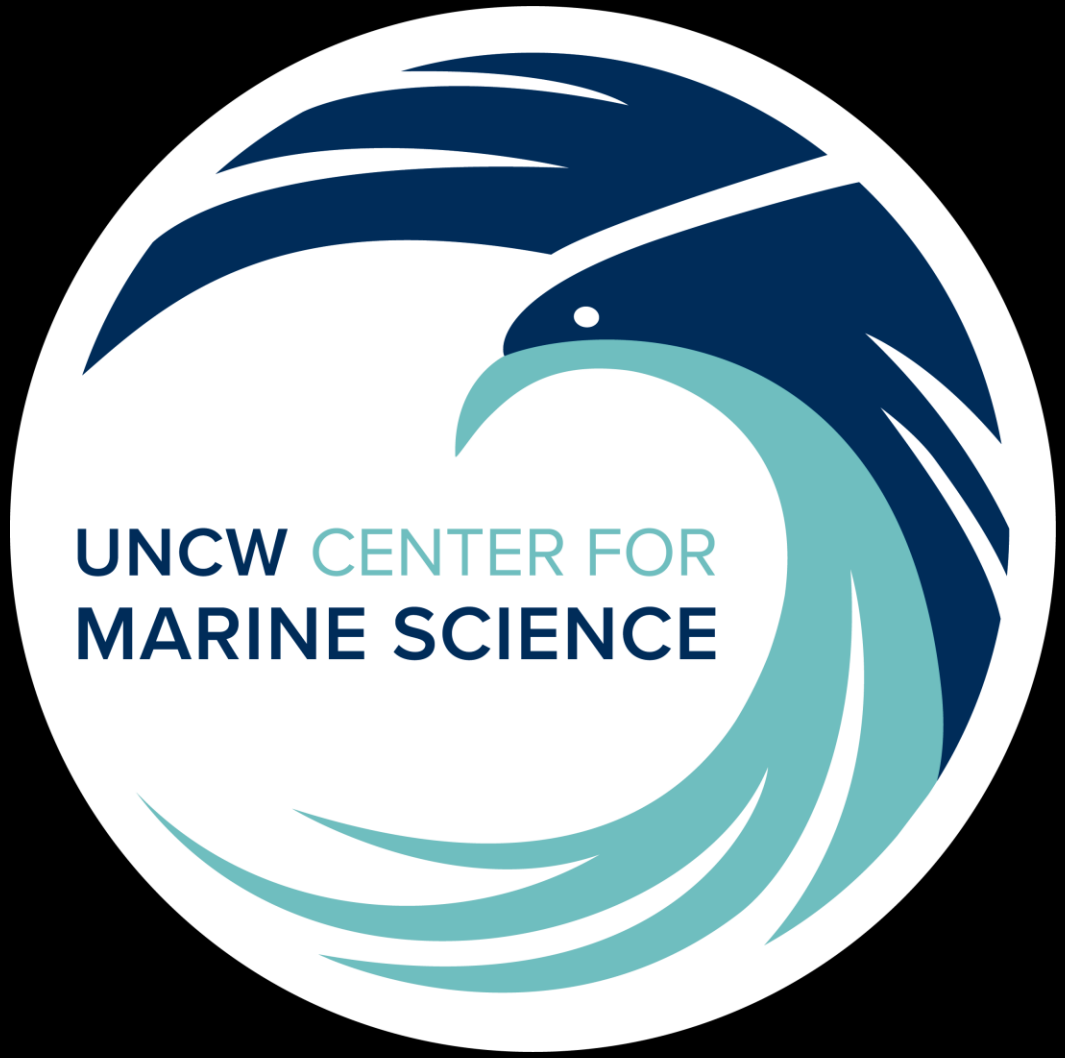

UNCW CENTER FOR
MARINE SCIENCE

# Center for Marine Science

- 50+ years
- Affiliated with 108 UNCW faculty & 15 academic programs
- Help focus university research opportunities & experiential learning
    - Undergraduate programs
    - MS and ACOS graduate programs
- Across all UNCW schools and colleges

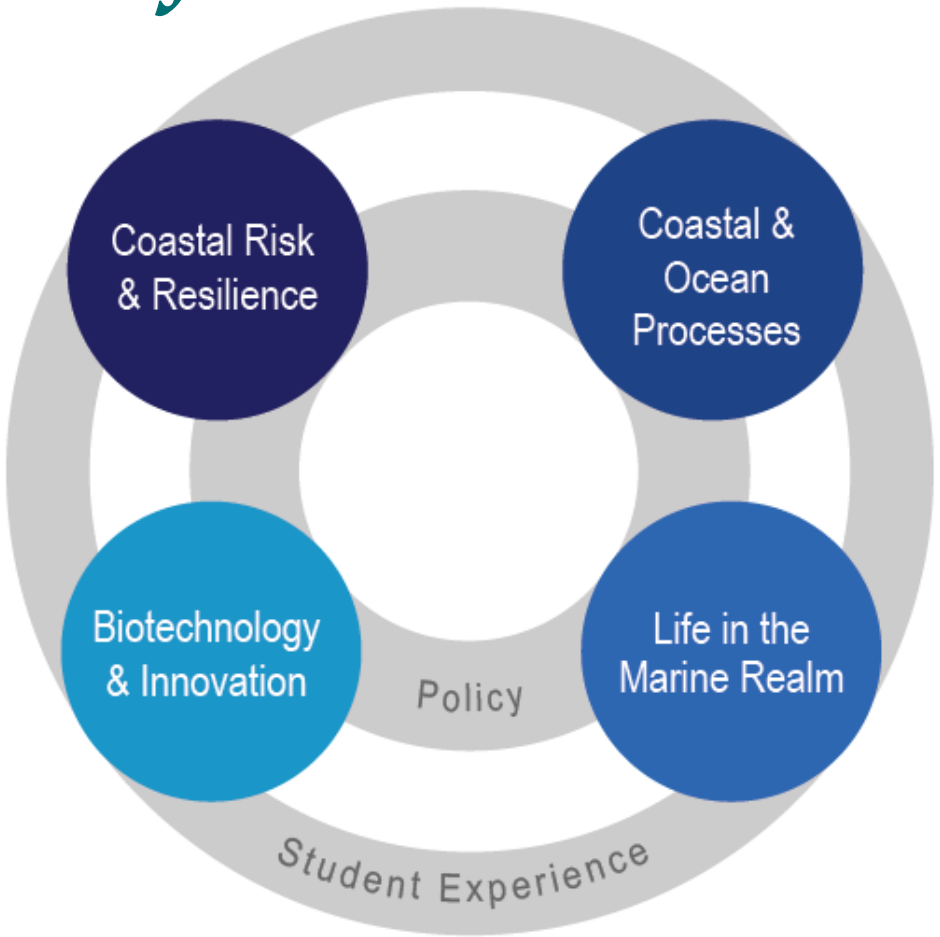
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# Center *for* Marine Science

Safety & Stability

Predictability




Commercialization

Knowledge

CMS needs philanthropic support to enhance facilities and student programming.

*Ensuring safe and healthy coasts*

# R/V Osprey – Now in Service




*Sea trials, July 2026. Photo: Bronson Lamb/All American Marine*

- 78-ft hydrofoil catamaran
- 22 knots; 150 nm offshore
- Wet & dry labs; multibeam
- 10 berths; 24-hr operations
- **All American Marine**
- **Arrived Sept. 2026**

# A Floating Lab and Classroom











## Mission capabilities

- Seafloor & habitat mapping
- Fisheries & habitat assessments
- CORMP buoy deployment & recovery
- Water-quality sampling
- Offshore SCUBA platform
- Hands-on student field training

*Photos: UNCW (arrival & welcome, Sept.–Oct. 2026); All American Marine (interior, deck)*

# WaterSeNCe: Flood Resilience


CAROLINA BEACH – ETC MEDIA

Real-time sensor network: water level, rainfall, soil moisture, water quality

Led by Dr. Phil Bresnahan – local, state, regional & international partners






**Love Grove Bridge, NC**

**Tue Jan 21, 11:00 AM EST**

Turn notificaitons on

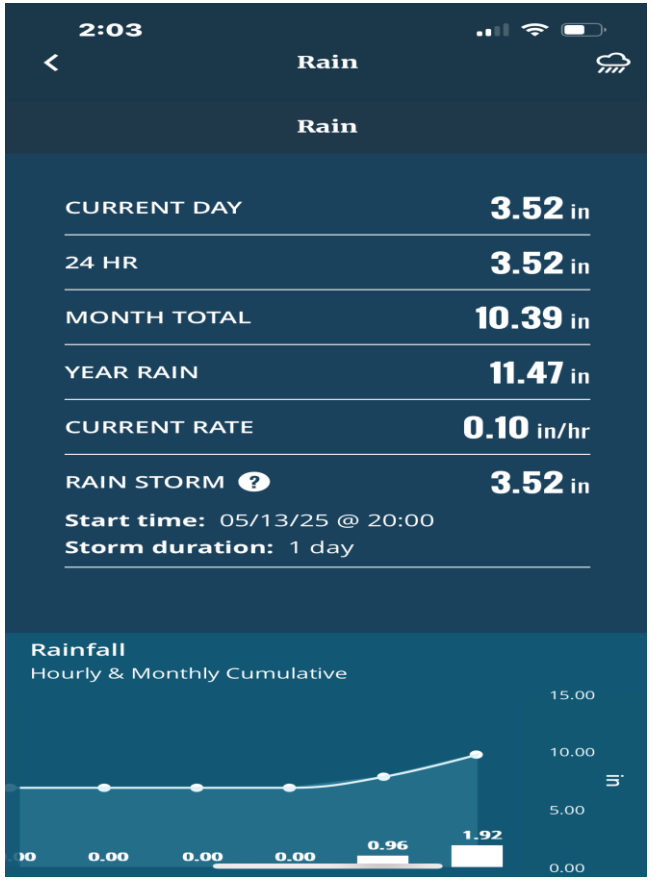
| | |
|---|---|
| Water level | 0.82 ft |
| Monitoring notifications | On Off |
| Operator | n/a |
| Reporting frequencey | 10 |
| Deployed | n/a |
| Full data record | Visit site |
| Location | 34.2553 ° N 77.9268 ° W |

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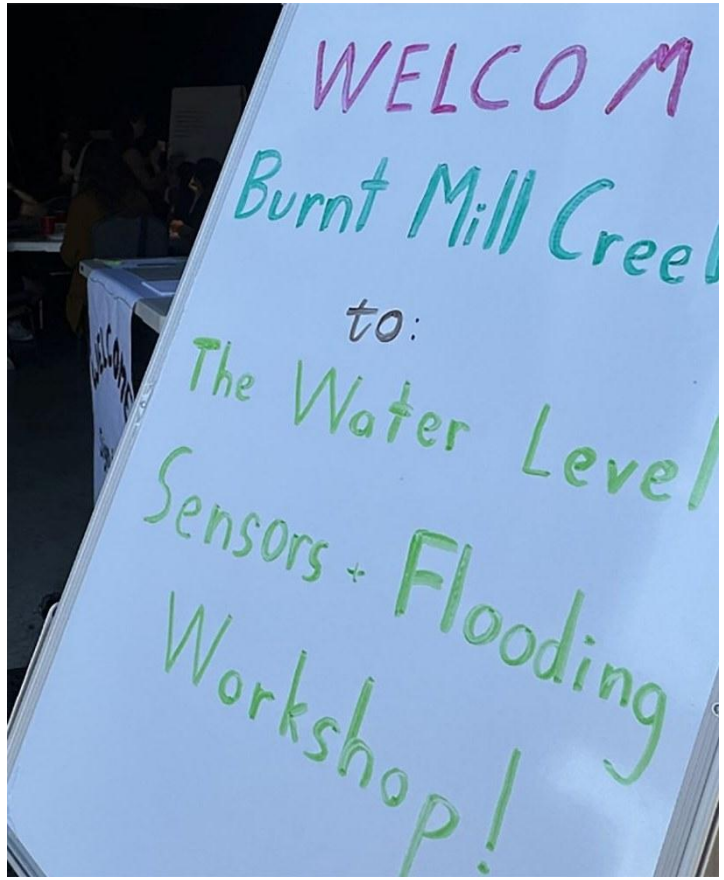
# WaterSeNCe: Living Laboratories



Sensor stations on UNCW & CMS campuses




Real-time rainfall & water-level data




Community sensor workshops (Burnt Mill Creek)

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# Prioritizing Community Flood Needs

New Hanover Community Endowment: $500K two-year planning grant (2025) to a CMS-led Flood Resilience Consortium, building on WaterSeNCe data

**$500K**

New Hanover Community Endowment
2-year planning grant

1

## Inventory

Maps, models & real-time WaterSeNCe sensor data

2

## Prioritize

Community vulnerabilities, priority projects, timelines & responsibilities

3

## Fund

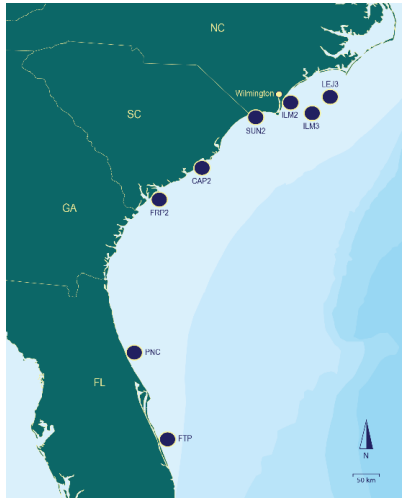
Funding strategy to carry priority projects forward

*Leads: Ken Halanych, Lynn Leonard, Phil Bresnahan – with local governments, private organizations & university experts*

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# CORMP

UNC-W Coastal Ocean Research and Monitoring Program



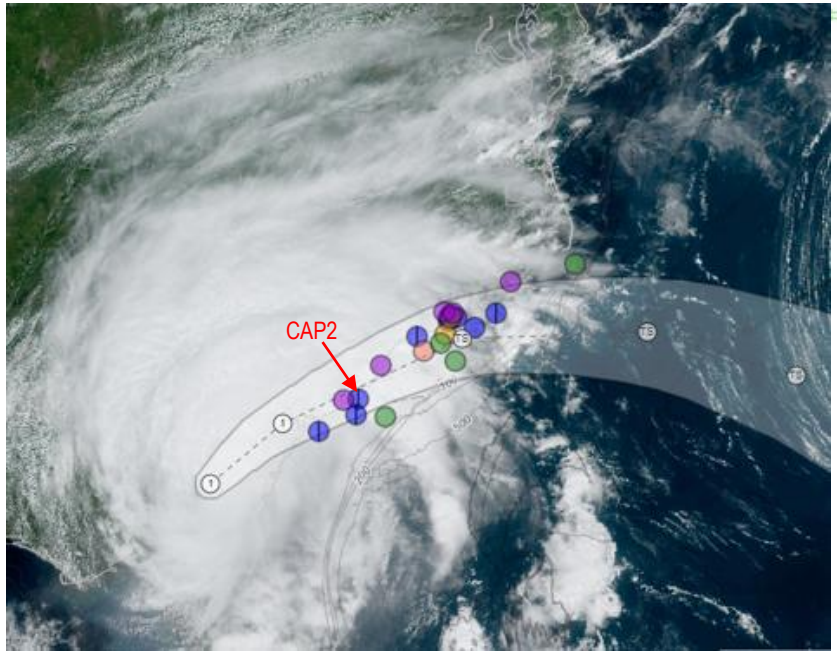


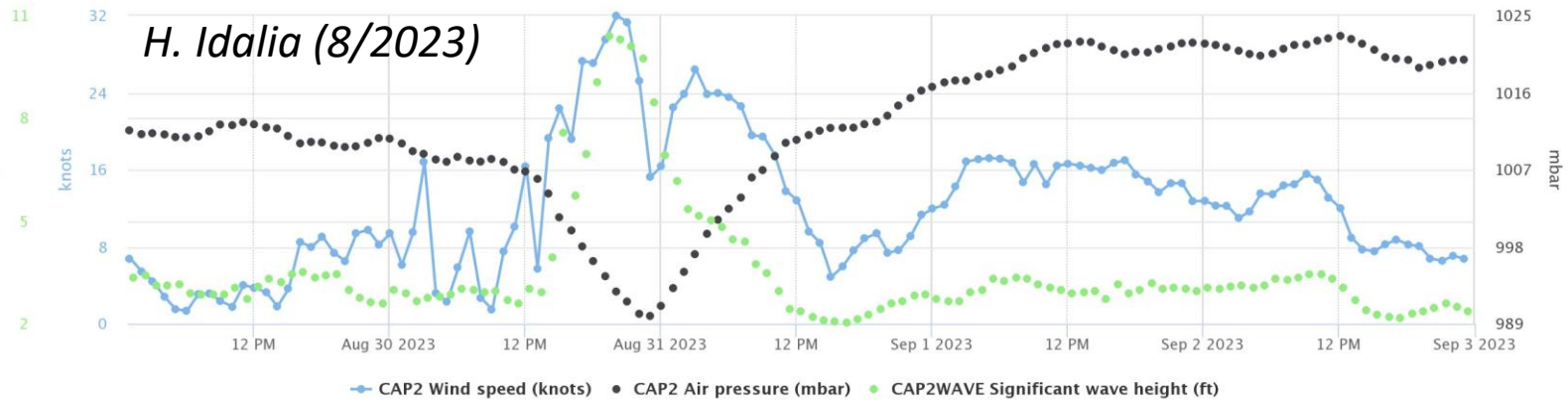


18 real-time wave and weather buoys from NC to FL

Hourly weather & oceanographic data (CORMP.org)

Web-based tools (e.g. visualizations, forecasts, storm tracks, alerts)

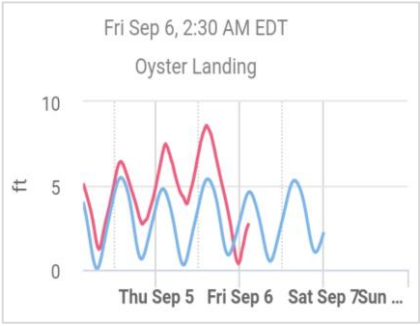




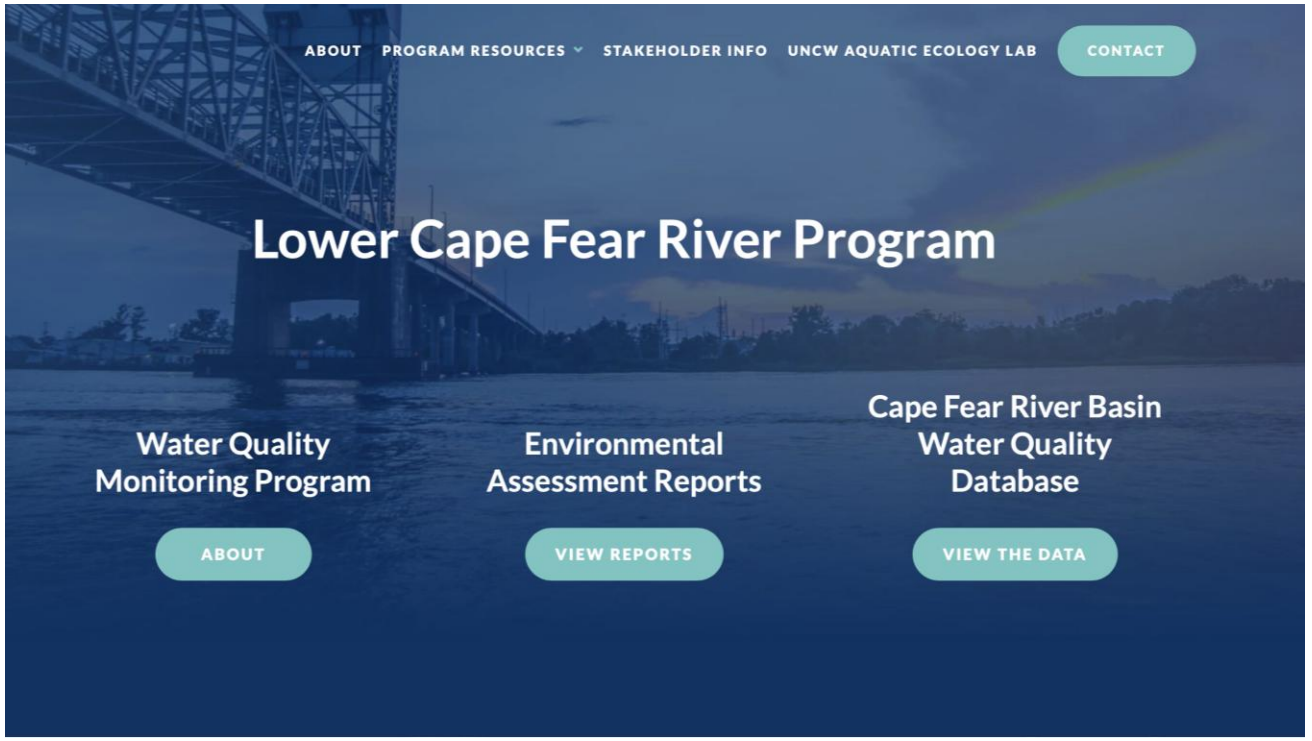






# Cape Fear River Program:

Consortium among eight industries and 11 public entities







Environmental assessments

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# NC PFAS Research Network Management Office

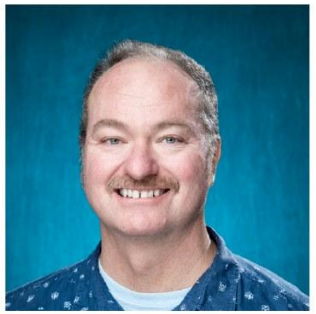
Designed to connect researchers from 10+ universities across North Carolina to address statewide PFAS research issues

Supports collaborative, interdisciplinary research consortiums grounded in partnerships and practical applications

Collaboration with Cape Fear Public Utility Authority (CFPUA) to leverage PFAS expertise at UNCW for Wilmington's benefit

A **North Carolina Collaboratory** program funded by the North Carolina General Assembly

## *The Team*



**Ralph N. Mead**
Program Director



**Rachylle Hart**
Program Manager

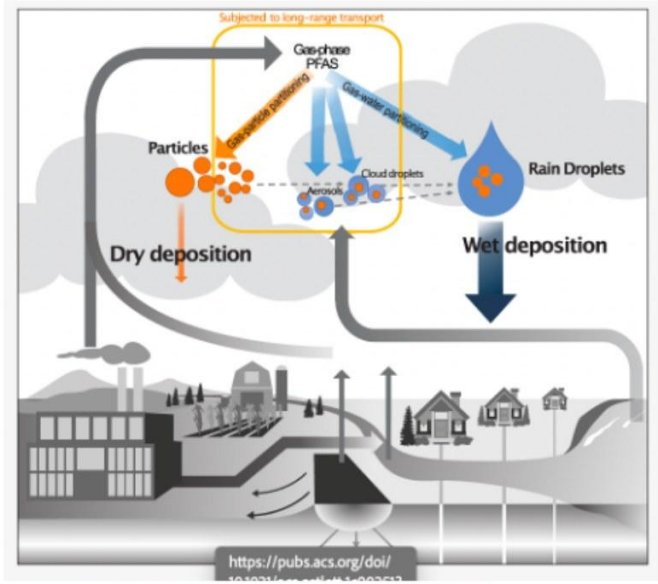


**Reece Taylor**
Program Support Specialist

ncpfas@uncw.edu

# Per- and Polyfluoroalkyl Substance (PFAS) Research at CMS :

- **Atmospheric deposition of PFAS**
  - Leads to global distribution of PFAS to distal locations (eg Arctic) far from initial source
- **PFAS Forensics**
  - Development of source apportionment tools to trace source/transformation of PFAS
- **PFAS Occurence in marine organisims**
  - Trophic transfer and biomagnification in marine systems
- **Quantitative determination of PFAS in coastal waters and sediments**
  - Occurrence and fate of PFAS






# Forensic Light Isotope and Trace Environmental Spectrometry Laboratory (FLITES)

FORENSIC LIGHT ISOTOPE & TRACE ENVIRONMENTAL SPECTROMETRY

FLITES

Analytical instrumentation core at CMS available to faculty, students and outside users.

Coordinators:
Taylor Conklin
Chad Lane
Ralph Mead

Stable isotopic analysis using Orbitrap-IRMS




Quantitative analysis of emerging contaminates using LC-MS/MS



# CFPUA/UNCW Collaboration



*Zane Ritter, CFPUA PFAS Scientist loads sample into new instrument. Photo was shared by CFPUA team.*

Supported the **establishment of an in-house PFAS testing facilty at CFPUA** for operational monitoring rapid turn-around

Capable of identifying and quantifying

**60**

unique PFAS, including short and ultra-short chain compounds

Through close **coordination between Zane Ritter and Dr. Ralph Mead,** developed a robust and comprehensive analytical method

## *Course Feedback*

"This class made me excited and hopeful to run PFAS in the future."

Hosted **first PFAS Training Course** for utility staff at CMS, including one day high-level PFAS training and a 4-day analytical bootcamp

# Finfish Aquaculture











- Black sea bass, red drum & southern flounder – broodstock, larviculture & recirculating grow-out (Wrightsville Beach)
- 2026 fish bank with Zora's Seafood: 20 black sea bass a week for families in need

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# • Sudden Unusual Mortality (SUMs)

- First observed Virginia 2012
- Now Maine to Texas
- Can kill 80-90% near-market sized oysters

- Cause?
  - Not any known pathogen
    - No indication of infectious disease
  - Wild oysters do not *seem* to be impacted
  - Not correlated with culture method
  - *Mostly* late spring/early summer
  - *Mostly* associated with high salinity sites





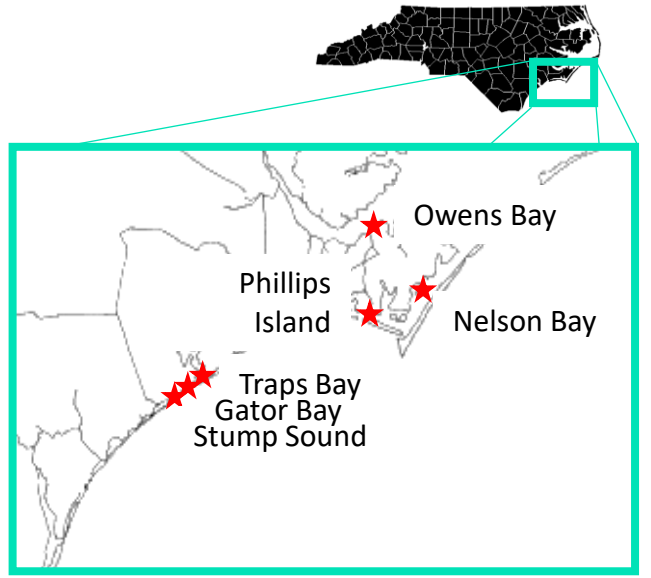


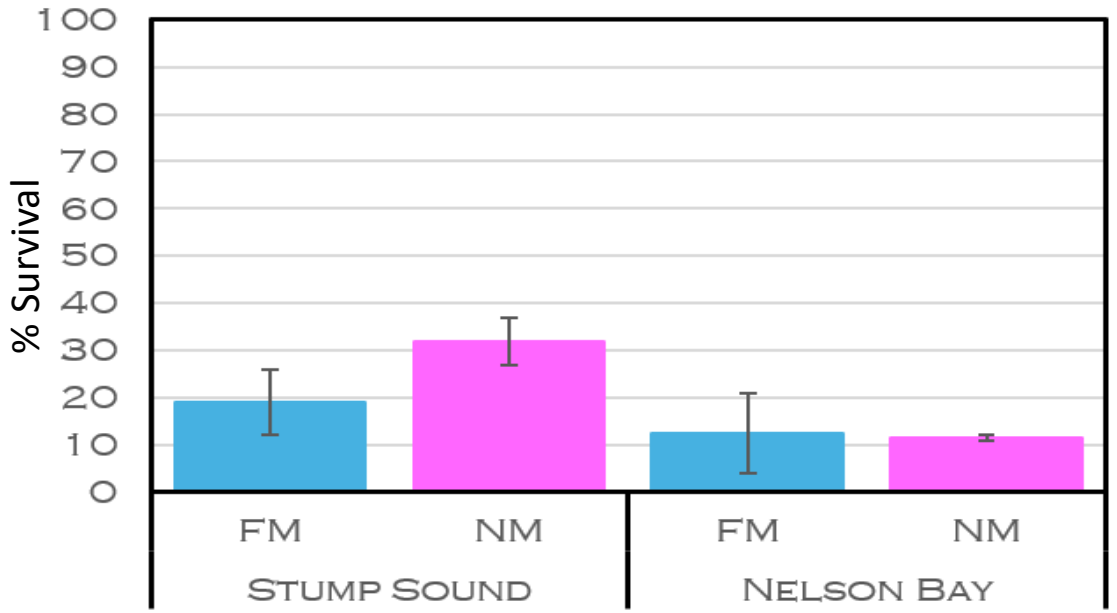


# Can we breed for SUMs resilience?

- Does breeding survivors always improve resilience?
  - Apparently!

- Can we predict resilience for genetic information?
  - Apparently not!
    - At least with current genetic information



MARINEQUEST

UNCW.EDU/MARINEQUEST

K-12 outreach
and education







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BLUE FISH SOCIETY

UNCW CENTER FOR MARINE SCIENCE

## Needs:

Vessel operations

Flood Center

Grad student support

Summer classes


- Ken Halanych, Executive Director
  halanychk@uncw.edu


*Ensuring safe and healthy coasts*