Calibration Experiments for a Novel Clam Survey Dredge & Monitoring Carbonate Chemistry of Surfclam Habitat

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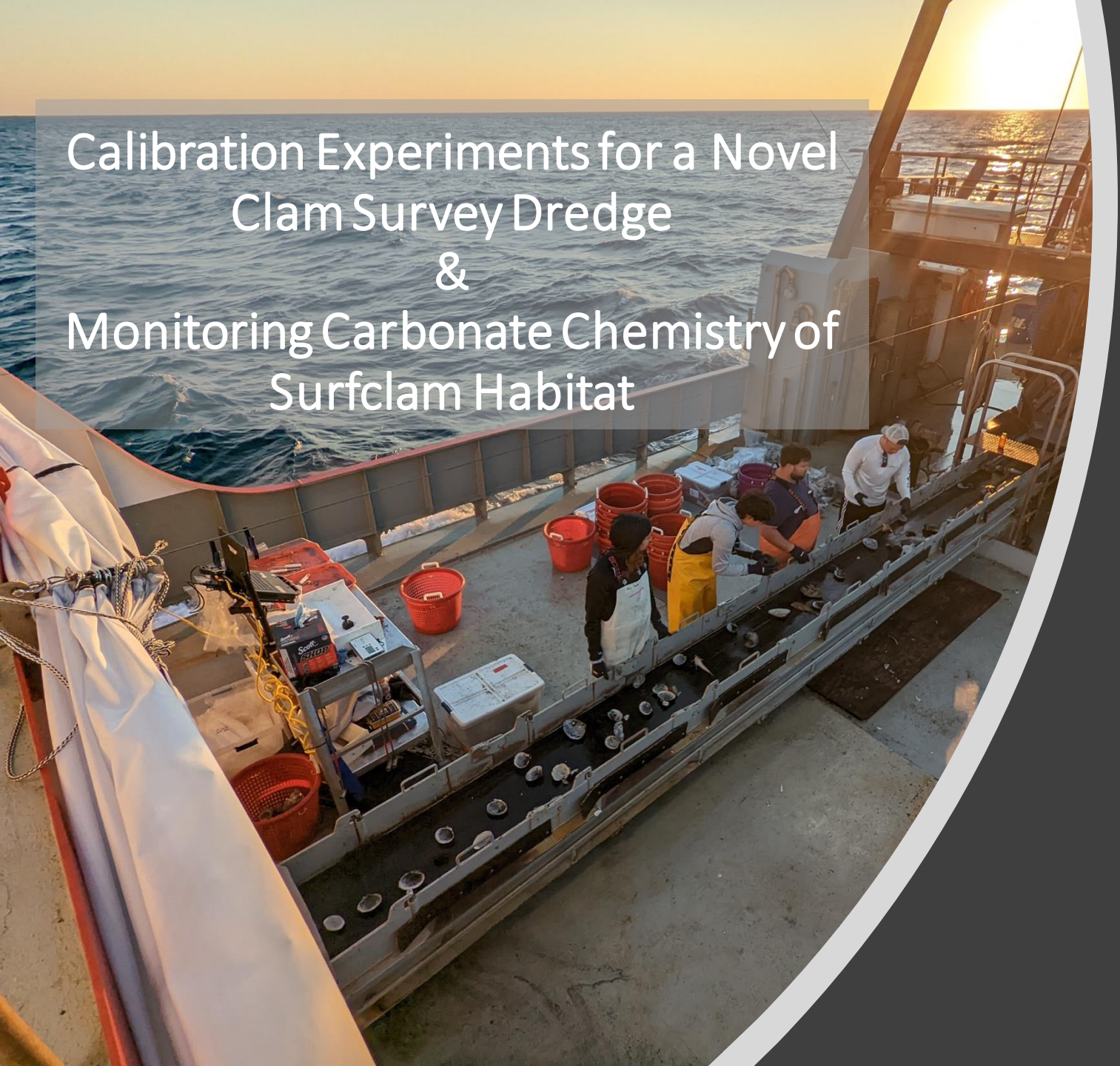


Calibration Experiments for a Novel Clam Survey Dredge & Monitoring Carbonate Chemistry of Surfclam Habitat

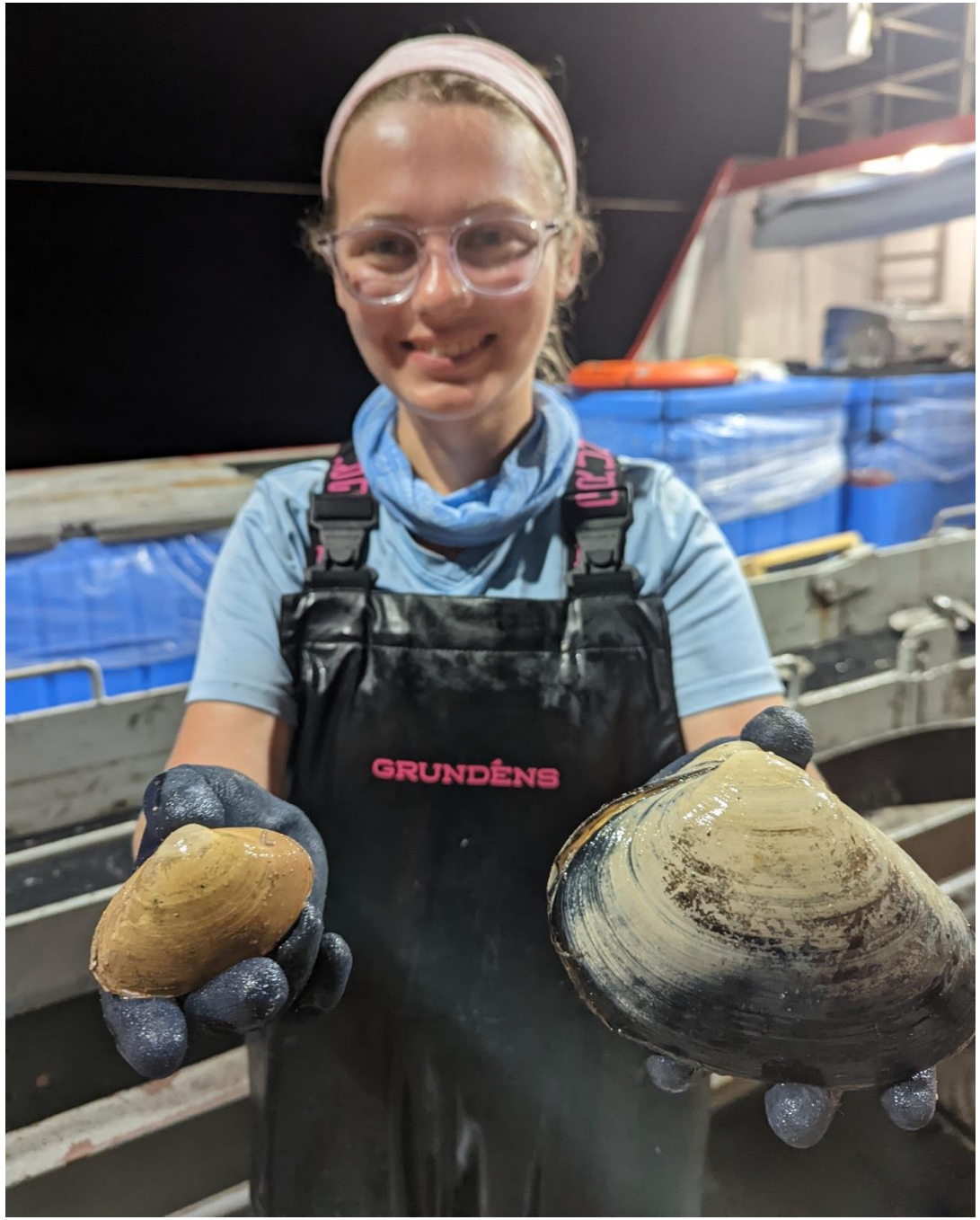
Goals of the Project

- **Obj1:** Construction of a scientific surfclam dredge
  - Smaller bar spacing
- **Obj2**: Dredge calibration
  - Federal Survey Stations
  - Size Selectivity Experiments
  - Dredge Efficiency Experiments
- **Obj3**: Ocean Acidification Data
  - Profile carbonate saturation.
  - Benthic grabs (early recruits)
  - Shell strength testing

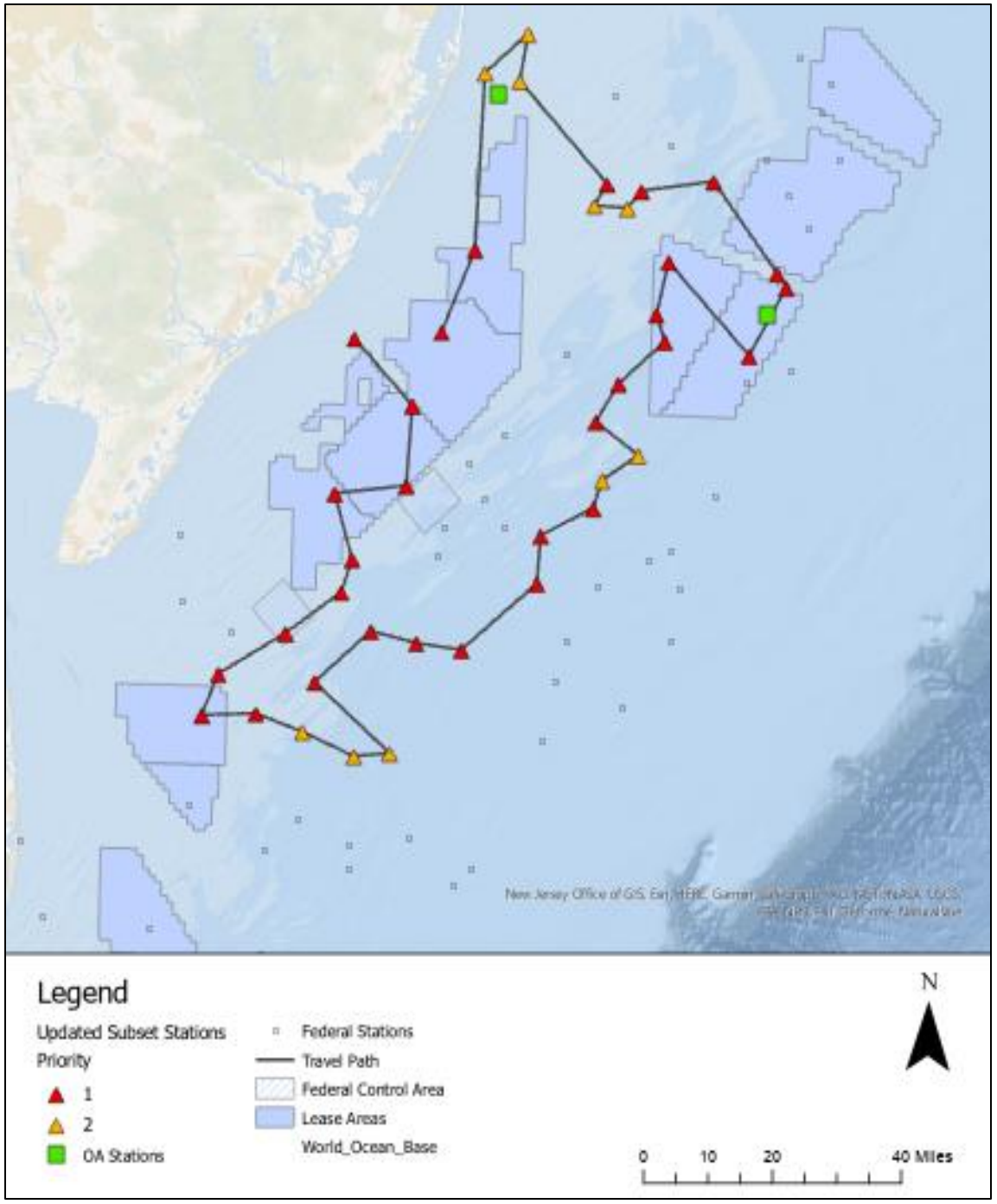
- **Goals of the Project**

- **Obj1:** Construction of a scientific surfclam dredge
  - Smaller bar spacing
  - Relied heavily on industry support and collaboration
  - Likewise in vessel preparation for other survey efforts


ATLANTIC CITY
N.J.


GRUNDÉNS


Sharpie
FINE POINT

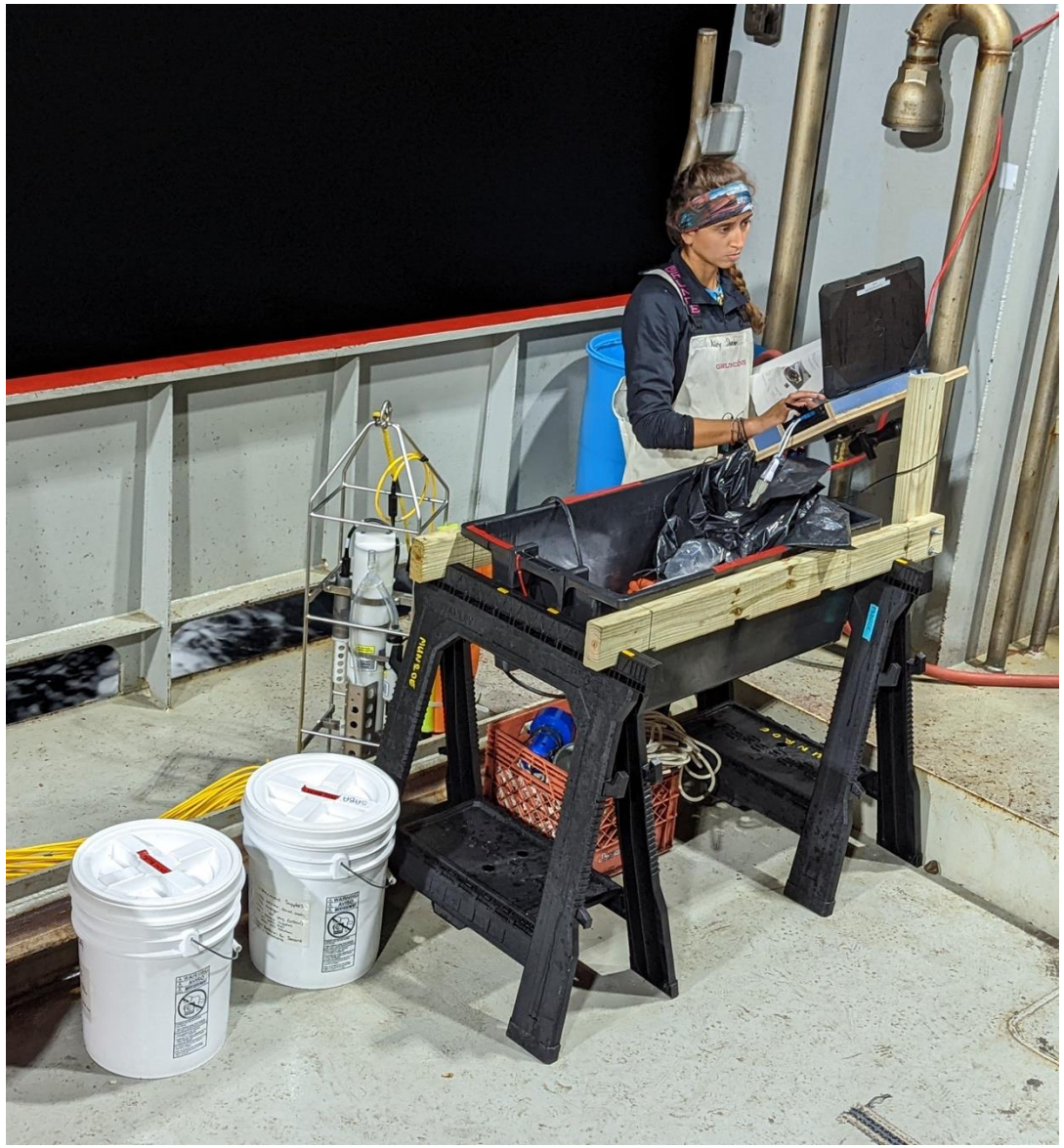


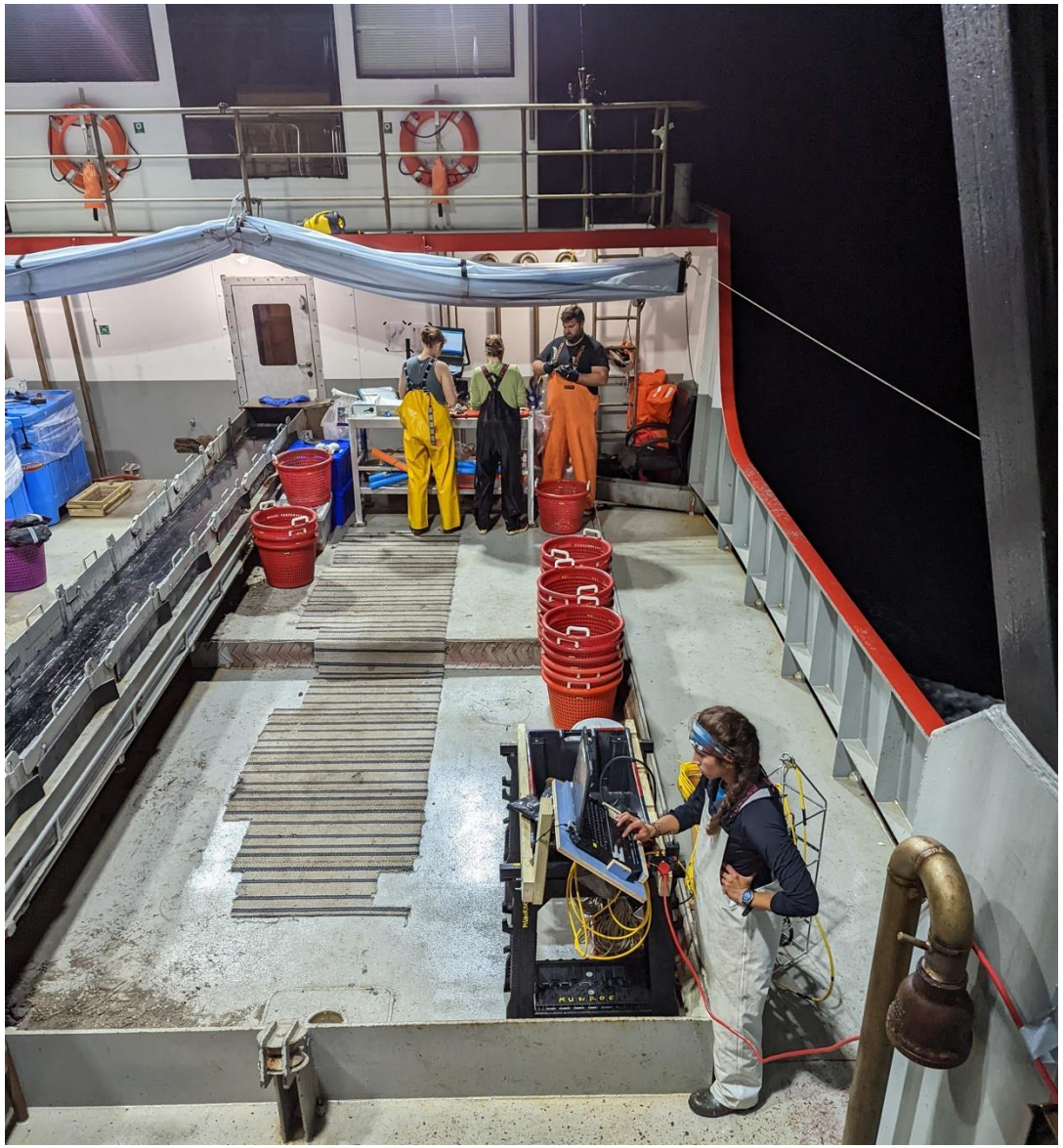
Obj2: Dredge calibration

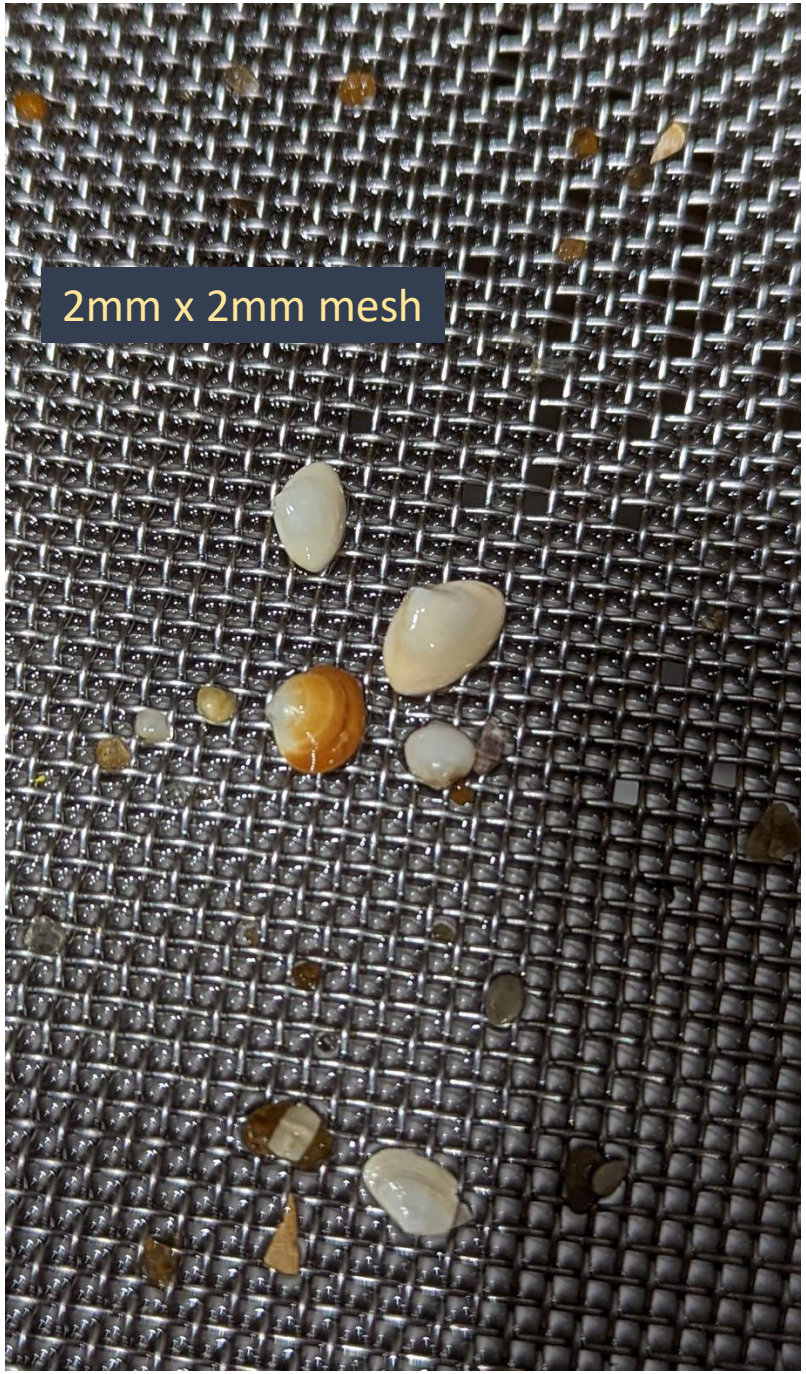
- Federal Survey Stations

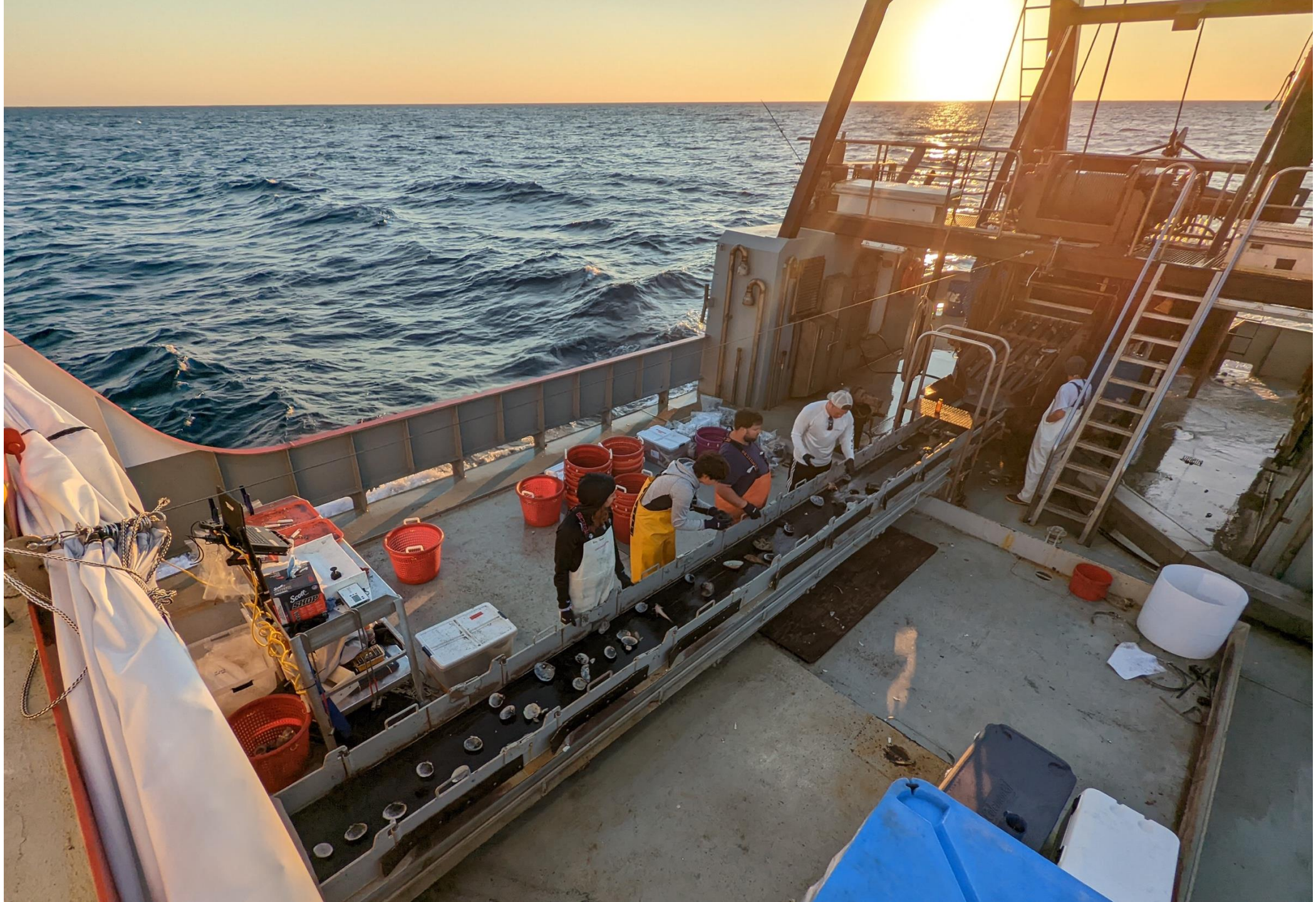
At each station:

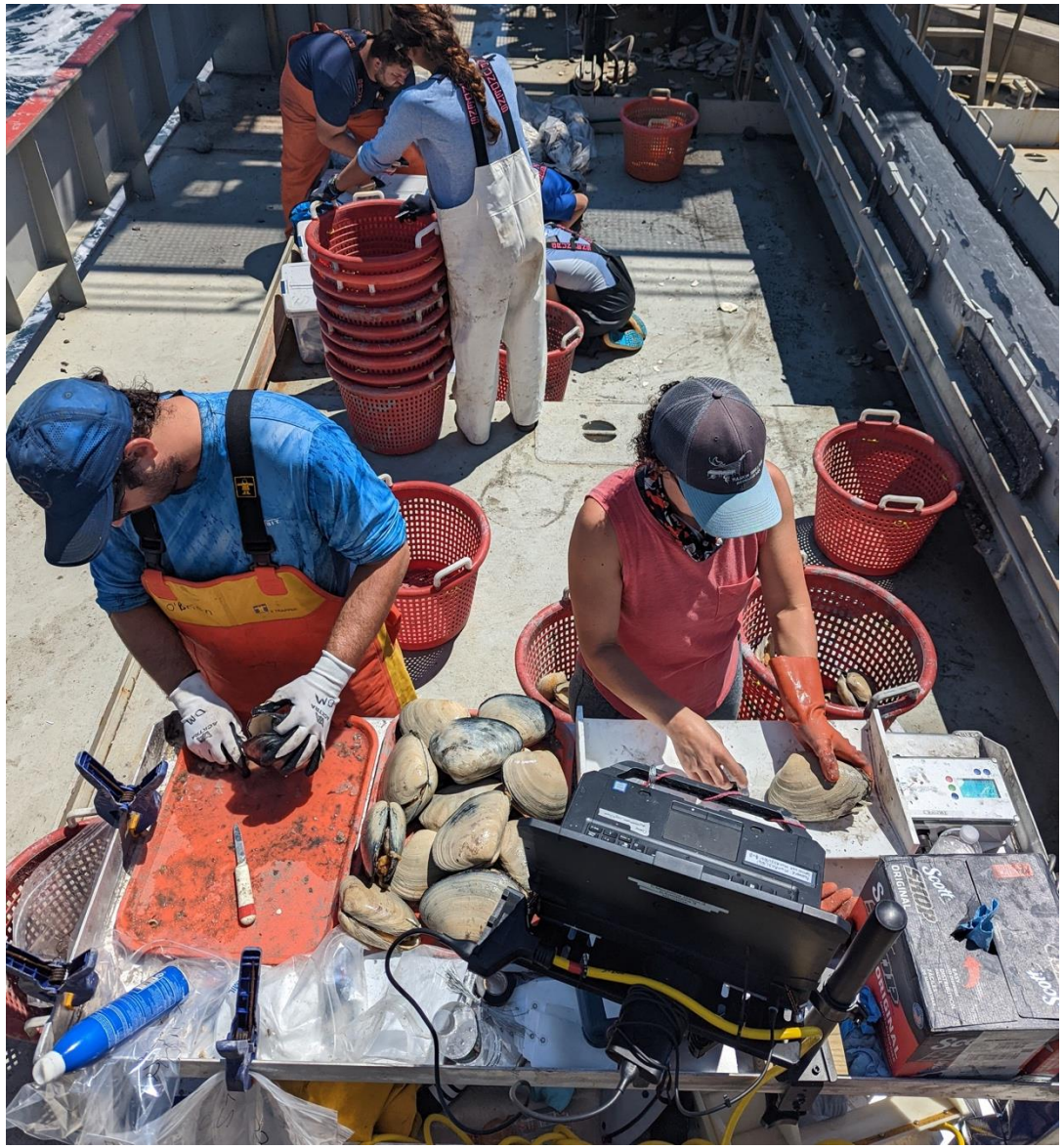
- Benthic grab
  - Links with long-term state survey
- CTD & pCO2 sensor cast
  - Oceanographic profile & bottom water chemistry
- Standardized dredge tow
  - Clam abundance, size & age frequency, shell strength

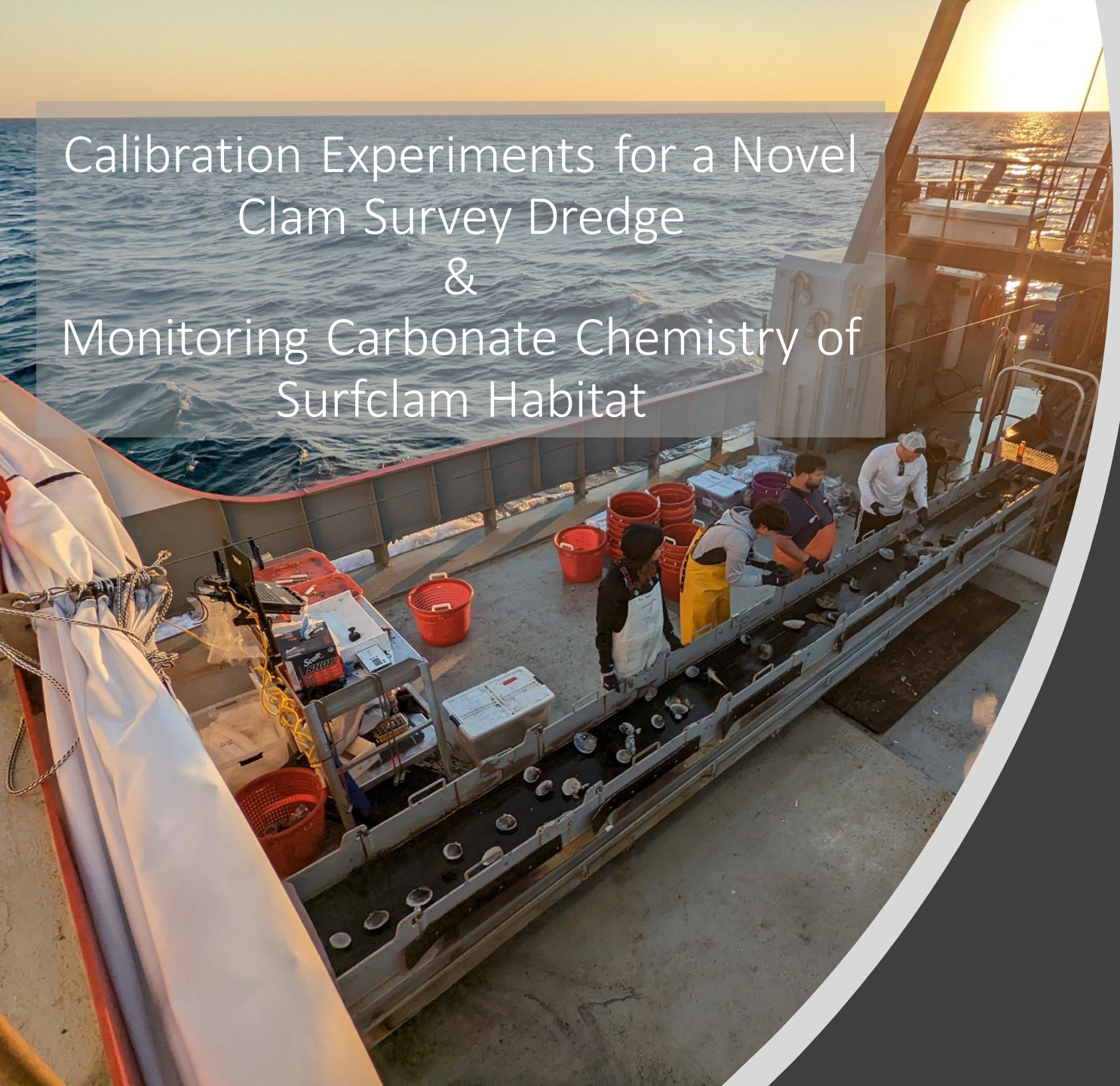





2mm x 2mm mesh







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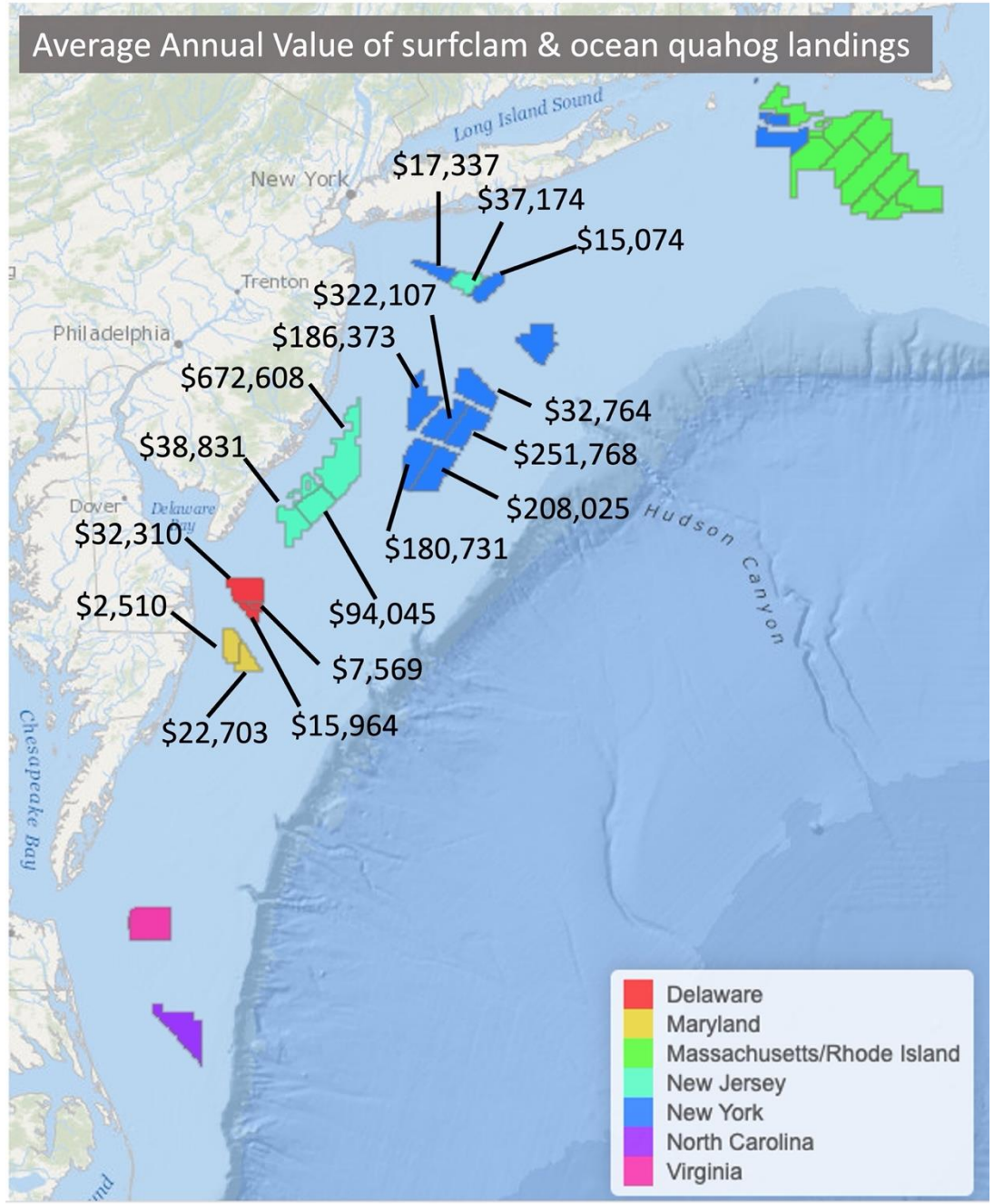
Next Steps

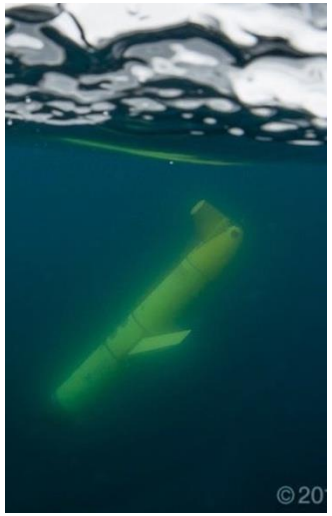
- **Obj2**: Dredge calibration
  - Size Selectivity Experiments
  - Dredge Efficiency Experiments
- **Obj3**: Ocean Acidification Data
  - Oceanographic data processing
  - Shell ages
  - Shell strength testing



Annual average values from each lease area over 2015-2019. Data from NOAA Socioeconomic Impacts of Atlantic Offshore Wind Development, GARFO online data resource. Accessed June 30, 2022.
https://www.fisheries.noaa.gov/resource/data/socioeconomic-impacts-atlantic-offshore-wind-development

Fisheries Monitoring Of An Offshore Windfarm
Ocean Wind 1





Jason Morson, Jason Adolf, Kaycee Coleman, Gregory Decelles, Keith Dunton, Thomas Grothues, Josh Kohut, Daphne Munroe, Grace Saba, Kevin Wark, and Douglas Zemeckis

RUTGERS
THE STATE UNIVERSITY OF NEW JERSEY

MONMOUTH UNIVERSITY

Ørsted

Ocean Wind 1

Location: Approximately 15 miles off the coast of southern New Jersey

Timeline: Construction is planned to start in the early 2020's, with the wind farm expected to provide first power in late 2024

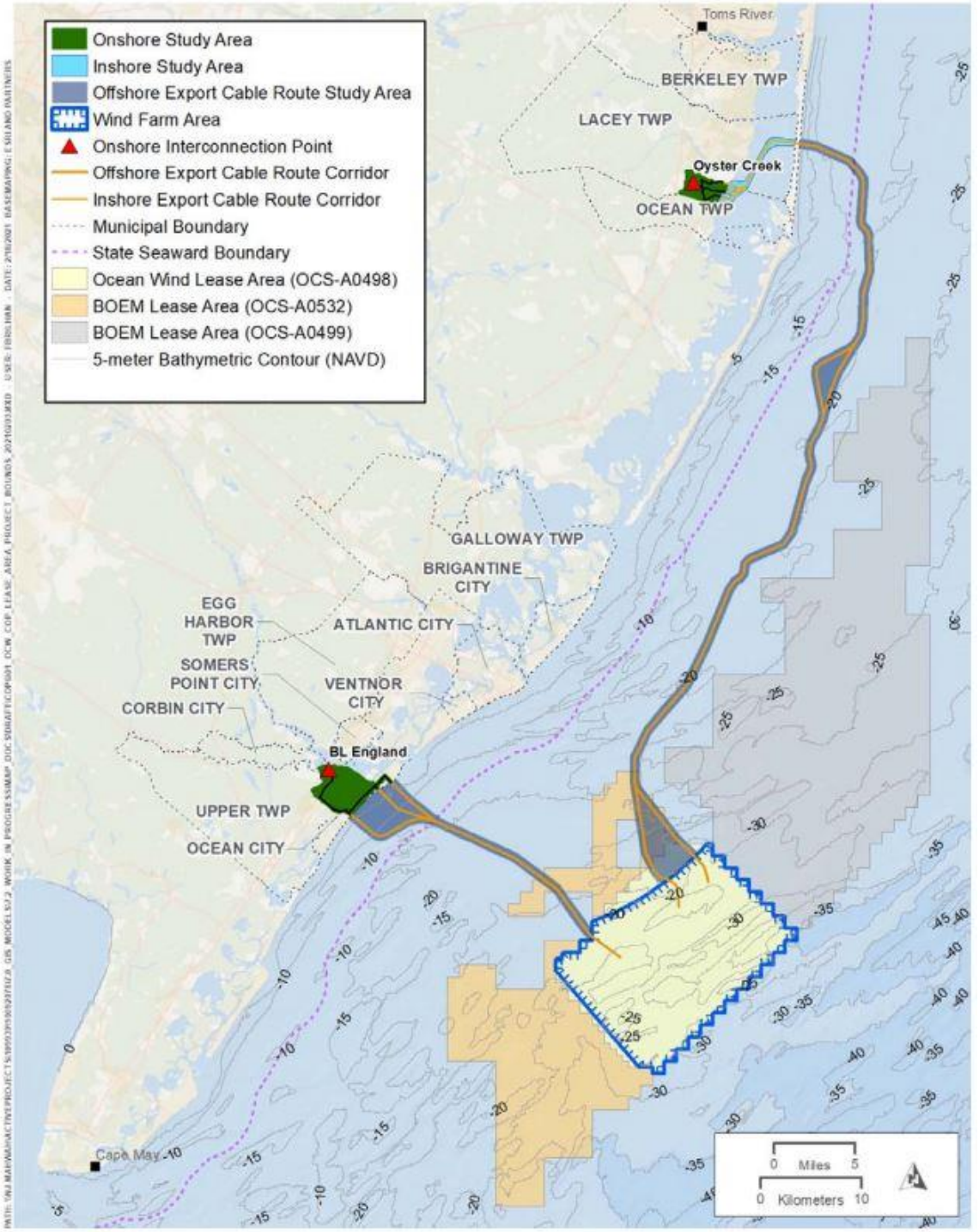
Turbine: GE Haliade X 12 MW turbine

Capacity: 1,100 MW

Annual Production: Enough to power more than 500,000 homes

Owner & Developer: 75% Ørsted, 25% PSEG

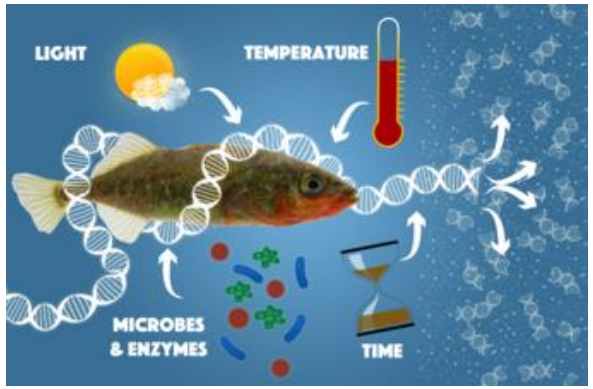
oceanwindone.com



Ocean Wind 1 Fishery Monitoring Plan

Trawl Survey (Extractive)

eDNA (Non-Extractive)

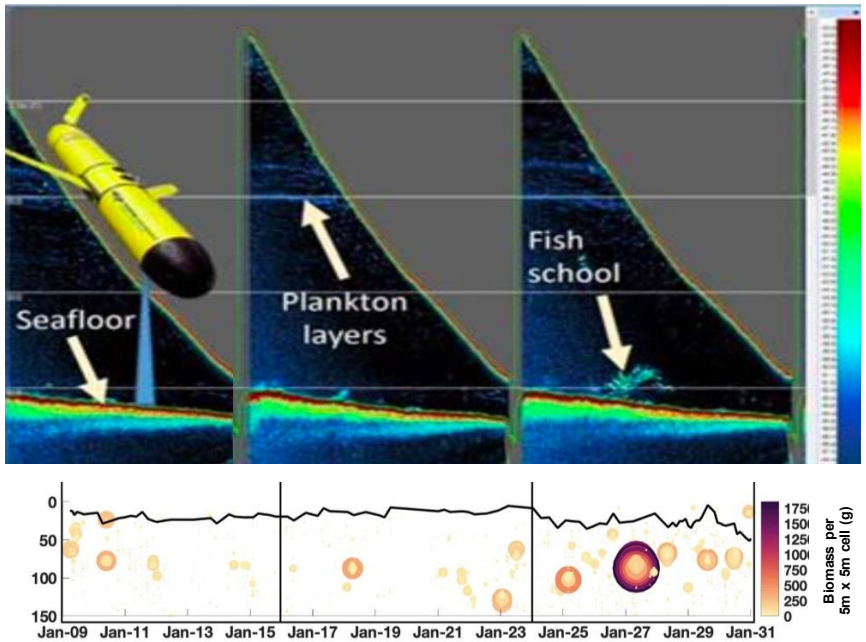


Clam Dredge Survey (Extractive)

Acoustic Telemetry
(Extractive/Non-Extractive)

Stuctured Habitat Survey:
-BRUV(Non-Extractive)
-Chevron Traps (Extractive)
-Hook-and-Line Fishing (Extractive)

Acoustic Glider-Based Surveys (Non-Extractive)



Towed Camera Surveys (Non-Extractive)

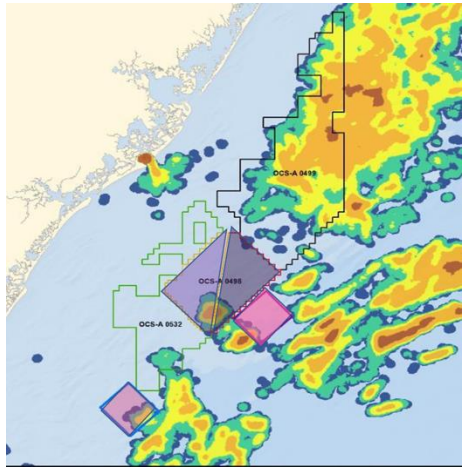
Atlantic Surfclam Cooperative Fishery Survey

Aim: Quantify dynamic abundance, distribution, age of surfclams.

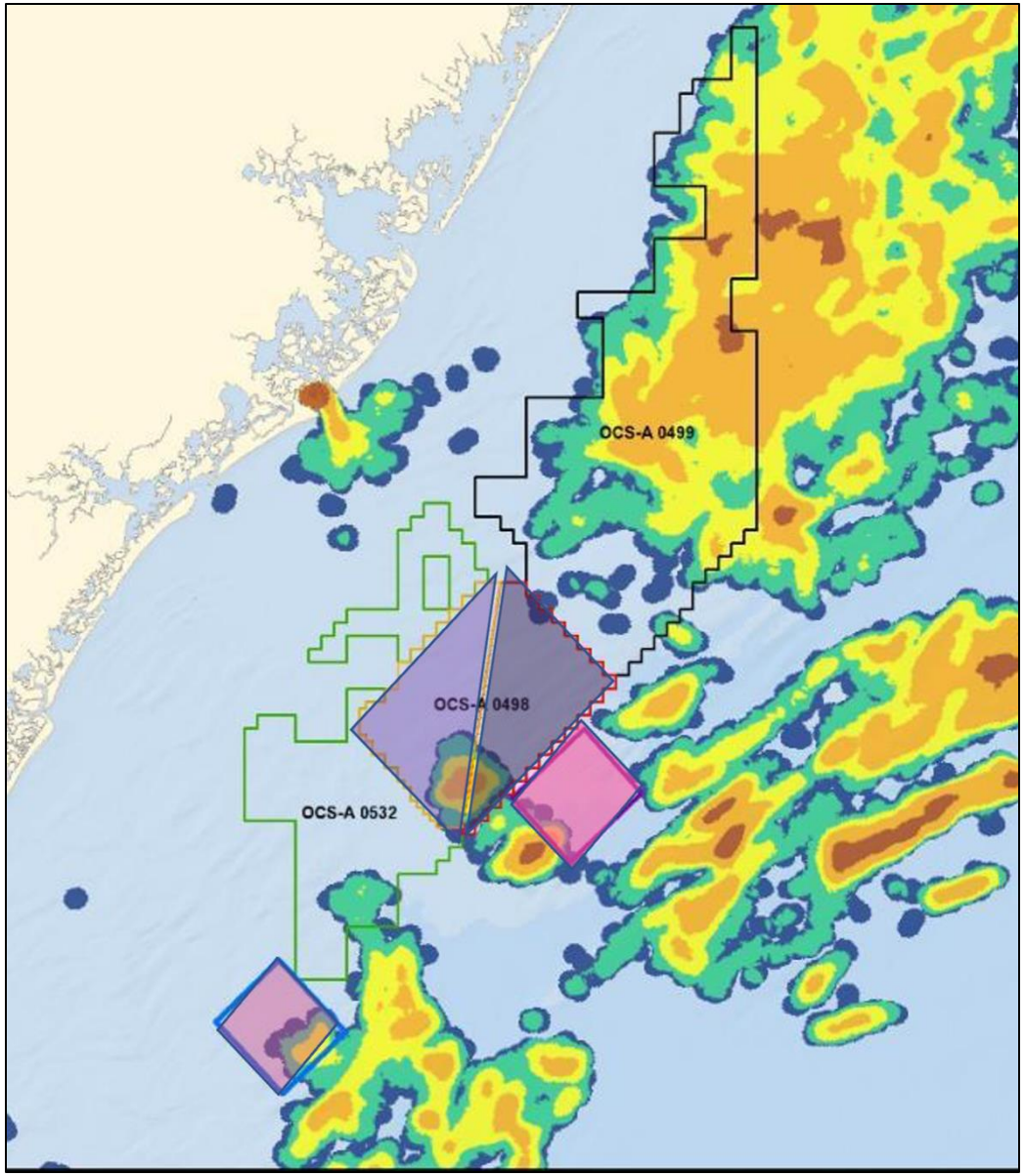
Methods:

- Survey Vessel: FV Joey D, commercial clam boat
- Samples collected with a modified commercial hydraulic dredge
- Ten tows in wind lease area, ten tows in control area, per year
- Before-After-Control-Impact (BACI) design

Anticipated Outcome: document the commercial clam resource within the wind lease and evaluate any changes to the stock over time or due to wind farm construction.



Survey strata (purple) and controls (pink) with heatmap of fishing activity.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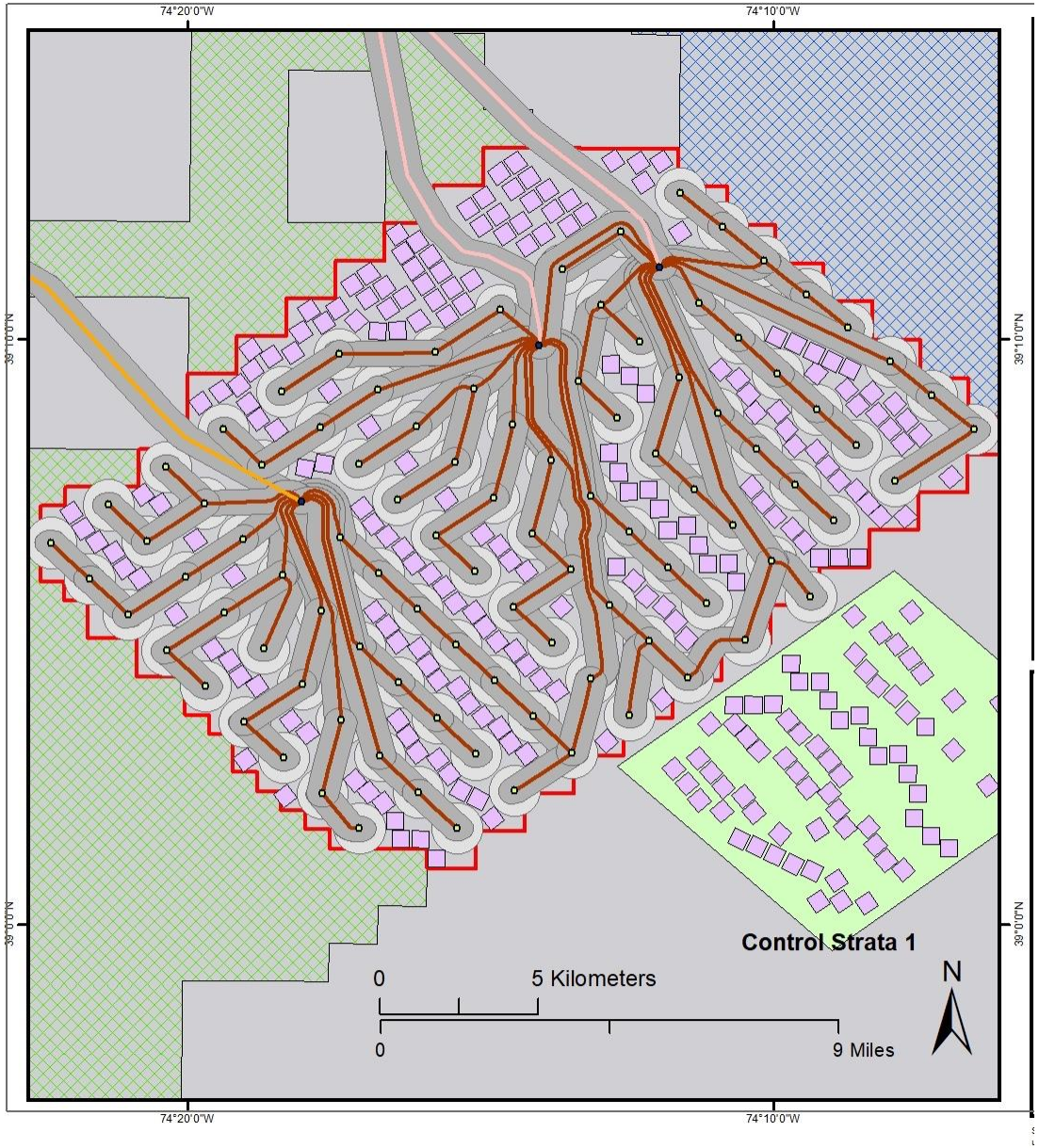
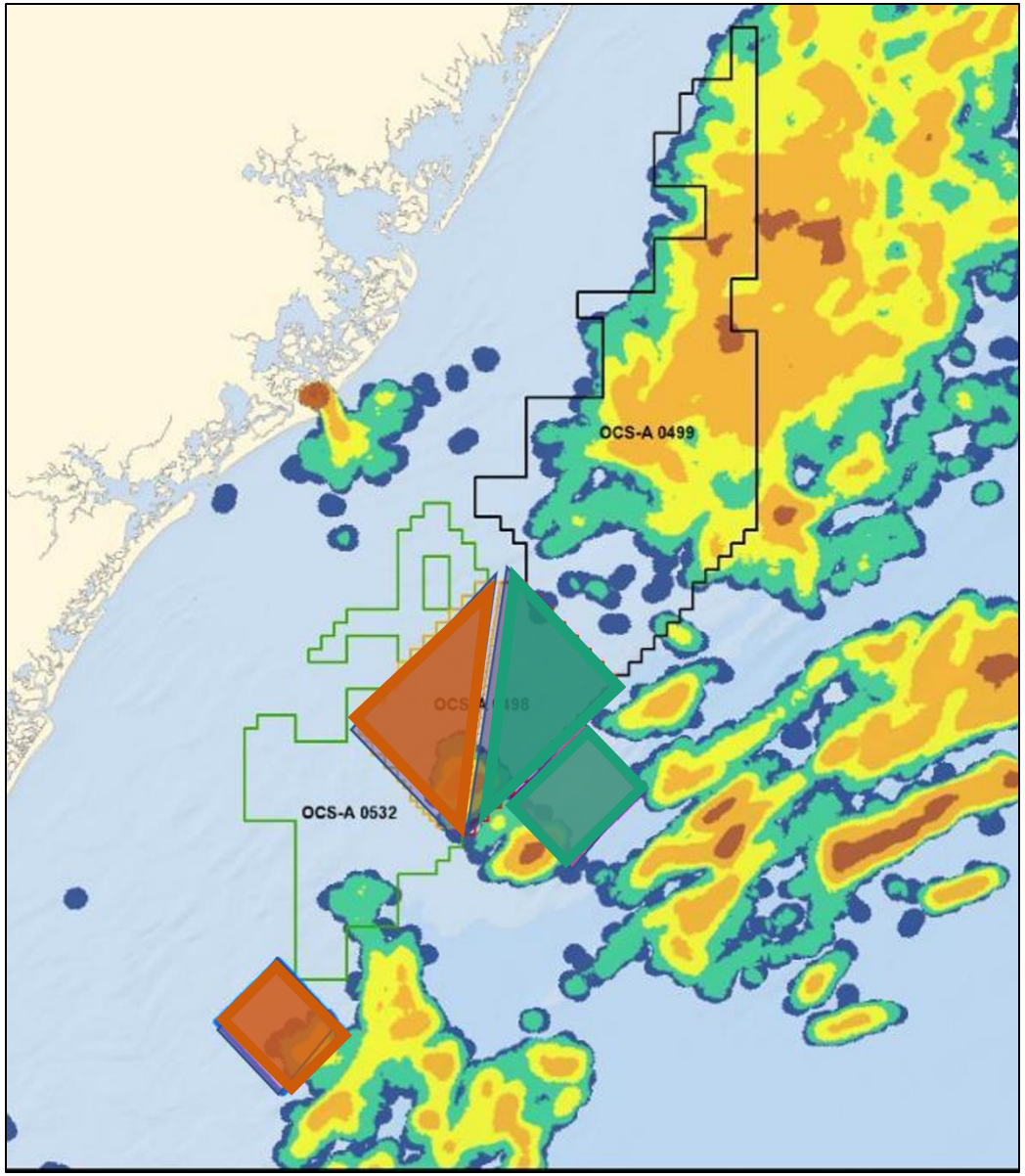
OCS-A 0498
OCS-A 0532


74°20'0"W
74°10'0"W
39°10'0"N
39°0'0"N
Control Strata 1
0
5 Kilometers
0
9 Miles
N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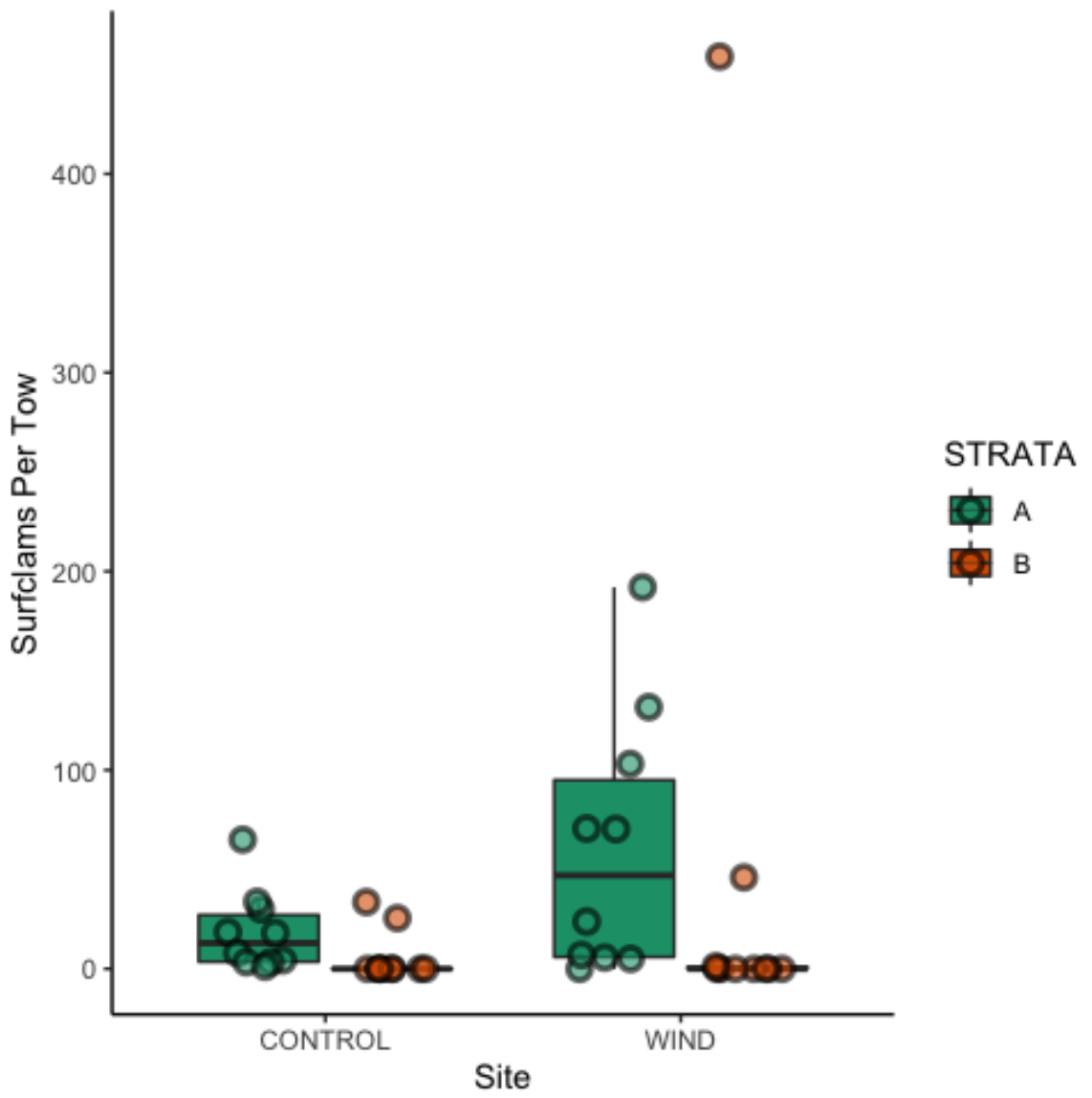
Surfclams Per Tow
400
300
200
100
0
CONTROL
WIND
Site
STRATA
A
B

Acknowledgements

- Thanks to all of the collaborating Captains and Crews among our fishing industry collaborators.

- Thank you to all of the technicians and staff from Rutgers University who participated in projects.

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- Funding for construction and calibration of the dredge, and carbonate chemistry studies provided by the New Jersey Research &Monitoring Initiative (RMI)

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New Jersey Agricultural Experiment Station
Cooperative Extension

Rutgers Offshore Wind Living Resources Studies (ROWLRS)
https://rowlrs.marine.rutgers.edu/