



Eastern Oyster Fishery Management Plan: Draft Amendment 5

DEPARTMENT OF ENVIRONMENTAL QUALITY
Marine Fisheries

NC Marine Fisheries Commission | Joe Facendola, Bennett Paradis | November 21, 2024



Eastern Oyster Amendment 5 Timeline

• Division holds public scoping period

• Marine Fisheries Commission approve goal and objectives of FMP

• Division drafting FMP

• Division holds workshop to further develop draft FMP with plan advisory committee

• Division updating draft plan

You are here

• **Marine Fisheries Commission vote to send draft FMP for public and advisory committee review**

• Commission advisory committees meet to review draft FMP and receive public comment

• Marine Fisheries Commission select preferred management options

• Department of Environmental Quality Secretary and legislative review draft FMP

• Marine Fisheries Commission vote on final adoption of FMP

• Division and Marine Fisheries Commission implement management strategies



Eastern Oyster FMP Amendment 5

Section Overview



Base Plan

- Stock Status
- Description of the Fisheries
 - Habitat Importance



Issue Papers

- Recreational Shellfish Harvest
- Mechanical Harvest



Information Papers

- Intertidal Harvest
- Enhancement Programs



Eastern Oyster FMP Amendment 5

Goals & Objectives

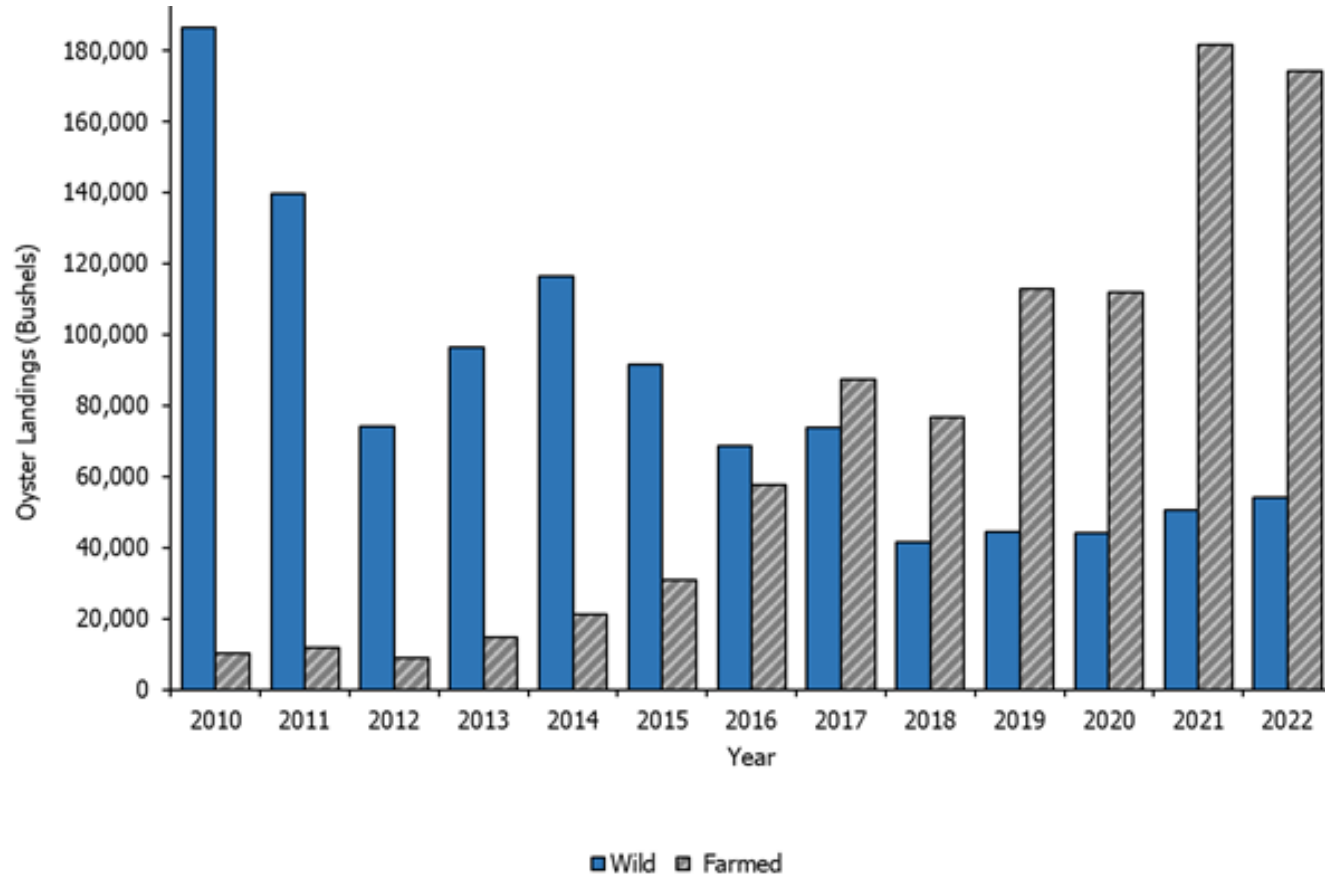
“...to manage the oyster resource in such a way as to maintain oyster populations that provide long-term harvest and continue to offer protection and ecological benefits to North Carolina's estuaries.”

- Use the best available biological, environmental, habitat, fishery, social, and economic data to effectively monitor and manage the oyster fishery and its environmental role.
- Support and implement the restoration and protection of oyster populations as both a fishery resource and an important estuarine habitat through the actions of the Cultch Planting and Oyster Sanctuary programs.
- Coordinate with DEQ and stakeholders to implement actions that protect habitat and environmental quality consistent with the Coastal Habitat Protection Plan (CHPP) recommendations.
- Manage oyster harvesting gear use to minimize damage to habitat.
- Promote stewardship of the resource through public outreach to increase public awareness regarding the ecological value of oysters and encourage stakeholder involvement in fishery management and habitat enhancement activities.



Eastern Oyster FMP Amendment 5

Managing Wild Harvest Only



- Managing only wild Eastern Oysters occurring within NC coastal waters
- Current oyster farming practices have less reliance on wild stocks.
 - Increasing use of seed oyster and cages
 - Discontinuing of relay program
 - Growth of mariculture industry beyond the scope of FMP process, now managed by SLAP

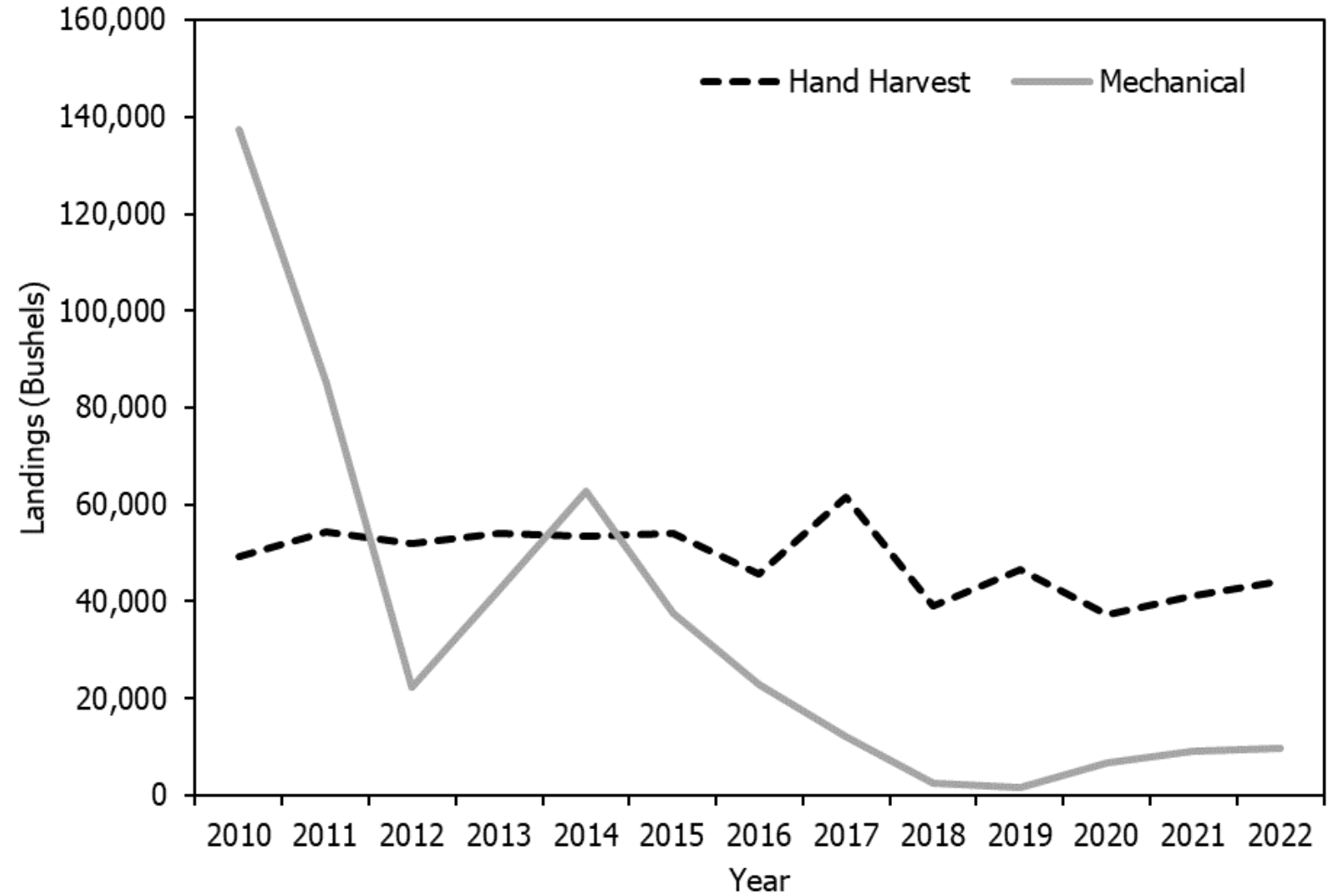


Stock Description

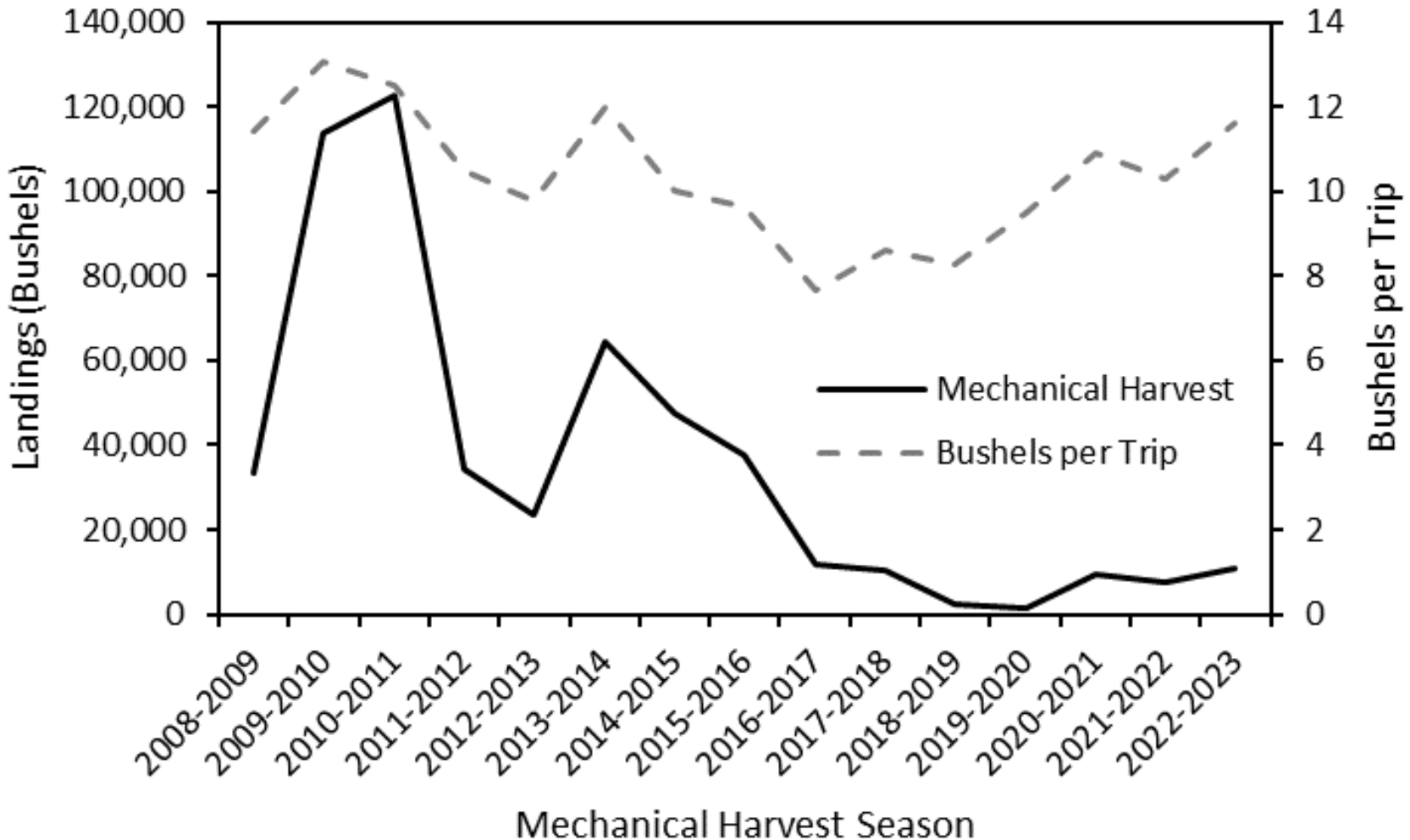
- Stock unit – all Eastern Oysters occurring within NC coastal waters
- Stock Assessment – Unavailable due to data gaps
 - Only data available are commercial landings, which fluctuate greatly due to many factors
 - Fisheries-dependent data are not typically proportionate to population size
 - No recreational harvest data
 - Data gaps in fishery-independent data (subtidal and intertidal)



Commercial Fisheries



Commercial Fishery – Mechanical Harvest

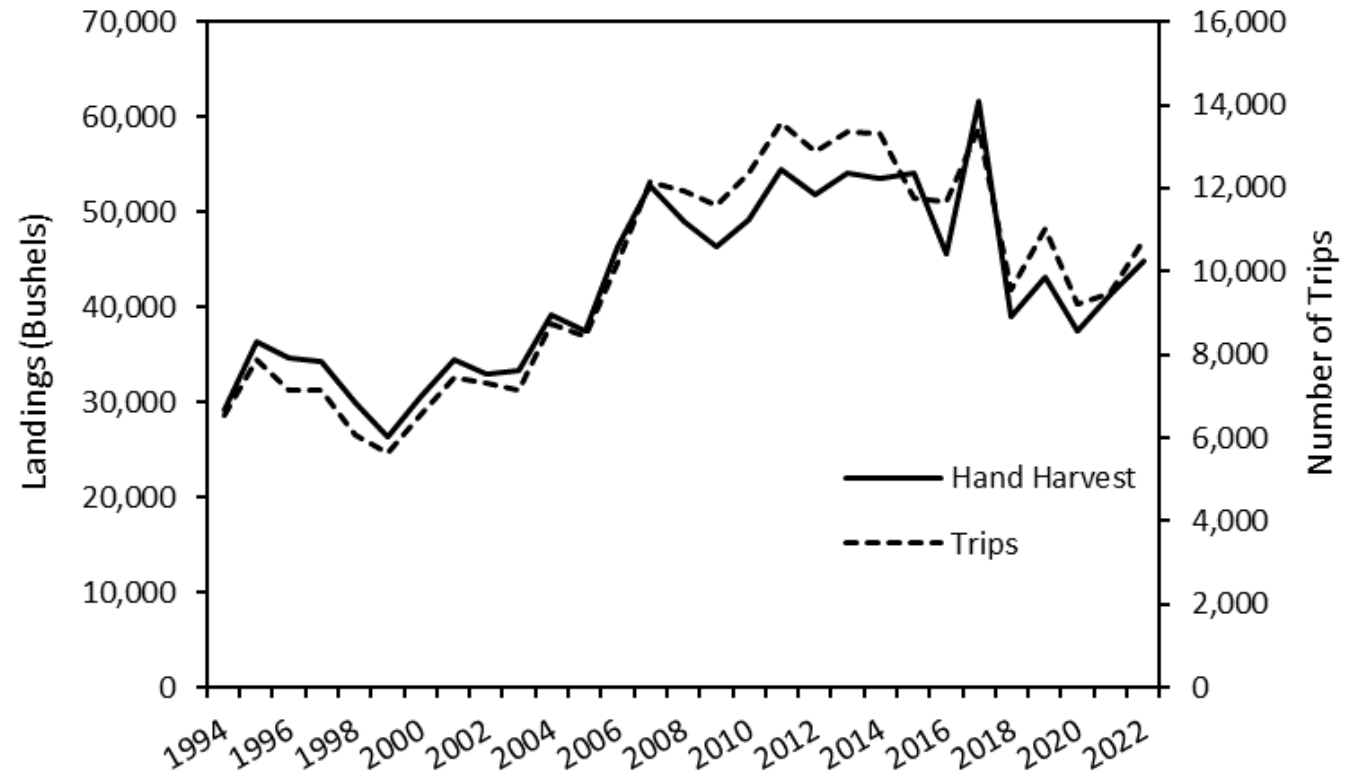


- Exclusively with dredging
- Limited to Pamlico Sound
- Late November to March 31
 - In-season management by triggers
 - Variable season length
- Declining participation
 - Recent peak in 2010
 - 60 or fewer participants in the last five years



Commercial Fishery – Hand Harvest

- Southern region typically sees higher and more consistent landings with predominantly intertidal reefs
- Northern region general accounts for very little hand-harvest
 - < 2% prior to 2005
 - Climbed to nearly 20% between 2015-2017
 - remained under 5% since 2019
- Hand-harvest oyster landings have generally increased
 - Likely due to increased effort (trips)
 - Peaked in 2017 at 61,574 bushels
 - remain steady ~41,000 bushels/year



Oyster Reefs as Habitat

- **Oysters create habitat for 70+ species**
- **Improving water quality as filter feeders**
 - Adult oysters filter 15 gallons/day in the wild
 - Impact neighboring and downstream habitats
- **Coastal Habitat Protection Plan (CHPP)**
 - Identify threats and recommend management actions to protect and restore coastal habitats critical to NC's coastal fishery resources
 - Healthy oyster reefs → valued at \$2,200 to \$40,200 / acre (annually)



Info Paper: Habitat & Enhancement Oyster Programs



Enhancement Programs

Creating habitat to restore oyster populations and provide fishing opportunities



Cultch Planting (est. 1915)

- Rebuild oyster beds open to harvest
- Lessen harvest pressure on natural reefs
- 2,000+ cultch sites since 1980s



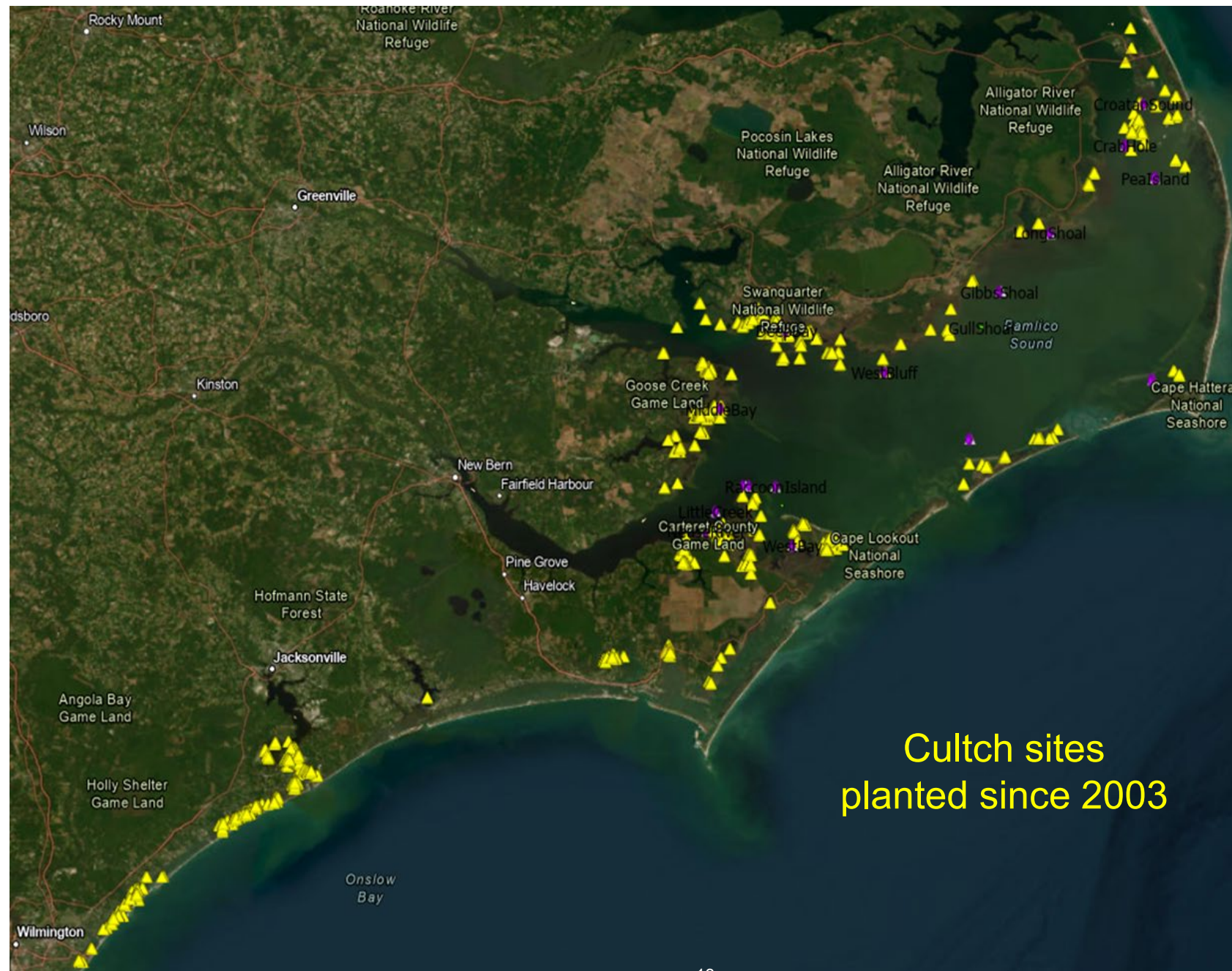
Oyster Sanctuaries (est. 1996)

- 789 acres across 17 sites in Pamlico Sound
- Protected subtidal habitat (not open to oyster harvest)
- Ensures healthy broodstock, larval supply



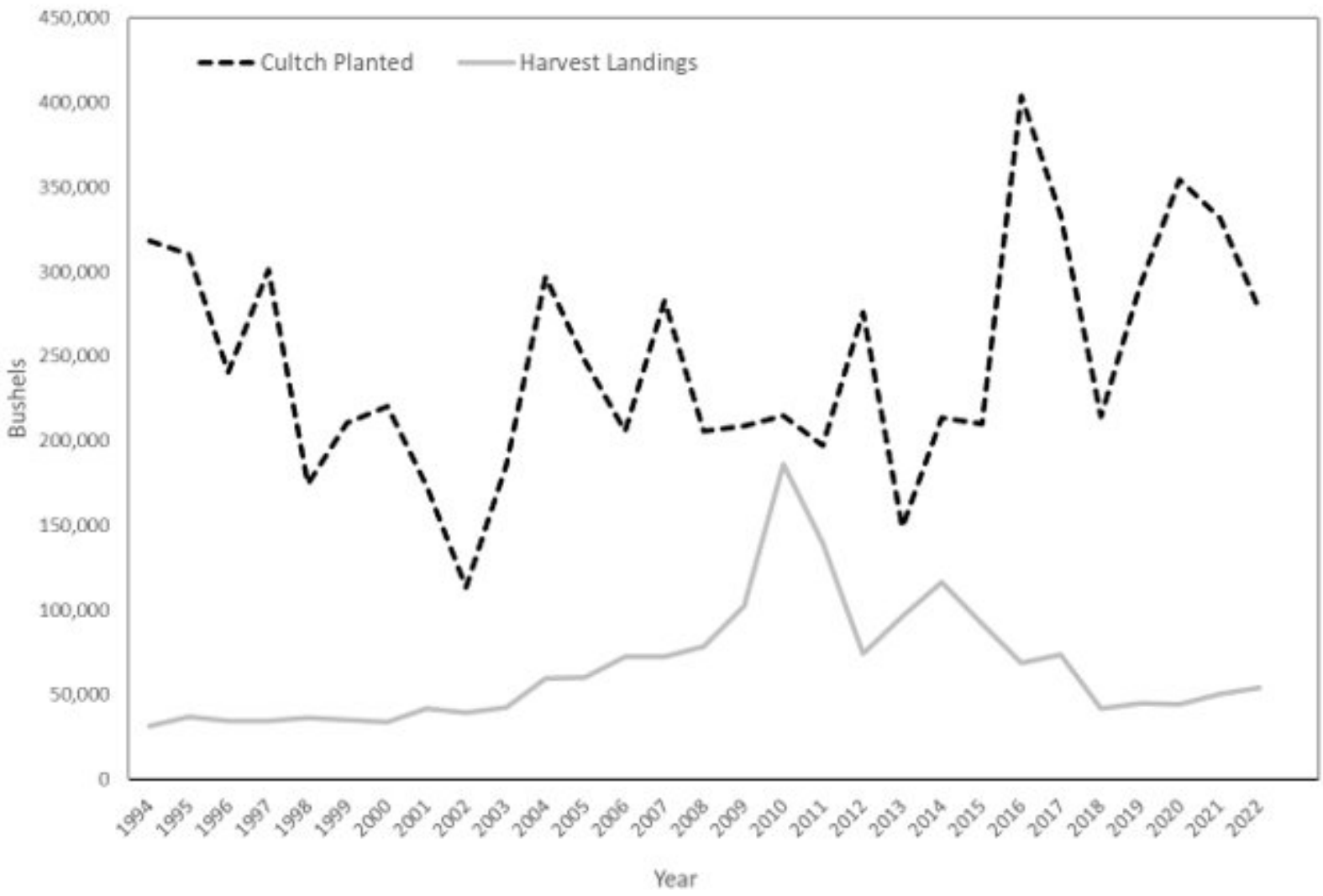
Cultch Planting

- Estimated 21 million bushels of material planted
- Recent annual productivity:
 - > 300,000 bushels of material planted
 - ~40-45 acres
- 4.5x more legal oysters than natural reefs
 - 27 legal oysters/m²
 - ~368 bushels/acre



Cultch sites
planted since 2003

NC Cultch Material Planted and Wild (Public) Oyster Landings



Info Paper: Intertidal Oyster Harvest Management



Overview

- Action in Amendment 4 had intended results
- Decreased effort with relatively open access shellfish license
- Some shellfish holders acquired SCFL
- CPUE increased
- Still localized waterbody areas with lower CPUE (still have elevated participation)



Issue Paper: Mechanical Oyster Harvest Management



Mechanical Harvest Management

- Addressing management for the mechanical fishery for subtidal oyster stocks (wild) in Pamlico Sound North Carolina.
- Origination
 - DMF and MFC via selected management strategies adopted in CHPP



Issues

Existing Strategy

- Monitor active harvest areas
- Prevent excessive damage
- Participation dropped hard to find areas of active fishing.
- Sampled areas may not be representative of fished areas



Issues

Existing Strategy

- Season determined by sampling
- Large variability between years
- Quickly close via proclamation
- Uncertainty for fishers



Issues

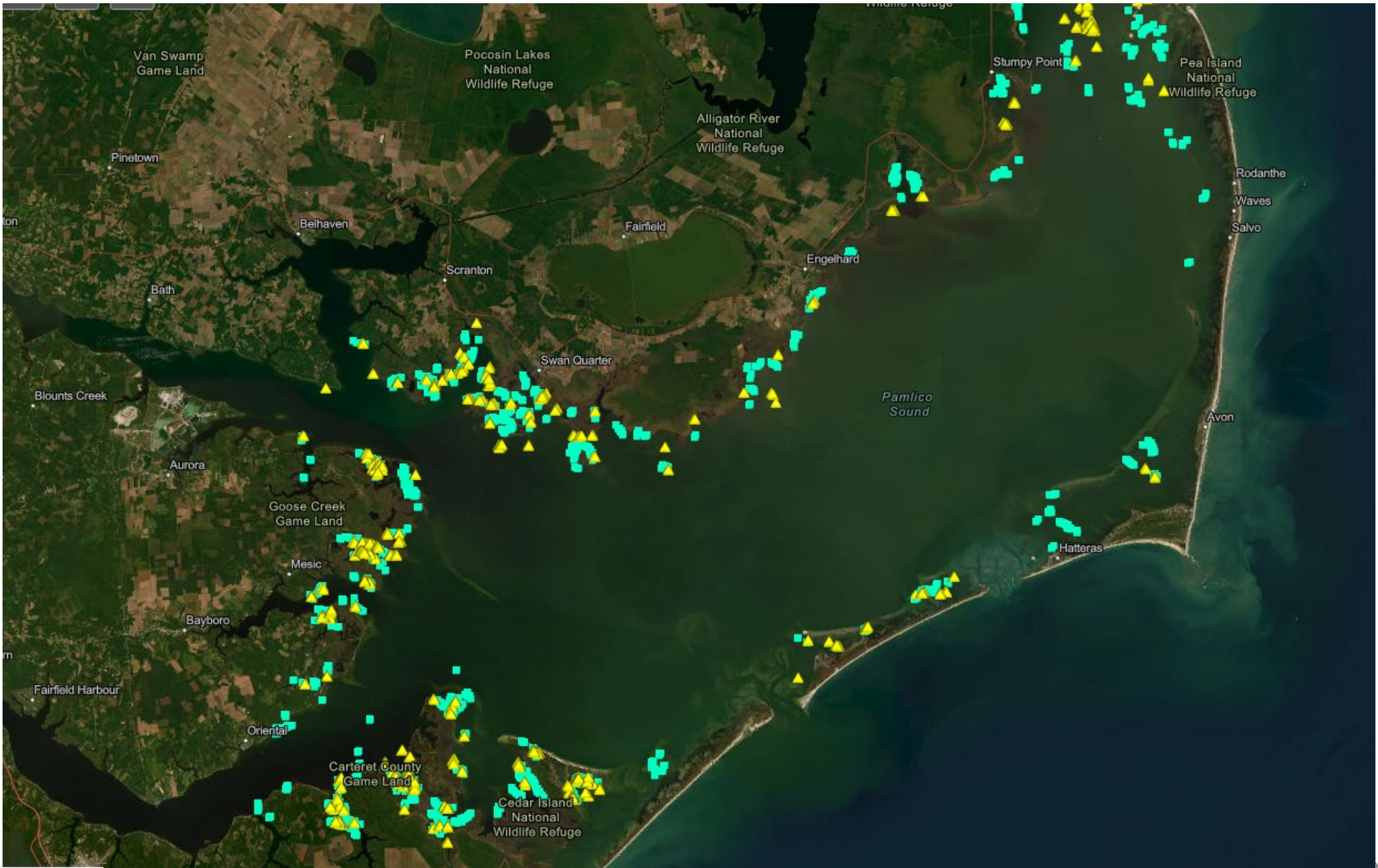
- Deep-water Pamlico reefs historically 13ft off bottom
- Deep-water reefs suffer mortality from low DO while shallow reefs do not
- The tops of high relief reefs in deep water survive these events
- Survival and recovery of deep-water reefs depends on gaining height



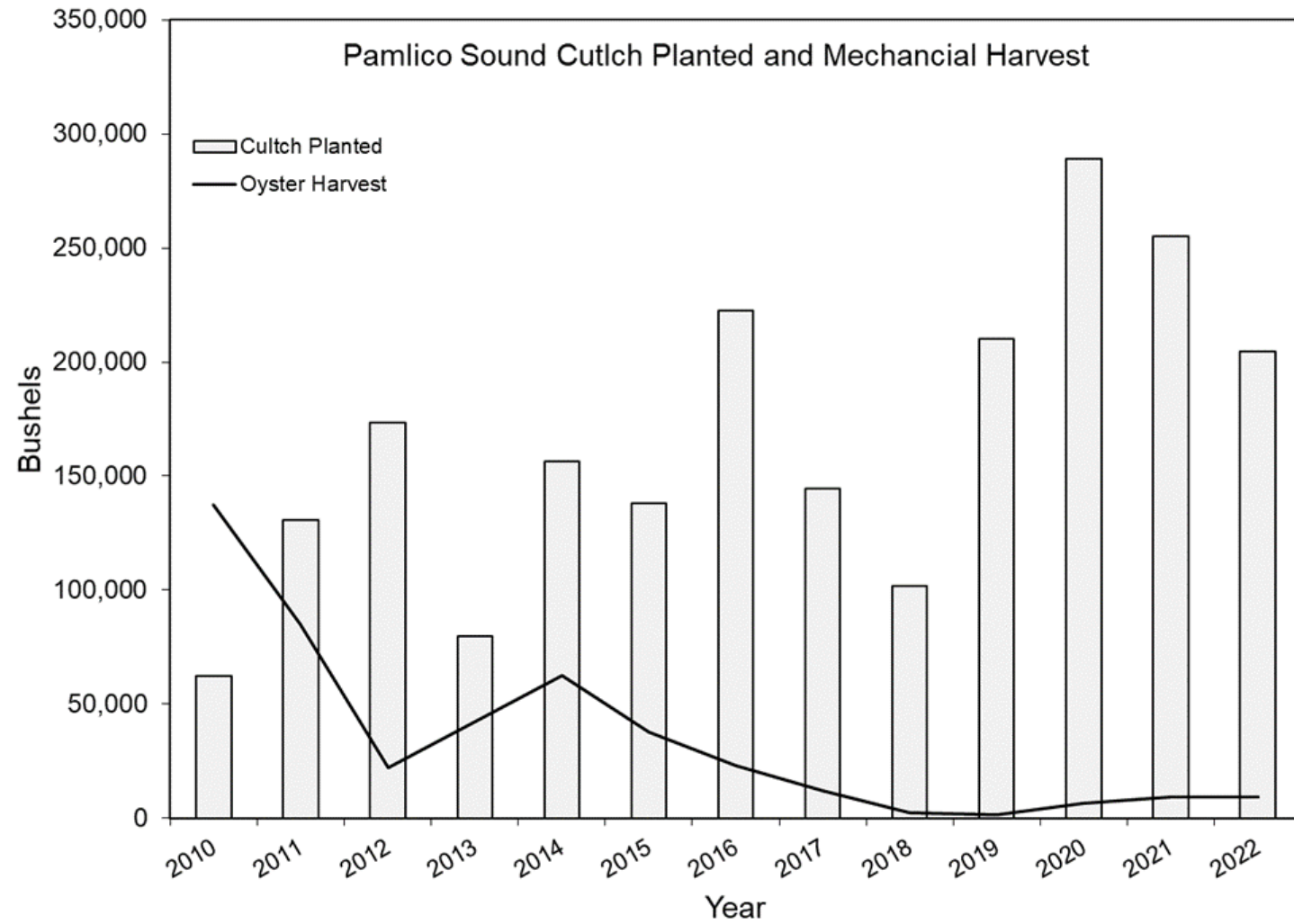
Issues

- Reefs in Pamlico Sound have been significantly reduced
- Many reefs have disappeared or been reduced to shell rubble
- Reefs have shown a decrease in height
- Declines in reef heights have been attributed to decades of fishery effort





Cultch Planting



Issues

- Cultch planting effort in Pamlico Sound exceeds harvest removal
- Planting restricted to areas without existing oyster
- Since 2018, 36x times more cultch has been planted than bushels harvested
- Cultch reefs and wild reefs are not differentiated in management



Potential Management

Deep-Water Oyster Recovery Areas
(habitat value > fishery value)

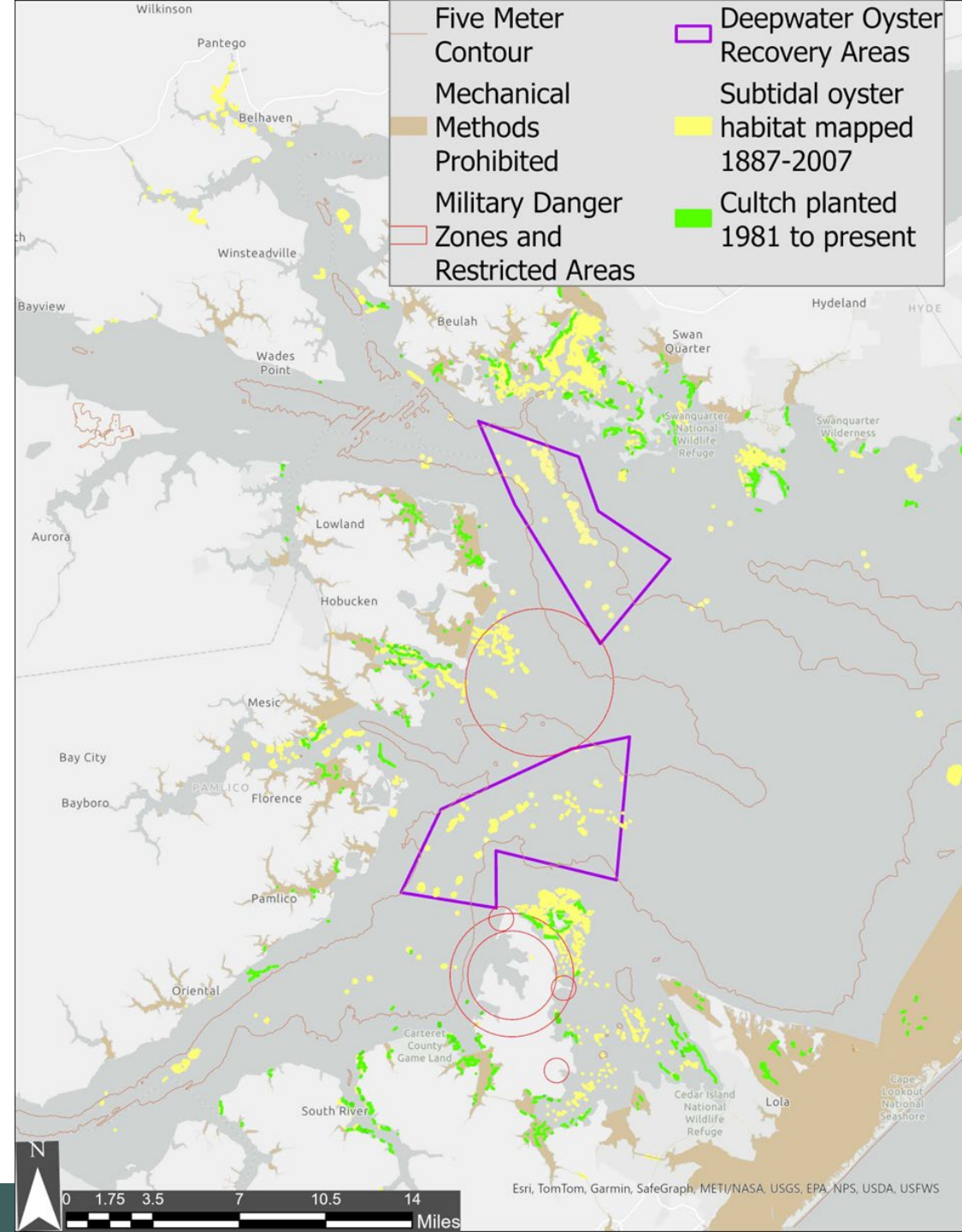
Cultch Supported Harvest (habitat
value = fishery value)

Rotational Cultch Sites
(habitat value < fishery value)

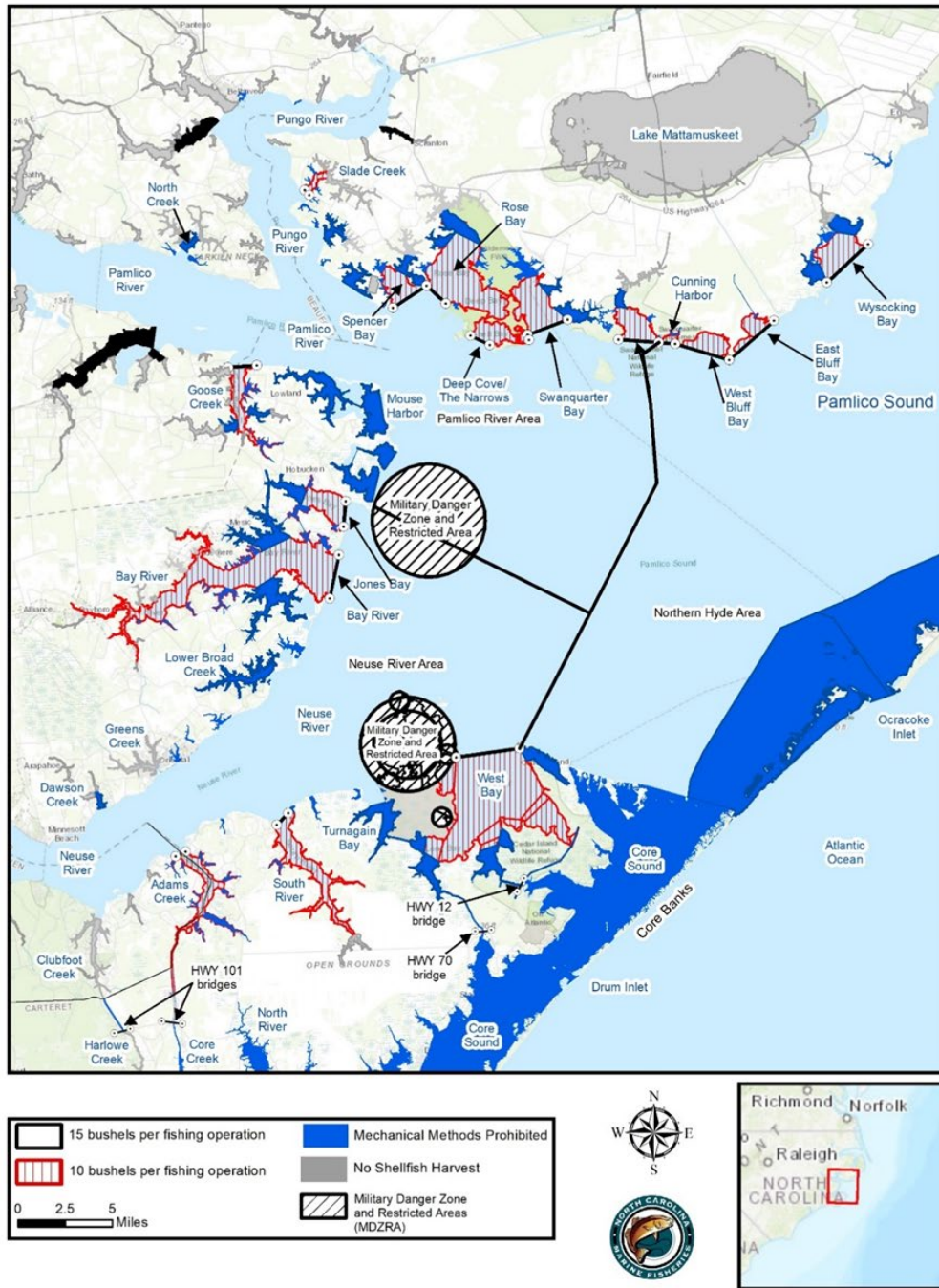


Deep-Water Oyster Recovery Areas

- Deep-water reefs suffered mass mortality
- Very few legal or live oysters since 2018
- No cultch planting effort
- Mechanical harvest not opened for these areas



Cultch Supported Harvest Areas



- Significant cultch planting efforts in bays and eastern sound
- Proposed areas aim to encompass all cultch sites
- Use existing bushel limits, areas and season dates
- Replace trigger monitoring and create fixed season lengths by area

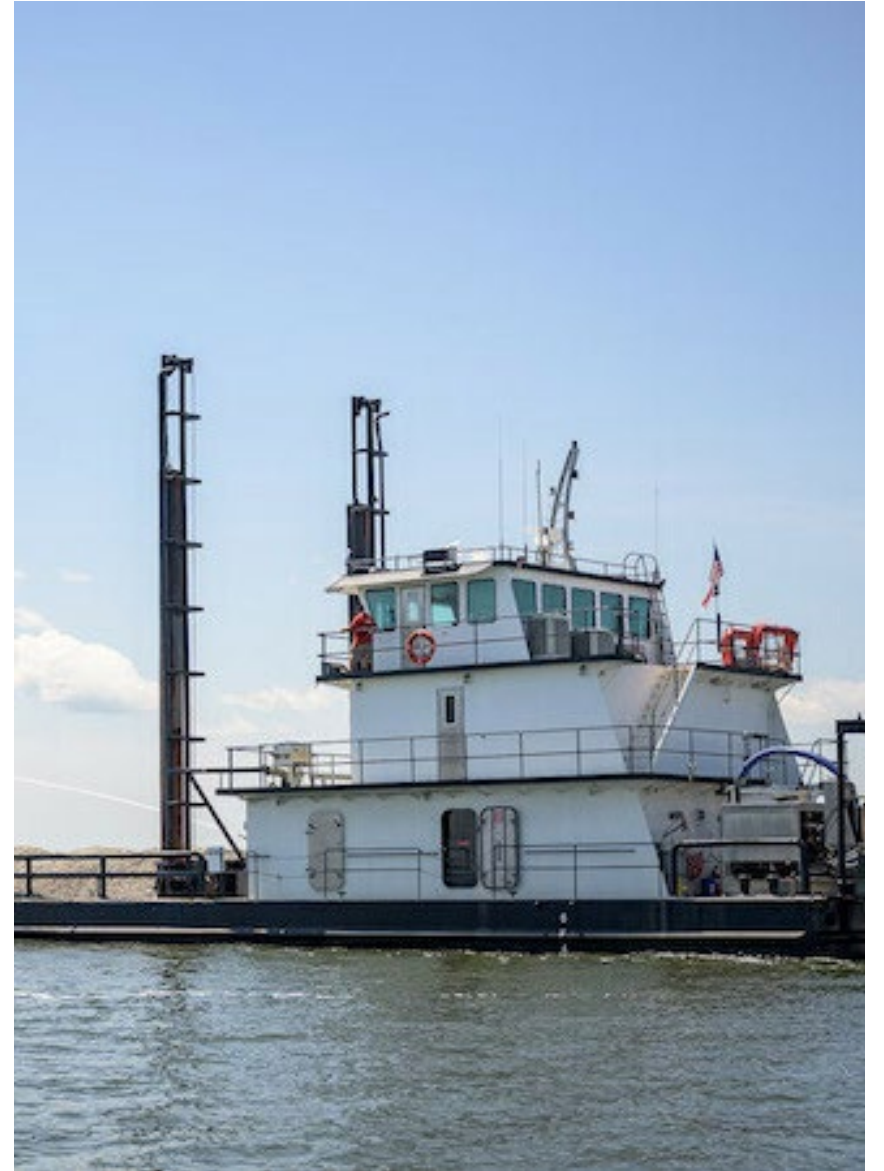
Cultch Supported Harvest Areas Season Determination Steps.

- Pre-Season Industry Reports
- Pre-Season Sampling
- Set Season Length
- In-season Industry Reports
- In-Season Sampling
- Evaluate Season Length
- Modify Season (if needed)



Rotational Cultch Sites

- Large 10-acre cultch sites
- 4 per Management Area by 2026 (10 constructed to date)
- Rotational opening strategy, replenish sites as needed
- Open full potential season (Nov-Mar) 15-bushel limit



Issue Paper: Recreational Shellfish Harvest



Issue - Data Gaps

- No recreational license or permit required
 - CRFL survey yielded limited data
 - Need a means to accurately survey all potential recreational harvesters
- Data needed for future stock assessment
- Unable to conduct economic impact assessment
- NC and VA are only states which do not require some form of license, or residency requirements.



Issue - Public Health

- No way to easily communicate health concerns to harvesters
- Molluscan shellfish harvest areas are highly regulated by the NCDMF Shellfish Sanitation Section
- With no license or permit requirements, participants are often unaware of health issues
- Separate license could help with this



Summary

- Creating a license or permit would provide NCDMF a complete pool of recreational shellfish harvesters
- A complete list of participants would also be useful to help distribute shellfish area closure proclamations and maps
- Closes data gap



Amendment 5: PRELIMINARY Division Recommendations



Amendment 5: PRELIMINARY Division Recommendations

Appendix: Mechanical Harvest

Maintain harvestable oyster populations in Pamlico Sound, and balance the value of oysters as both a fishery resource and essential habitat

- 1. Deep-Water Oyster Recovery Areas (DORAs)** -- close reefs near Pamlico & Neuse Rivers to harvest, giving them time to accumulate shell height.
- 2. Season lengths will be predetermined** based on pre-season sampling of oyster condition. Harvesters will be encouraged to report productive sites, aiding in more accurate in-season assessments.
- 3. Create a series of rotational 10-acre cultch sites** open to harvest on a seasonal basis. Sites would not be subject to the season lengths.



Amendment 5: PRELIMINARY Division Recommendations

Appendix: Recreational Harvest

NCDMF recommends exploring potential options and solutions for developing a recreational shellfish license/permit outside of the FMP process.



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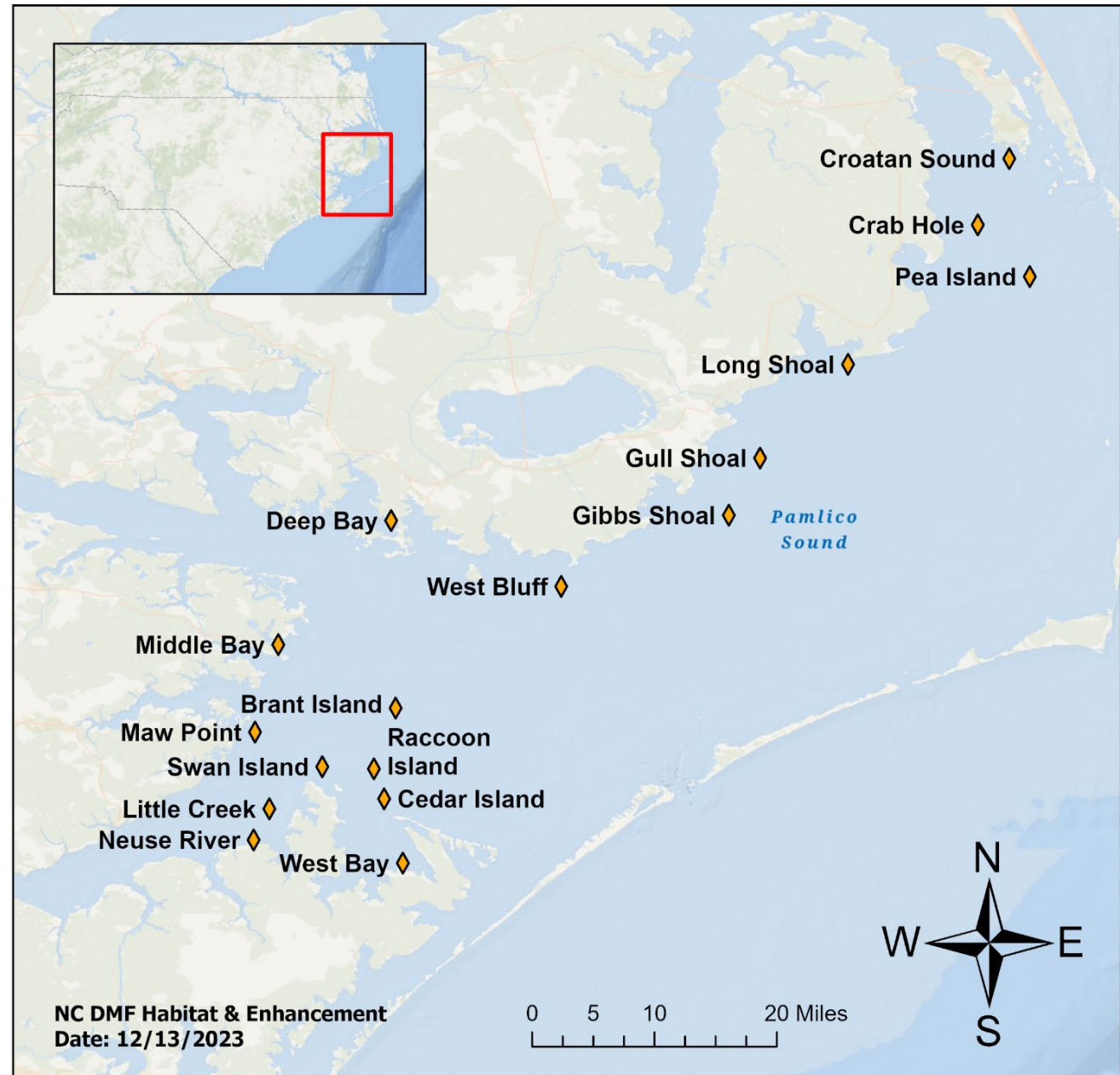
Email: Bennett.Paradis@deq.nc.gov

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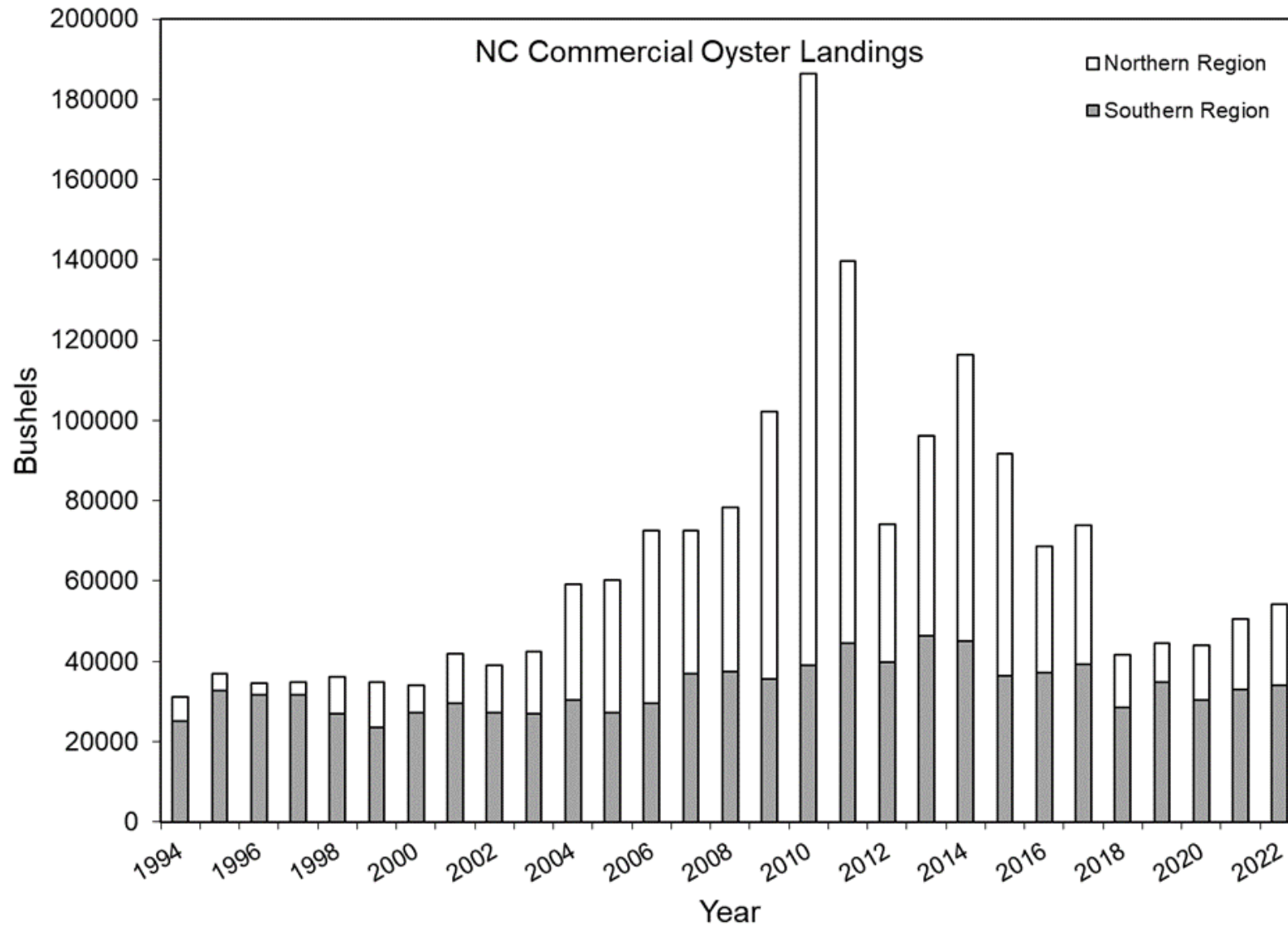


Oyster Sanctuaries

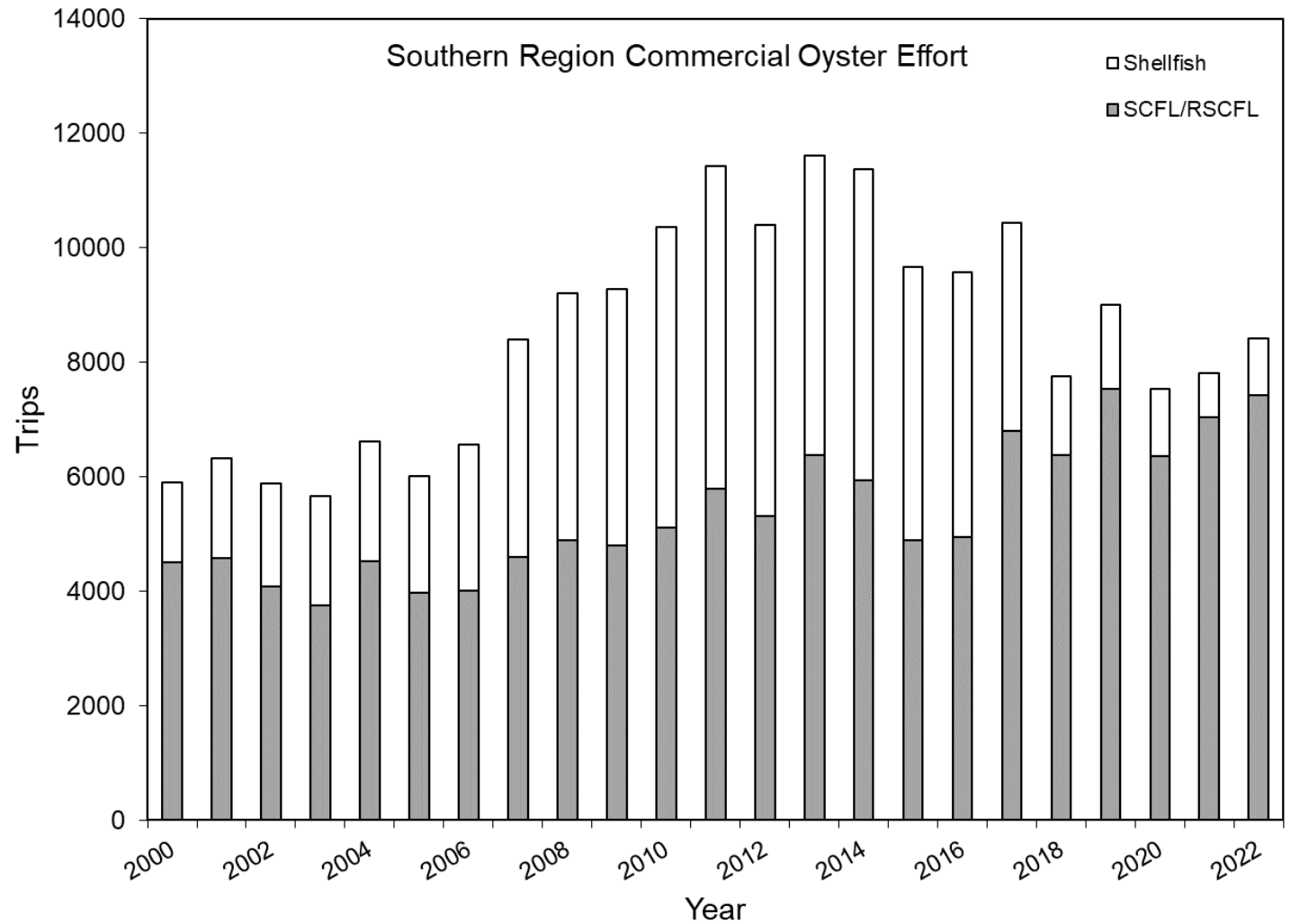
- "Spill-over effect" - provide larvae for natural reefs & cultch sites
- Habitat for diverse assemblages of fishes and invertebrates
- Recreational opportunities for residents



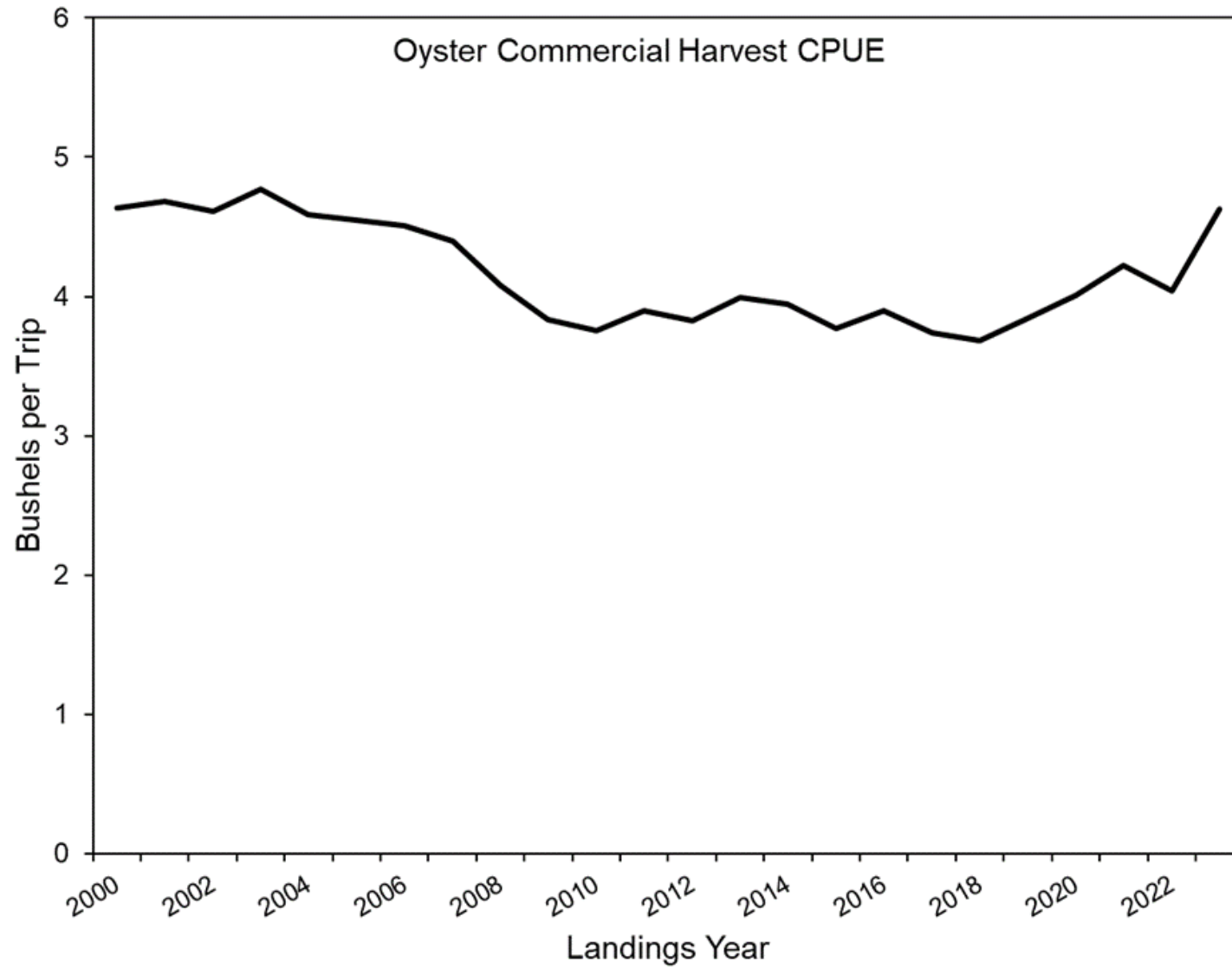
Oyster Commercial Fishery



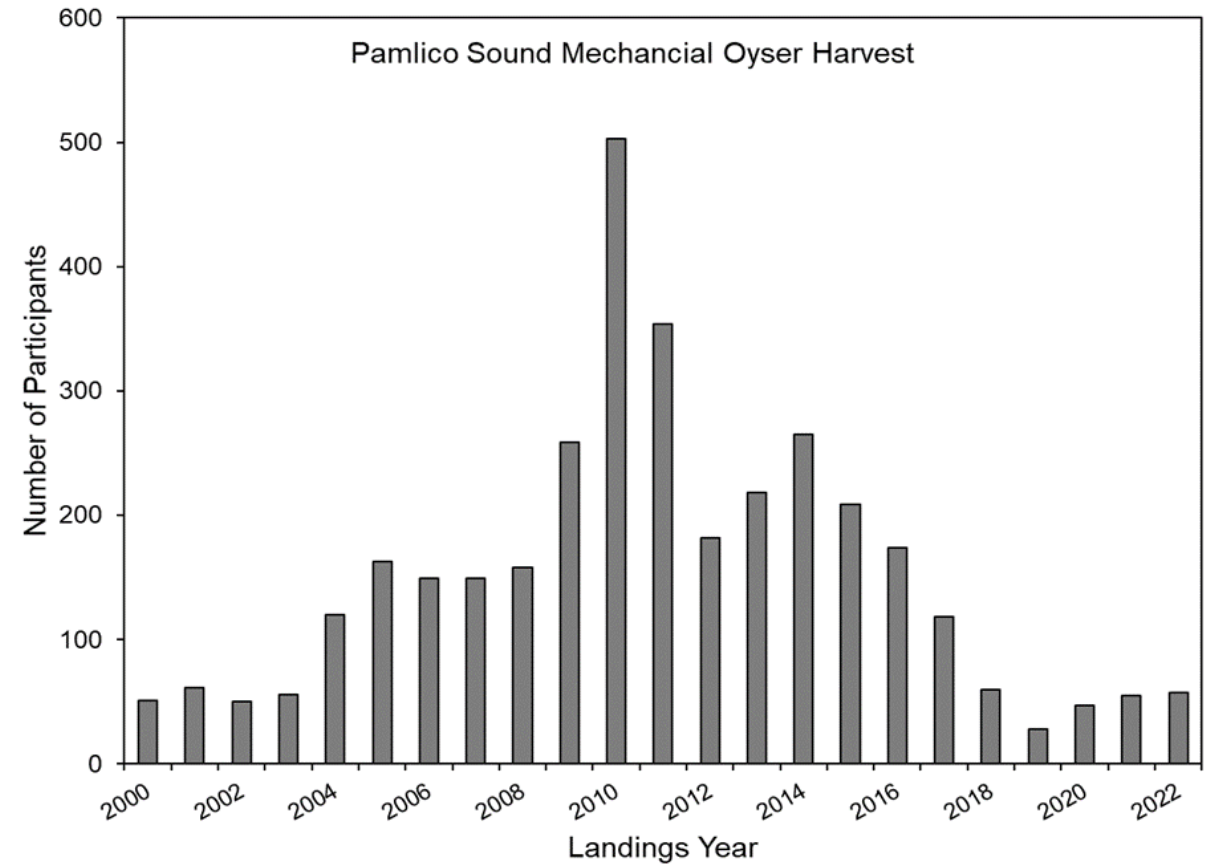
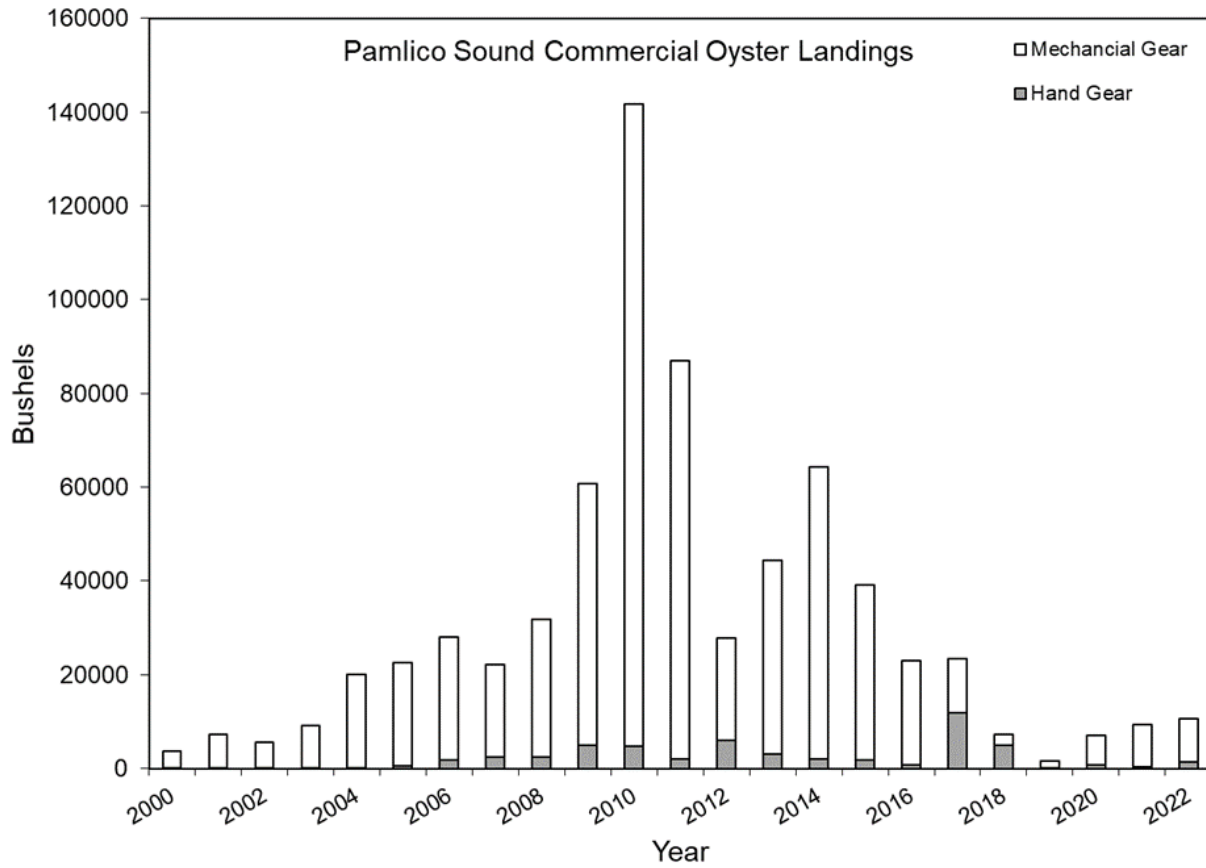
- Southern Region 5.7% of waterbody with over half oyster landings.
 - Decrease in CPUE
- MFC action in Amendment 4
 - Reduce daily limit for shellfish (2 bu.) Effective Oct 2017
 - Had intended effect
- Recommended eliminate oyster from public bottom from shellfish license.
 - Requires legislative action



Southern Region Oyster Commercial Fishery



Pamlico Sound Oyster Commercial Fishery



Harvest Monitoring

- Season 3rd Monday in November to March 31
- 4 Management Areas monitored and closed via 26% trigger
- Shallow bays limited 6-week possible season
- No minimum threshold for area openings



Oyster FMP Supplement A Management Areas



locator map

- Boundaries
- Military Danger Zone and Restricted Areas (MDZRA)

Datum: NAD83
Projection: NC State Plane
Map Date: October 2014

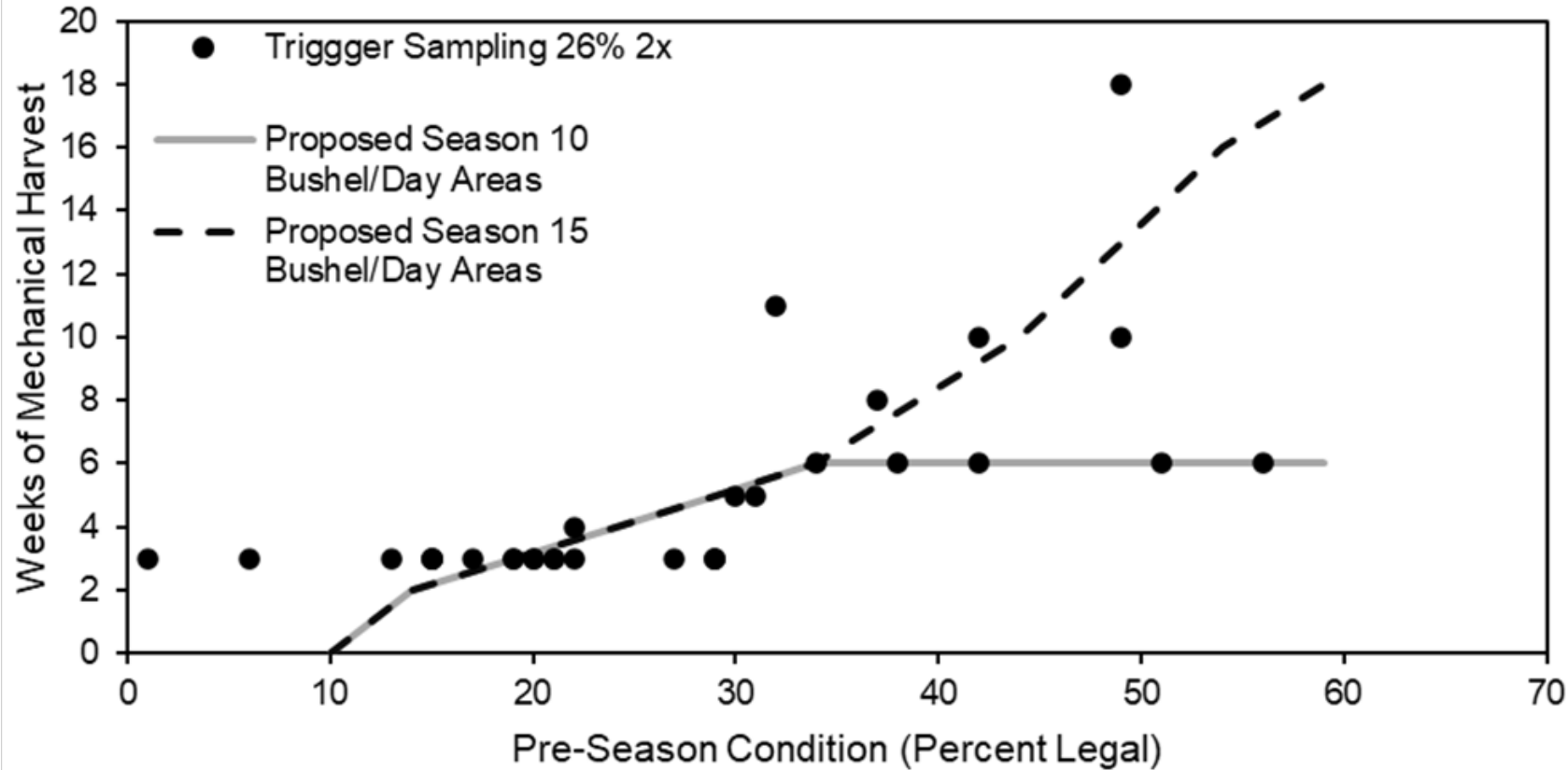


Harvest Monitoring

- Hurricane impacts to oyster resource
- Fewer weeks to trip trigger in western Pamlico Sound
- Some recovery in recent years

	2019-20	2020-21	2021-22	2022-23	2023-24
Pamlico Management Area Deep	13%	0%	0%	0%	0%
Pamlico Management Area Bays	44%	45%	49%	18%	41%
Neuse Management Area Deep	0%	0%	0%	0%	0%
Neuse Management Area Bays	8%	26%	33%	28%	39%

Trigger Sampling Data 2017-2023 and Proposed Season Length by Areas



Season Lengths

- Past trigger data to inform new management
- Dependent on fishery effort (stabilized after 2016-17)
- Any changes in effort could be addressed with adaptive management
- Underestimated by an average of 1.75 days across entire period
- Not open 2 times

Season Lengths

Starting Condition	Weeks of Mechanical Harvest Season	
	10 bushel per day bay areas	15 bushel per day areas
<10%	0	0
10-14%	2	2
15-19%	3	3
20-24%	4	4
25-29%	5	5
30-34%	6	6
35-39%	6	8
40-44%	6	10
45-49%	6	13
50-54%	6	16
>55%	6	18

- Fixed season lengths
 - Drops lowest two pre-season samples
 - 10% legal threshold
- Six-week cap for bay areas
- 10% legal threshold for opening

Adaptive Management

Three year running average of participants less than 70 or greater than 116 (calculated during annual FMP Update), triggers examination of oyster sampling data and potential adjustment to fixed season lengths for Cultch Supported Harvest Areas

