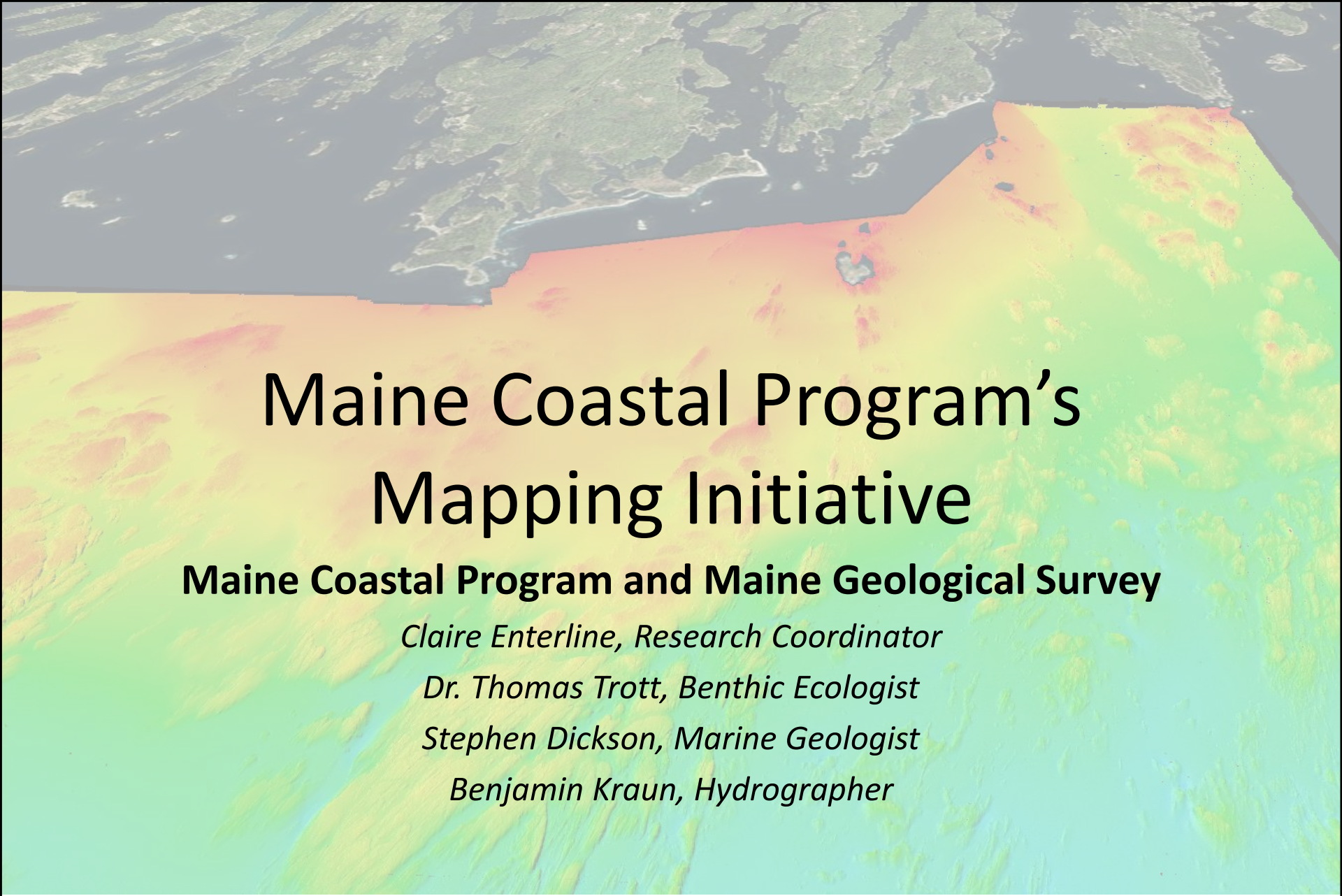


Maine Coastal Program's Mapping Initiative

Maine Coastal Program and Maine Geological Survey

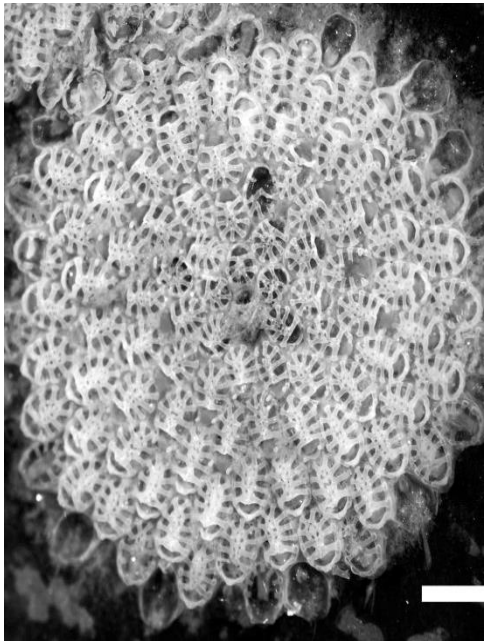
Claire Enterline, Research Coordinator

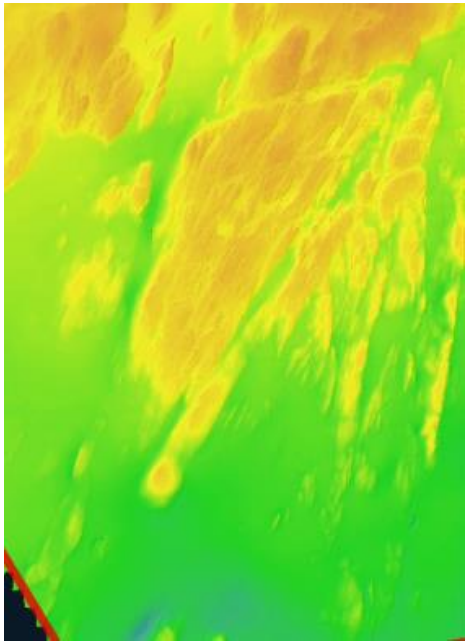
Dr. Thomas Trott, Benthic Ecologist

Stephen Dickson, Marine Geologist

Benjamin Kraun, Hydrographer

Casco Bay 2019 Season Objectives

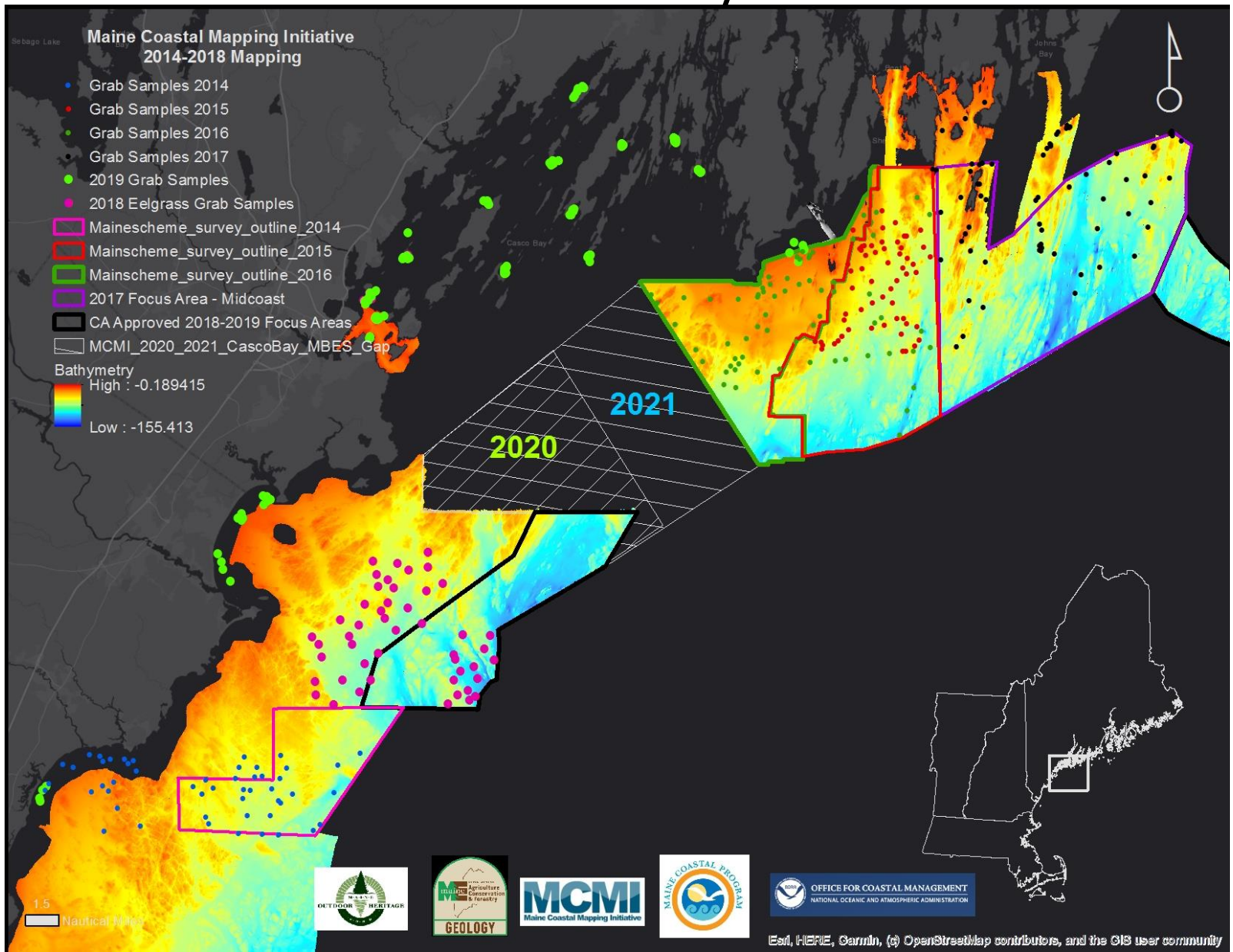




- Multibeam Echosounder (MBES) mapping in the outer bay: bathymetry, backscatter (bottom hardness), and ground truthing
- Invasive species methods comparison
- Non-native species identification and spatial extent investigations
- Cable Area Investigations

MCMI
Maine Coastal Mapping Initiative

2019 Bathymetry/Backscatter Coverage and 2020/2021 Plan



MCMI
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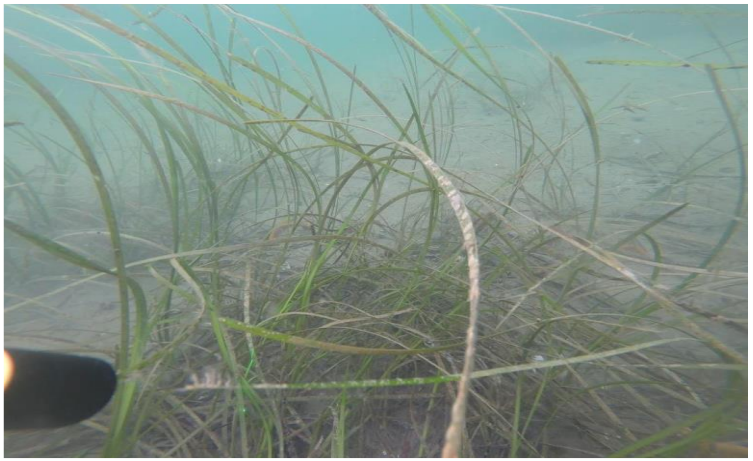
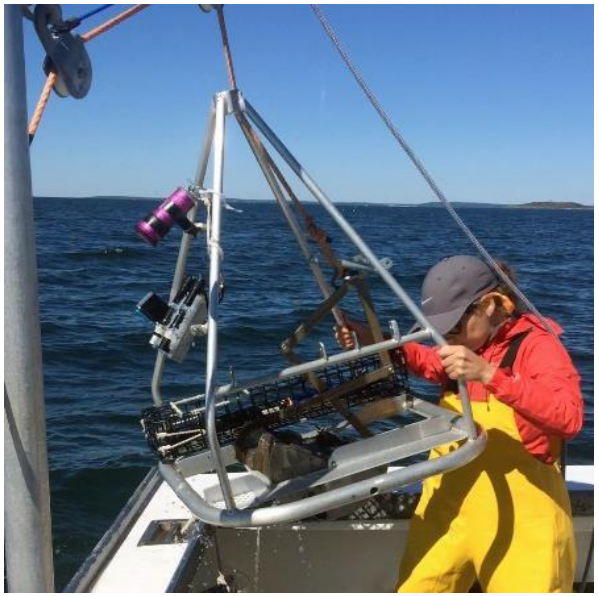
Eelgrass and Non-native Species





Physical Parameters

- Water Quality (ODO, Temperature, pH, Chlorophyll, Salinity, Depth)
- Sediment Grain Size

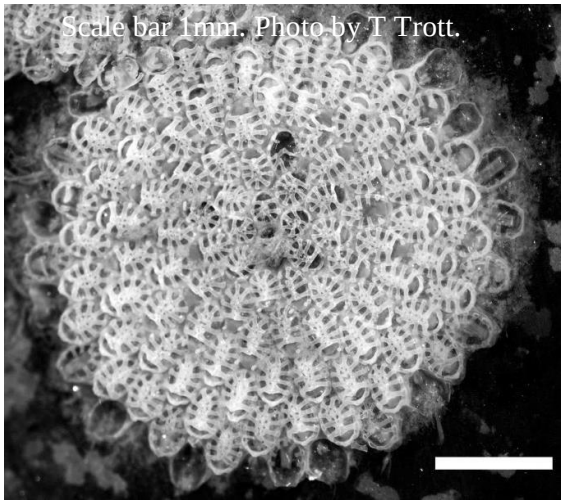
Biological Parameters

- Species Assemblage
- Species Diversity
- Preferred habitat

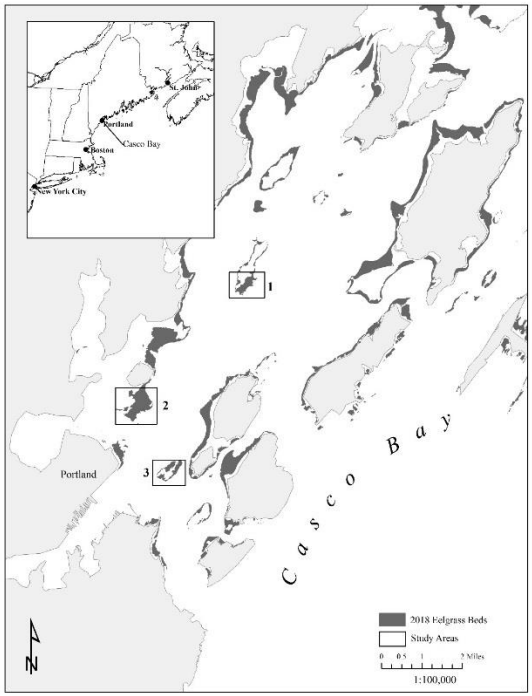
Spatial Parameters

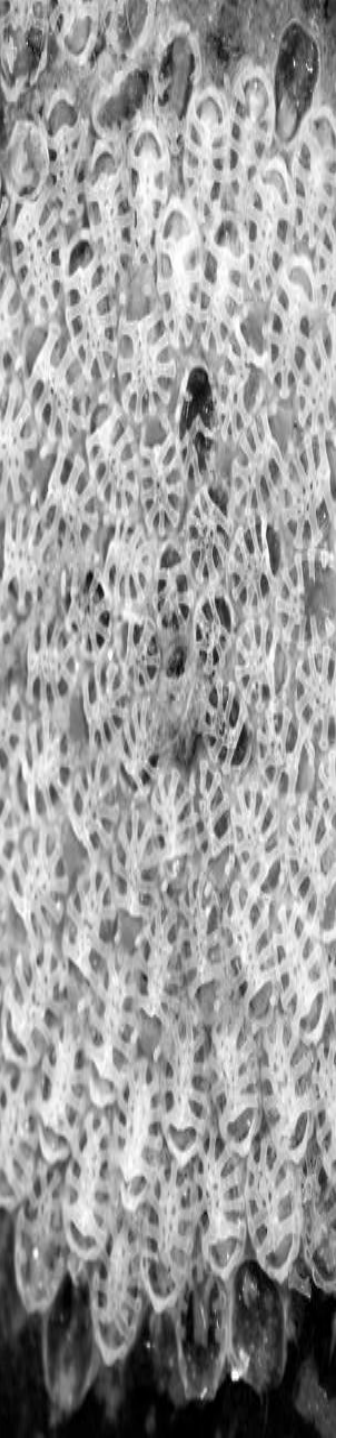
- Spatial Distribution
- Outer Bay vs. Inner Bay

Cribulina mutabilis, new observation for Northwest Atlantic



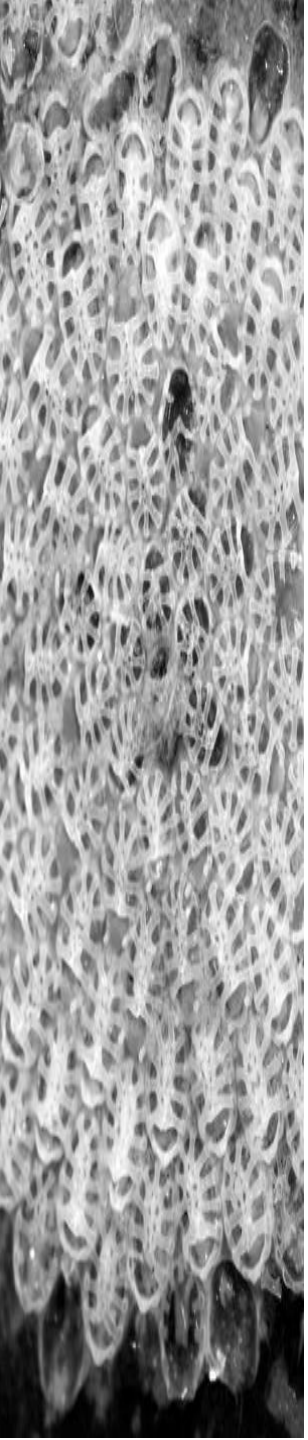
- Encrusting bryozoan native to Japan
- Light pink, flat, circular colonies
- Three kinds of zooids, the frequency of each varying with season in Japan
- Eelgrass obligate, but found on fucoid and laminarian algae in other introduced regions





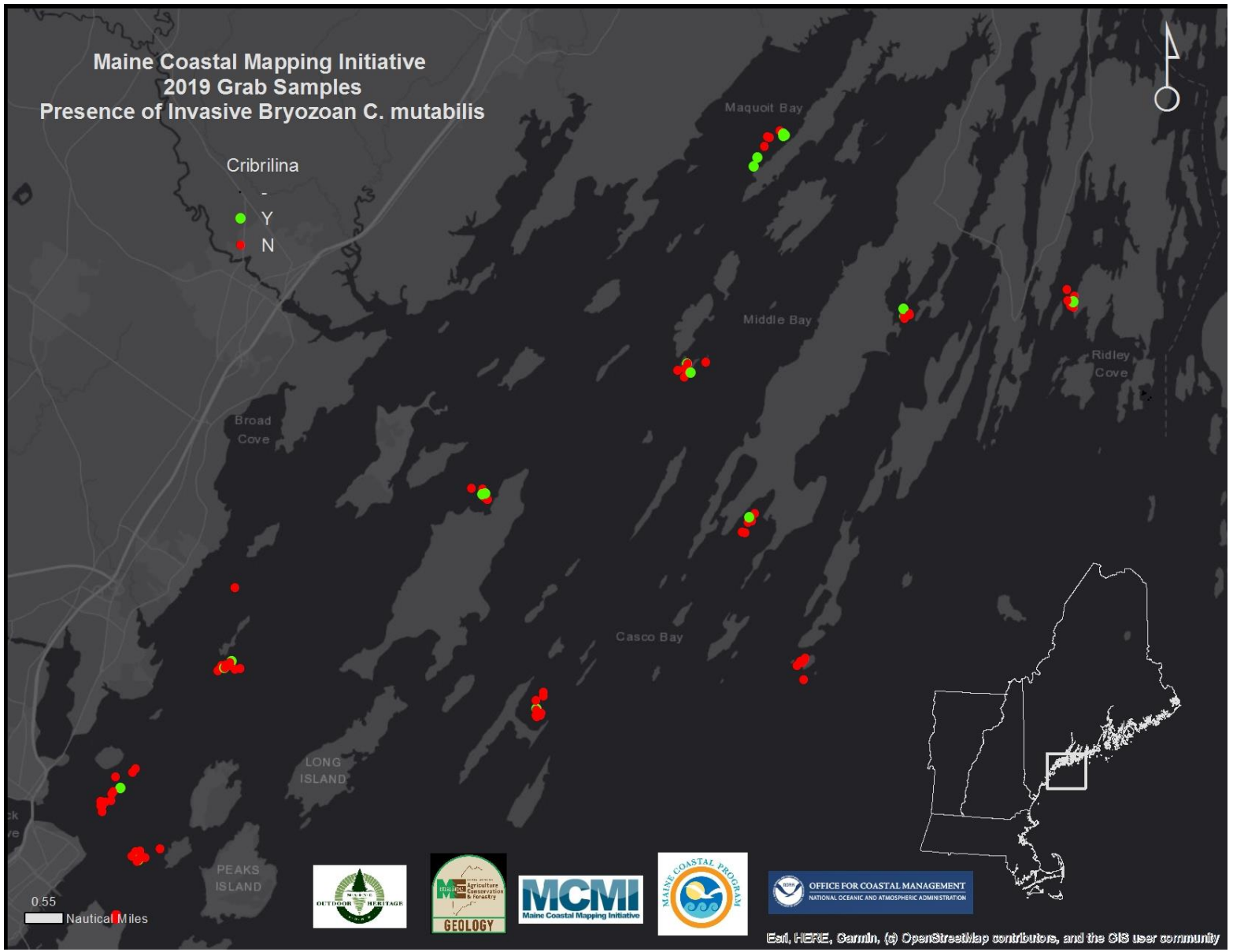
Grandidierella japonica, New Observation for the Northwestern Atlantic

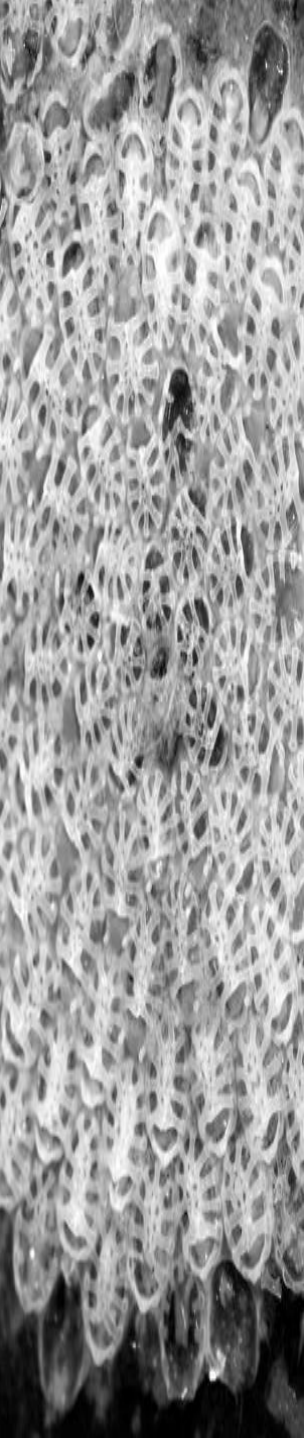
- Estuarine gammarid amphipod native to Japan, China, and Russia
- Builds U-shaped tubes on muddy substrates
- Introduced populations are known from the West coast of North America, Australia, England and France
- Impacts on US West coast not well studied
- **Analysis of 2019 samples for spatial distributionis currently ongoing**



2019

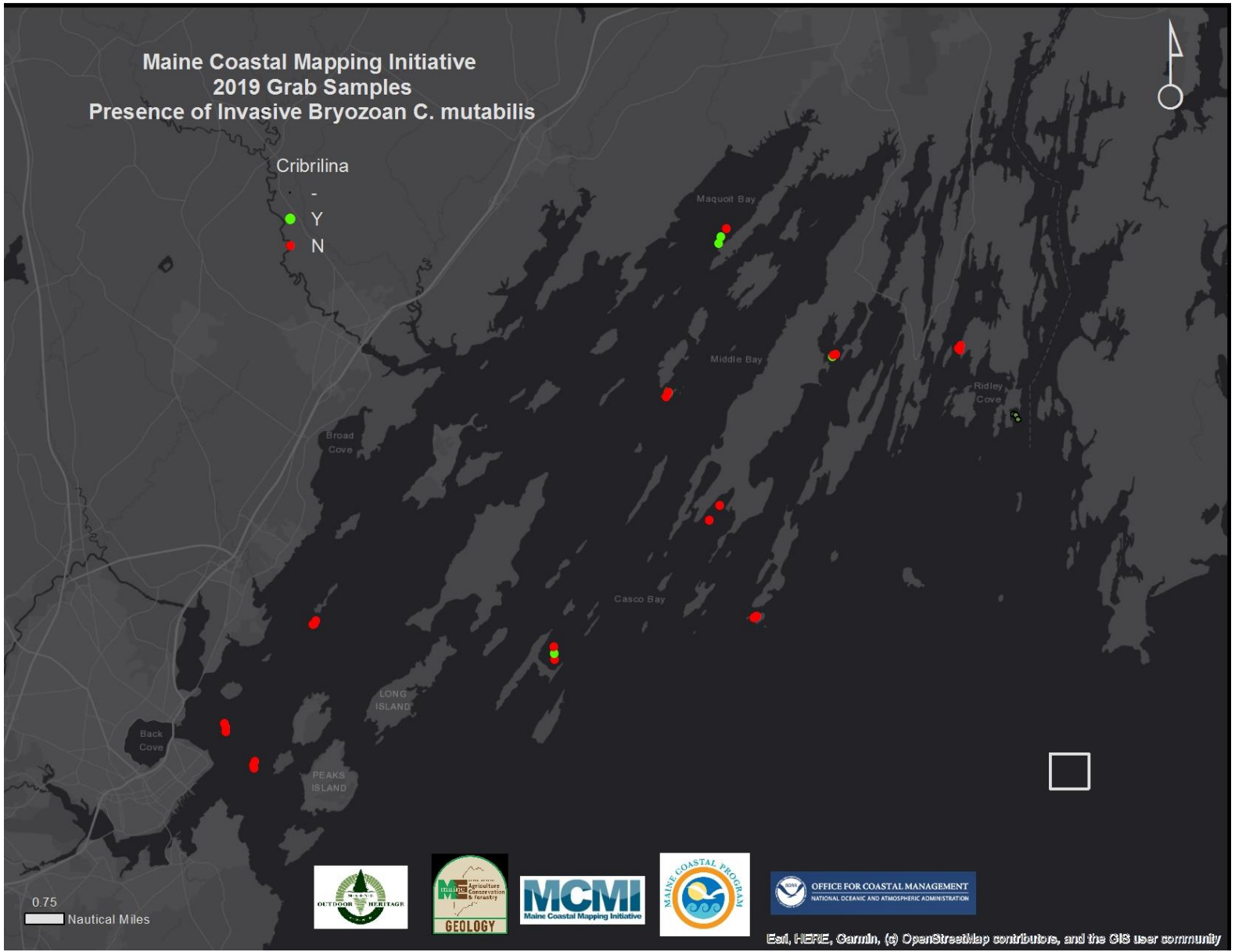
C. MUTABILIS PRESENCE – JULY TO SEPTEMBER

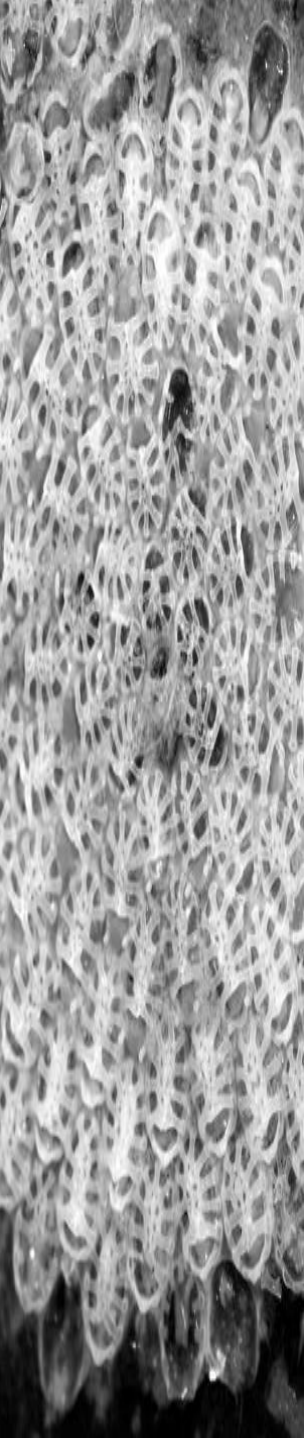




JULY

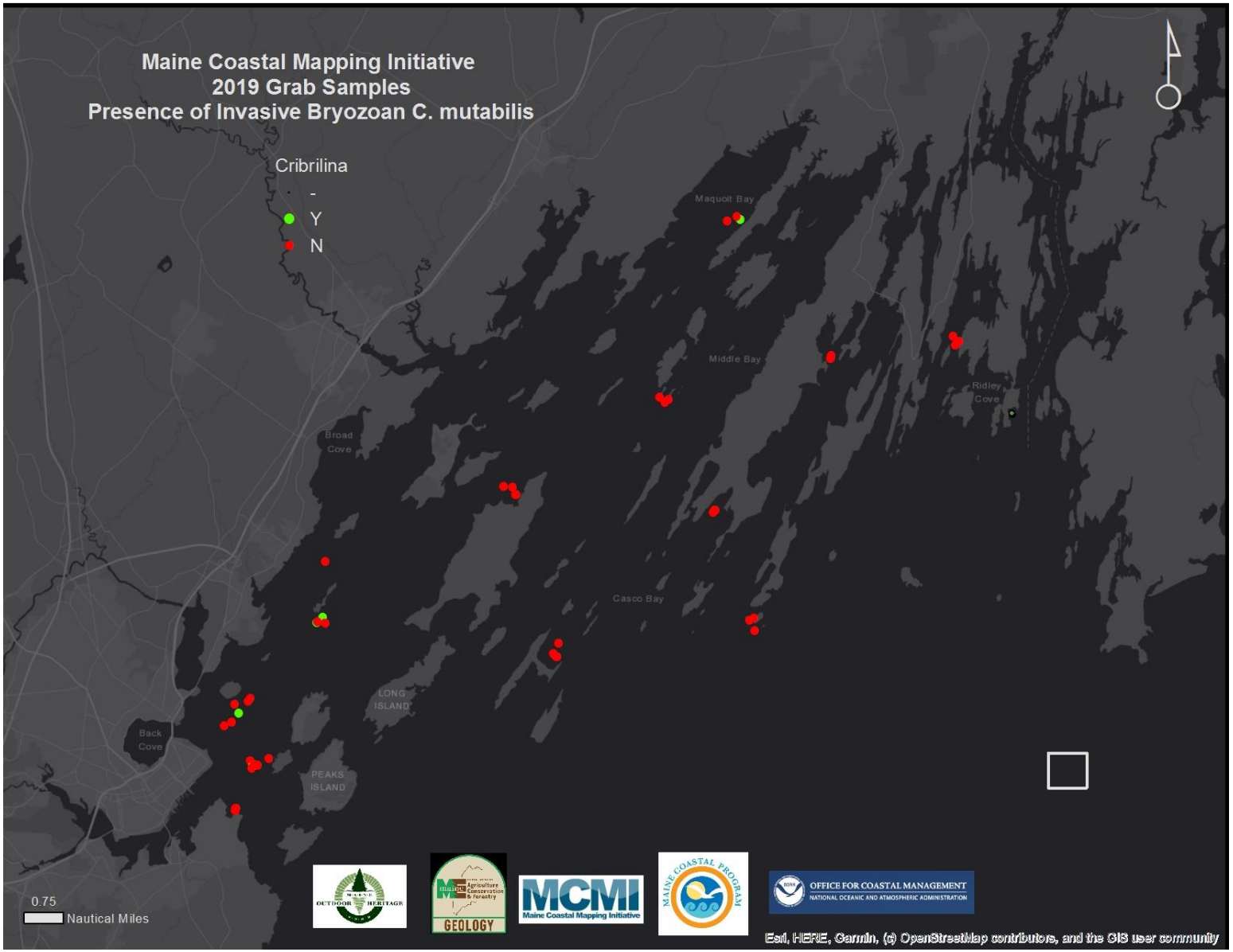
C. MUTABILIS PRESENCE

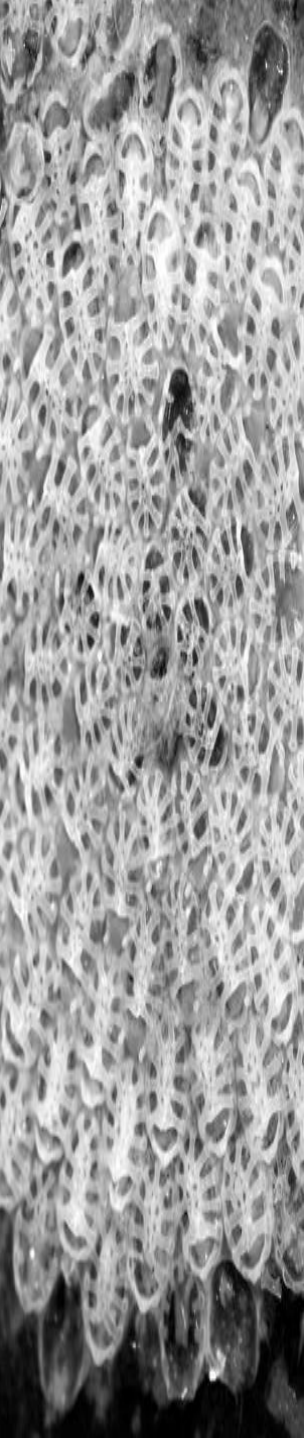




AUGUST

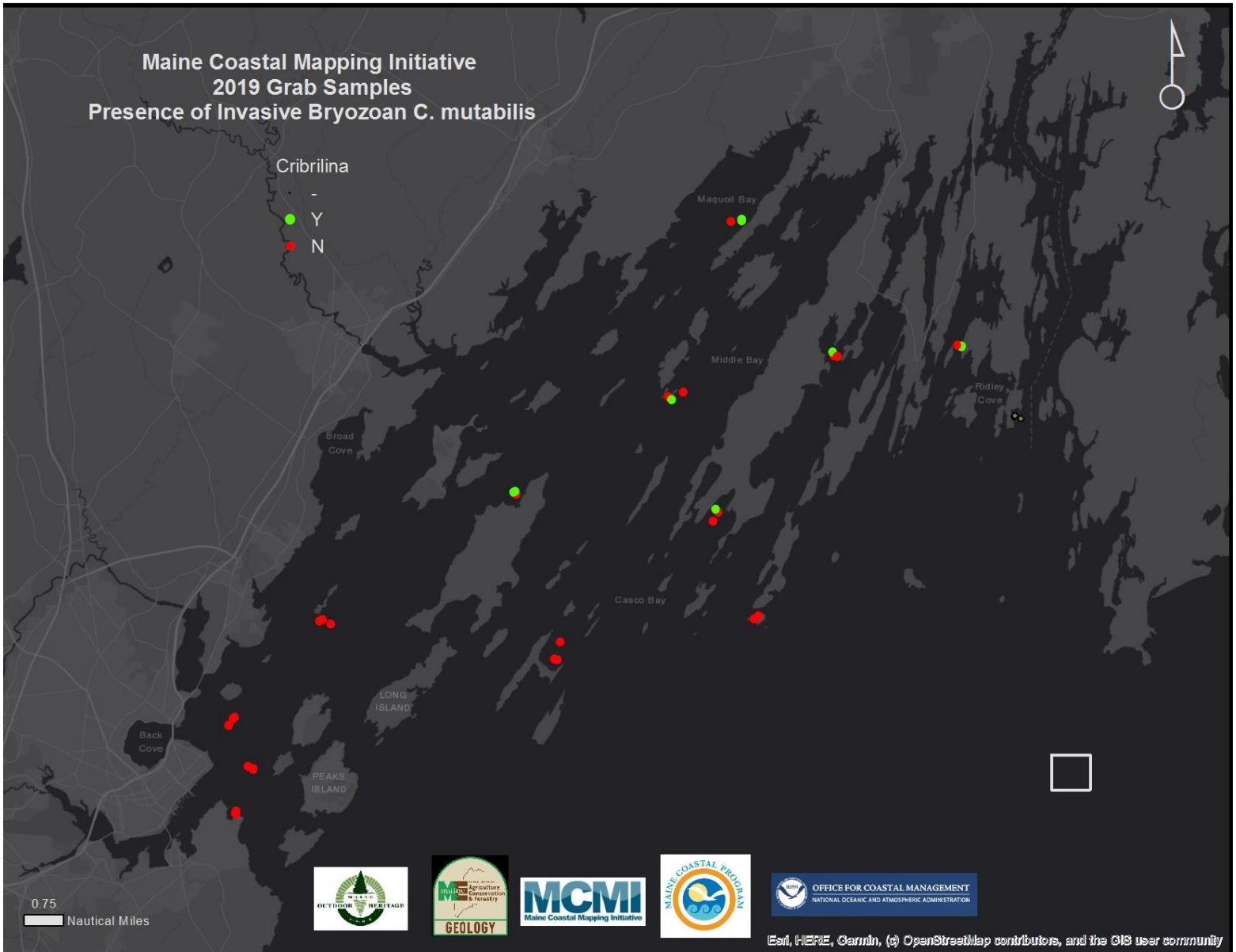
C. MUTABILIS PRESENCE





SEPTEMBER

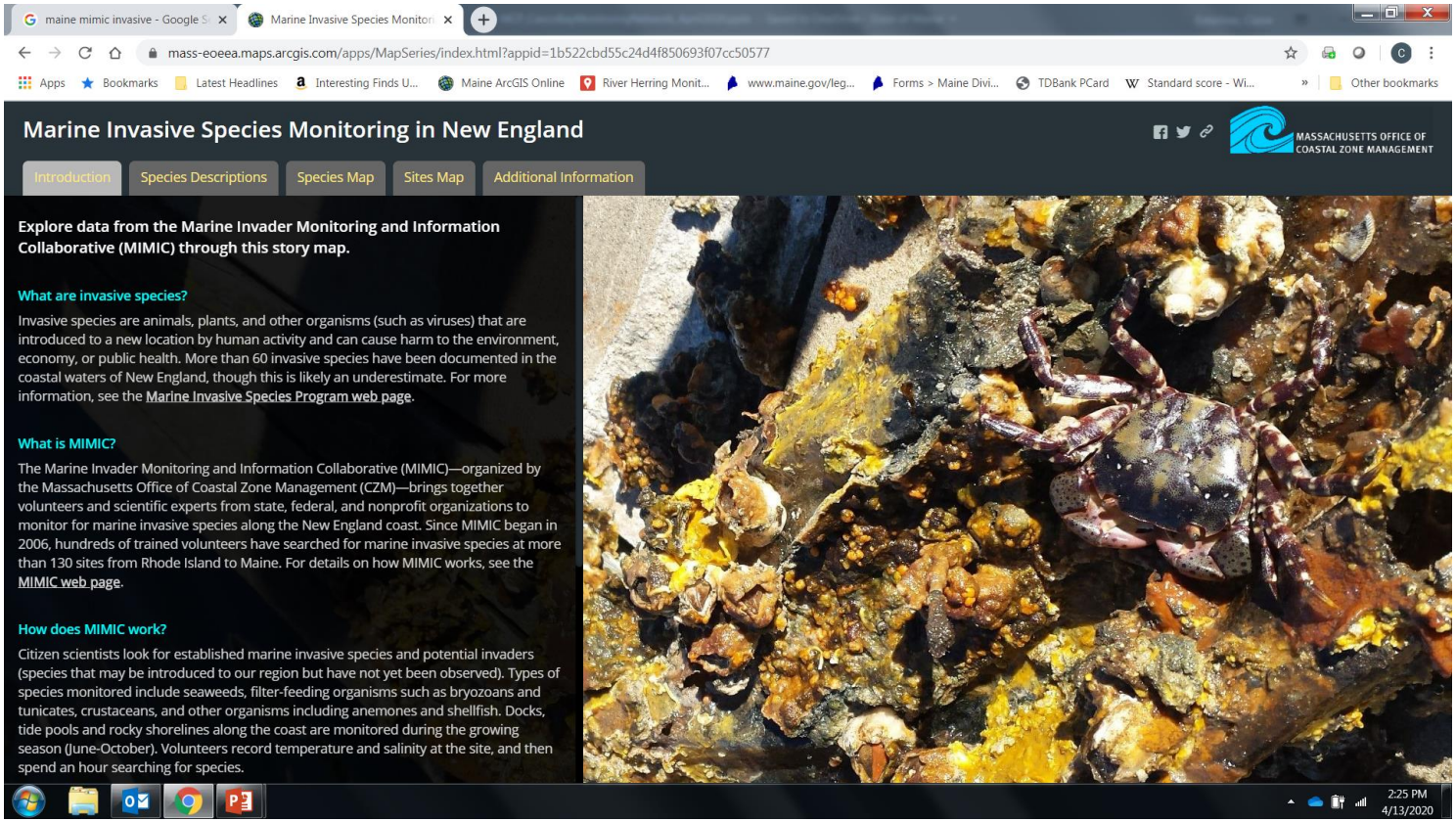
C. MUTABILIS PRESENCE



Invasive Species: Methods Comparison

Objective:

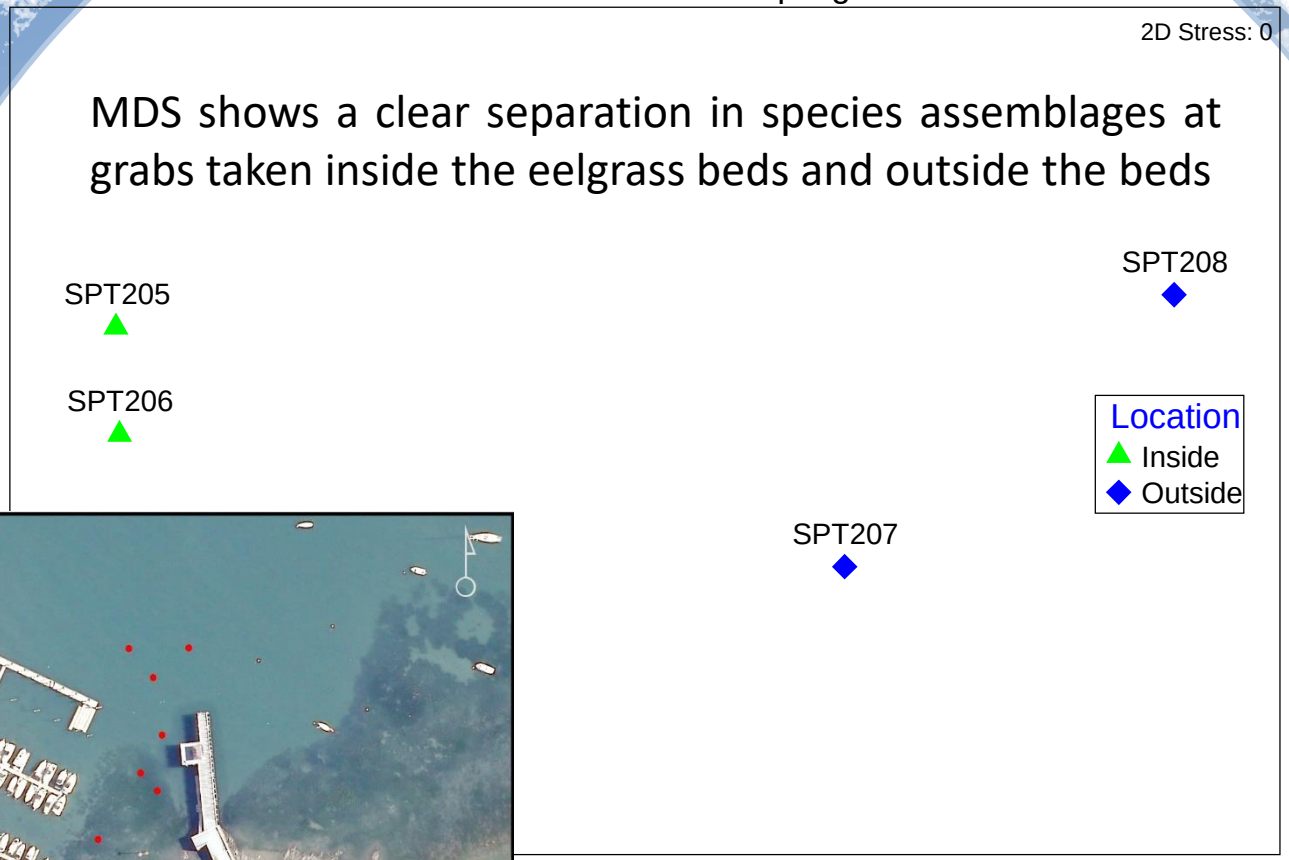
Evaluate the differences in detection of invasive species from dock-side, below dock (diving), and proximate “natural” benthic substrate



METHODS COMPARISON

		Location					
		Spring Point, South Portland			Stone Pier, Chebeague Is		
	Date	8/14/2019	8/14/2019	8/14/2019	8/14/2019	8/14/2019	8/14/2019
	Effort Type	Dock-side	Dive - Dock	Dive - Eelgrass	Dock-side	Dive - Dock	Dive - Eelgrass
	Salinity	26.0	29.7	29.7	35.0	35.0	35.0
	Water Temp	19.0	18.0	18.0	18.0	18.0	18.1
Solitary Tunicates	Ascidiella aspersa (European Sea Squirt)	A	-	-	R	-	
	Styela clava (Club Tunicate)	A	A	Absent	R	C	
Colonial Tunicates	Botrylloides violaceus (Sheath Tunicate)	A	-	-	C	-	F
	Botryllus schlosseri (Golden Star Tunicate)	A	F	Absent	R	Absent	R
	Didemnum vexillum (Mystery Colonial Tunicate)		C/F	Absent	A	A	F
	Diplosoma listerianum (Diplosoma Tunicate)		-	-		-	
Crabs	Carcinus maenas (European Green Crab)		C/F	F		F	F
	Hemigrapsus sanguineus (Asian Shore Crab)		Absent	Absent		Absent	
Bushy Bryozoans	Bugula neritina(Purple Bushy Bryozoan)		Absent	Absent		Absent	
	Tricellaria inopinata (Unexpected Bryozoan)	C	-	-	C	-	
Other Fauna	Caprella mutica (Japanese Skeleton Shrimp)	A	-	-	C	-	
	Diadumene lineata (Orange-Striped Anemone)		-	-		-	
	Membranipora membranacea (Lacy Crust Bryozoan)	C	-	-	R	-	
	Ostrea edulis (European Oyster)		-	-		-	
	Palaemon elegans (European Rock Shrimp)		-	-		-	
Seaweeds (Marine Algae)	Codium fragile subsp. Fragile (Green Fleece)		Absent	Absent		Absent	
	Colpomenia peregrina (Sea Potato)		-	-		-	
	Grateloupia turuturu (Red Algae)		Absent	Absent		Absent	
Encrusting Bryozoan	Cribrilina mutabilis						F

Spring Point Marina
Tandem Sampling 2

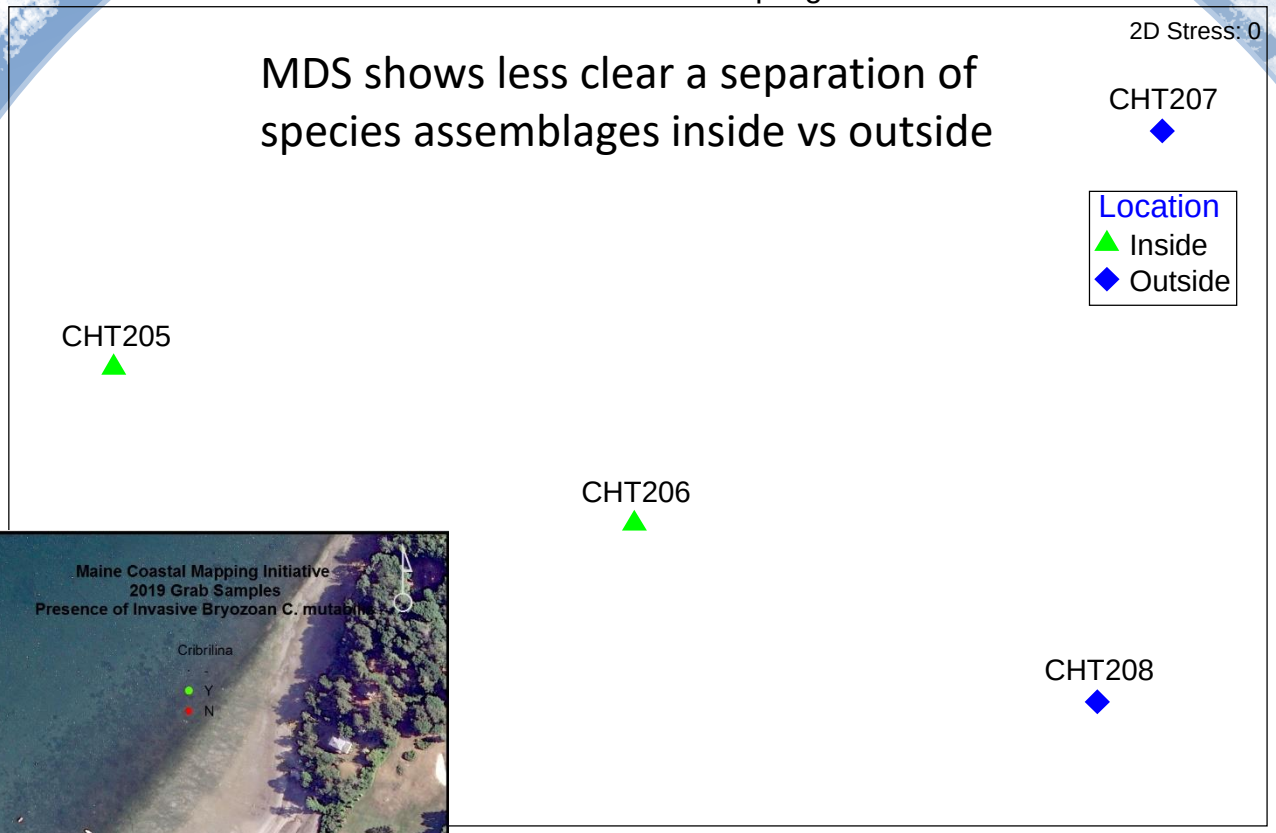


1. Adequate spatial separation of "
   "outside" locations
2. Eelgrass bed is small with a defi

Note that no eelgrass was in the gra
outside the bed.

Figure and research credit: Thor

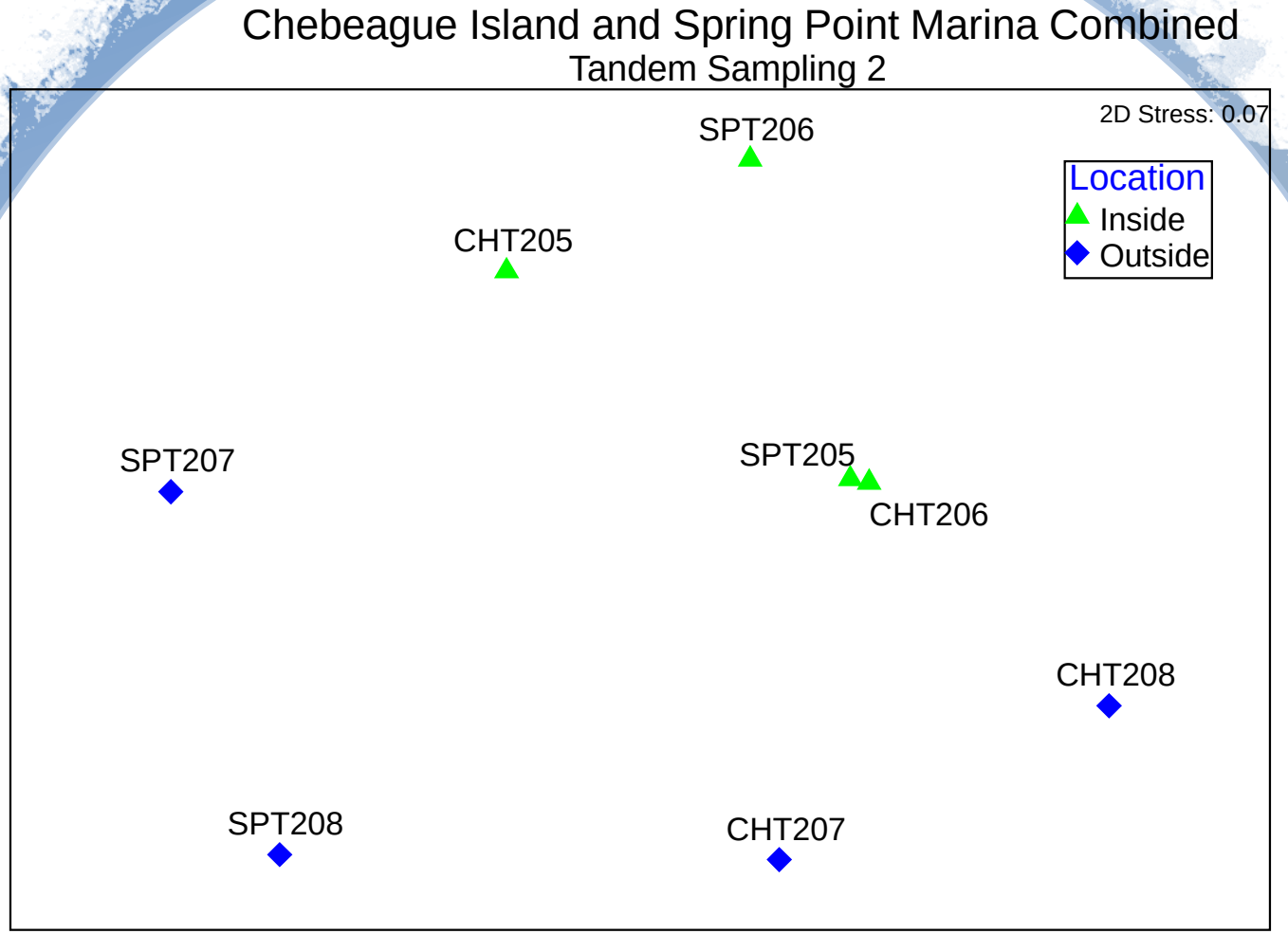
Chebeague Island
Tandem Sampling 2



1. Grabs were not taken far enough outsid show a clear difference
2. The bed has a diffuse boundary extendi the area of greatest plant density

Because *Cribrilina* was found on eelgrass in grabs taken outside the bed supports these

Figure and research credit: Thor



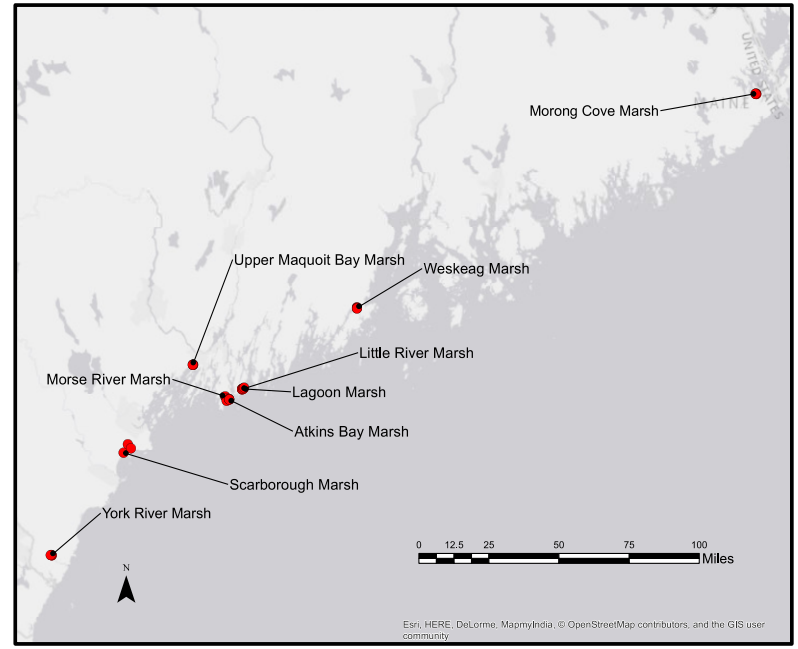
Species assemblages sampled inside both sites are more similar to each othe the ones sampled outside both sites.

- Clear separation between Spring Point Marina and Chebeague Island grabs outside the beds.
- In comparison, grabs taken inside beds at both sites are clustered closer tog meaning they are more similar to each other.

Figure and research credit: Thor

Monitoring Tidal Marsh Resilience

- Marsh Resilience Monitoring
  - RSET elevation (2 years)
  - Plant Community Analysis
    (2020 first data collection)
  - Water level monitoring
    (2019 pilot, 2020 first data collection)
- Tidal Restriction Database
- CoastWise




Questions?
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