

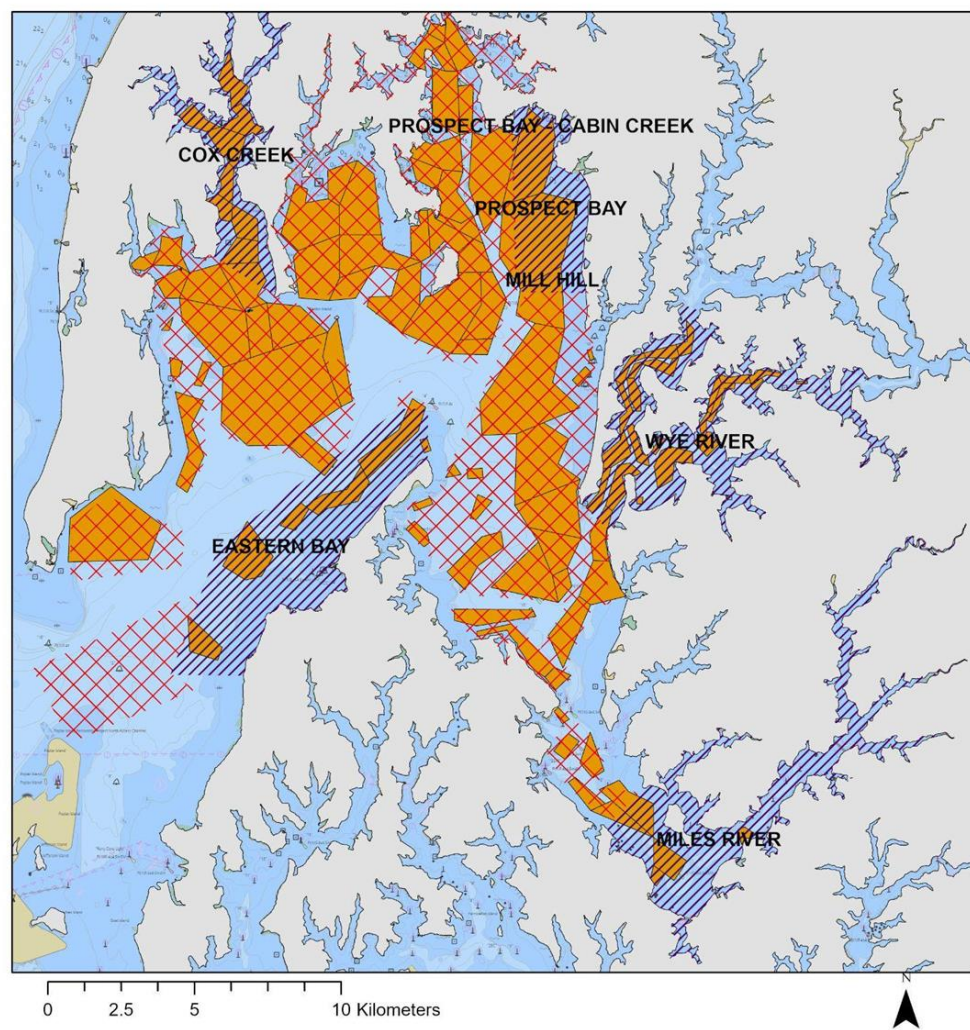
History and Current Status of the Oyster Population in the Eastern Bay Region

Eastern Bay Coalition Workgroup
2/2/2024

MD DNR Shellfish Division



Region



- Eastern Bay Region**
- Historic Oyster Habitat
 - Eastern Bay Region
 - Eastern Bay Sanctuaries
 - Eastern Bay Region PSFAs

Eastern Bay region = Miles River, Wye River and Eastern Bay

Historic oyster habitat = 1906-1912 Yates Survey plus its amendments

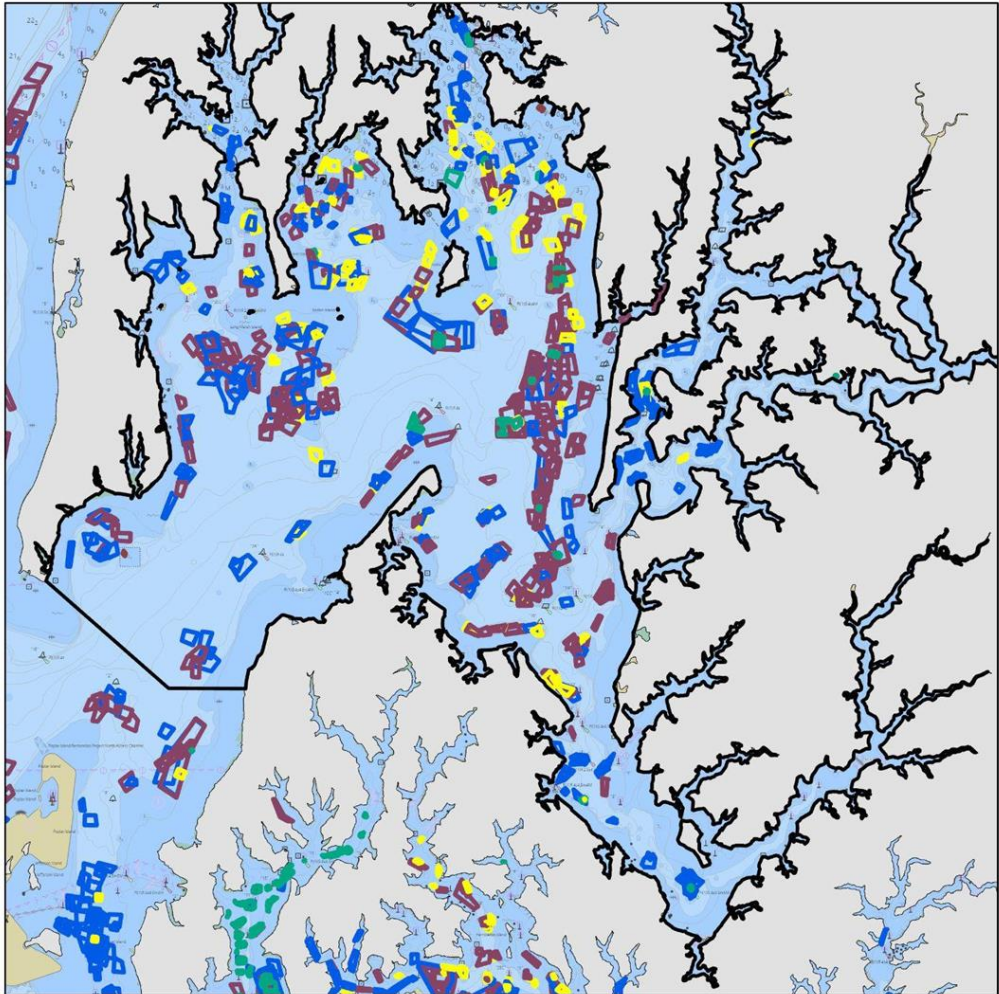
Sanctuary = no harvest areas

PSFA = no leasing allowed

NOAA Code Harvest reporting areas = 039, 060, 099



All Plantings - 1960-2022



Eastern Bay Region

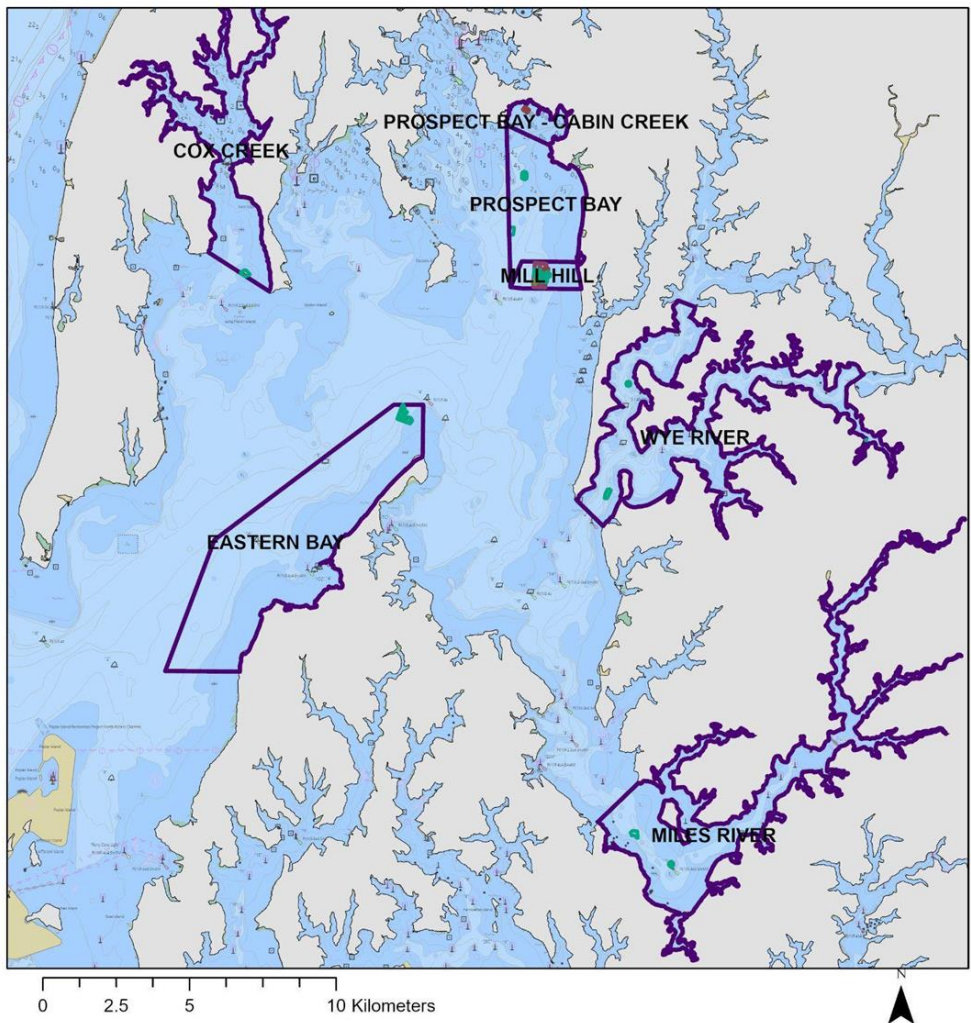
ActType

- ALTERNATE MATERIALS
- AQUA OYS PLANTING
- BAR ENHANCEMENT
- DIRECT SET OYSTER LARVAE
- DREDGED SHELL ADDITION
- FRESH SHELL PLANTING
- HATCHERY SEED PLANTING
- MIXED SHELL PLANTING
- UNKNOWN
- WILD SEED PLANTING

Prior to 2006:
Mostly dredged shell planting



Sanctuary Plantings



Eastern Bay Region

Eastern Bay
Region
Sanctuaries

ActType

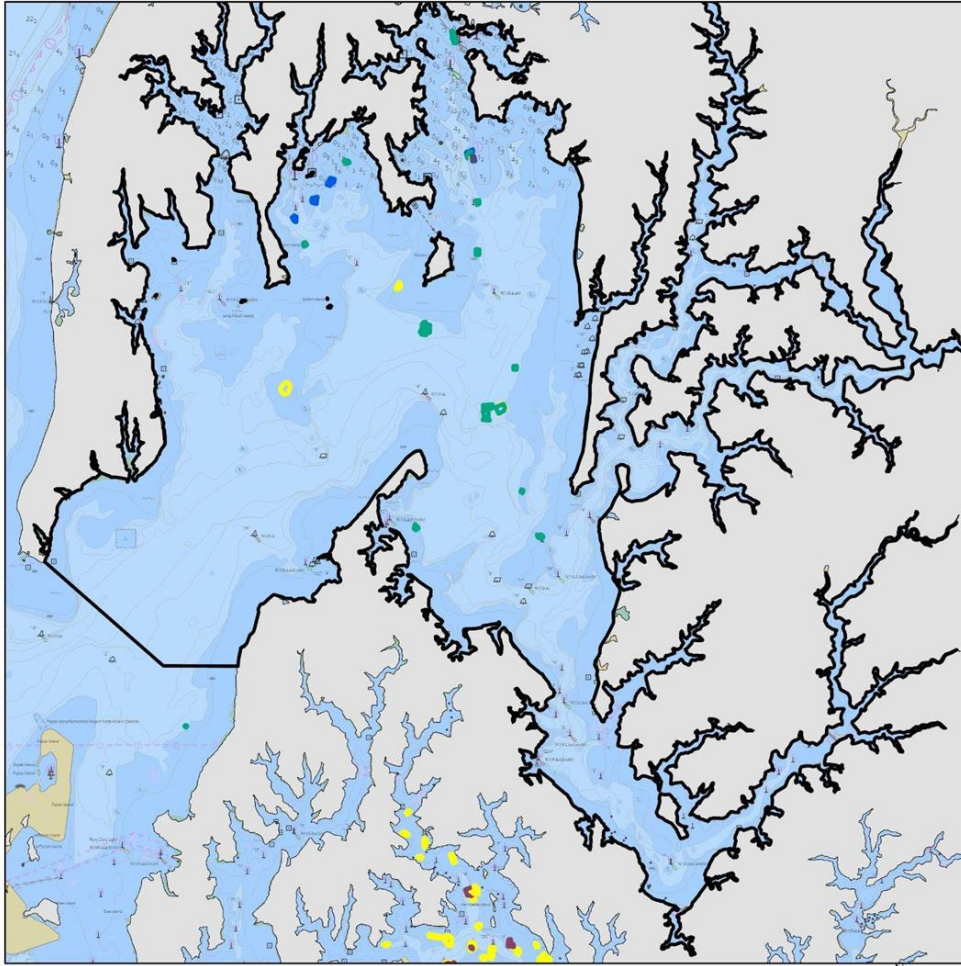
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Recently:
Mostly spat-
on-shell
planting

Mill Hill &
Cabin Creek
have had some
alternative
substrate
including reef
balls



Fishery Bottom - 2010-2022



Eastern Bay Region

ActType

- ALTERNATE MATERIALS
- AQUA OYS PLANTING
- BAR ENHANCEMENT
- DIRECT SET OYSTER LARVAE
- DREDGED SHELL ADDITION
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- HATCHERY SEED PLANTING
- MIXED SHELL PLANTING
- UNKNOWN
- WILD SEED PLANTING

Mostly fresh shell and spat-on-shell

0 2.5 5 10 Kilometers





QA Waterman Association

Direct larvae release in Eastern Bay

- 2022: Dominion (34 spat/bu) & Hood (12 spat/bu) vs 5 spat/bu average
- 2023: Cedar Island (49 spat/bu) vs 30 spat/bu average

Bar cleaning and shell consolidation

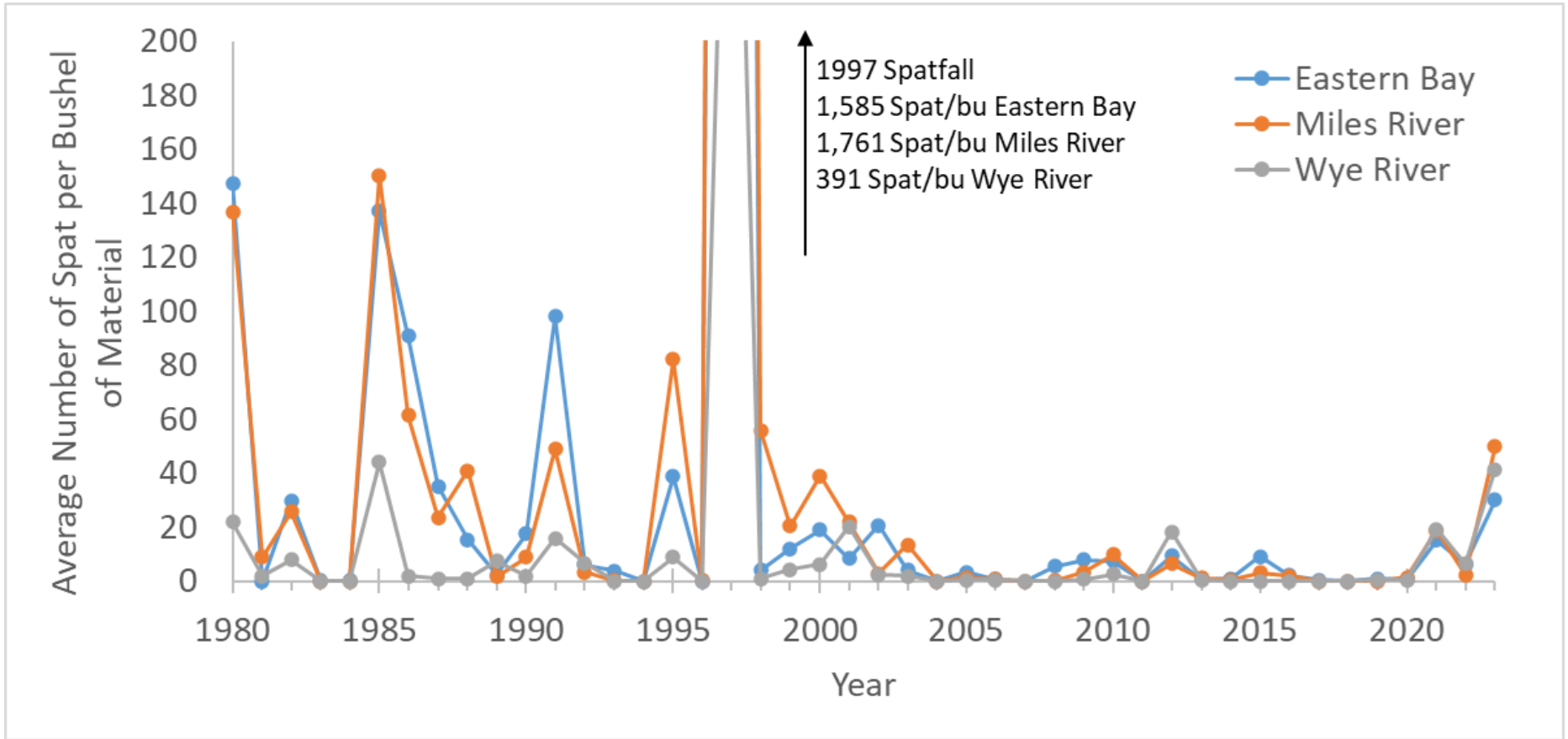
- 2020 to 2023

Clam rig shell reclamation

- 2024?



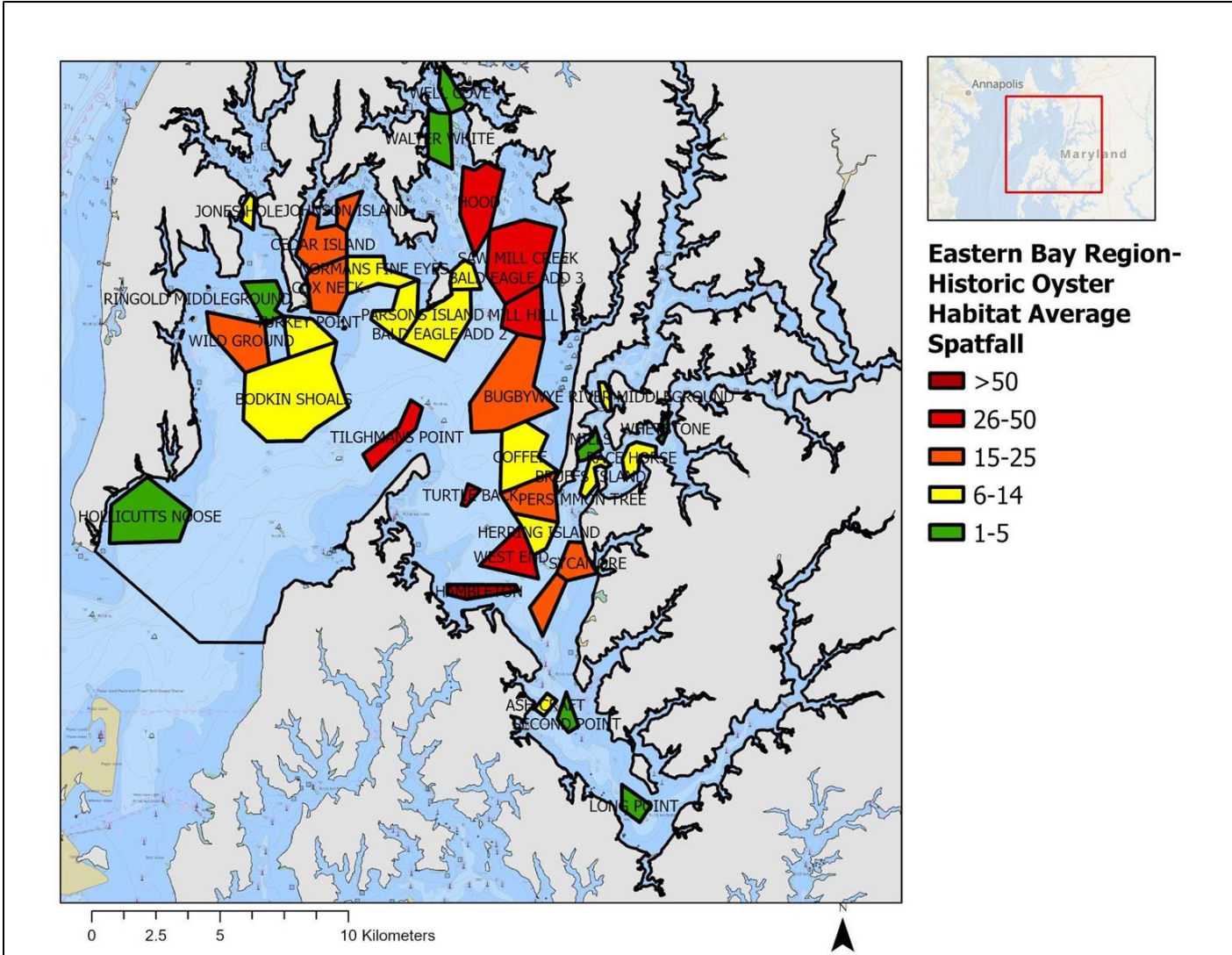
Natural Spatfall



Excluding wild seed and hatchery seed planting sites on the year it was planted₇



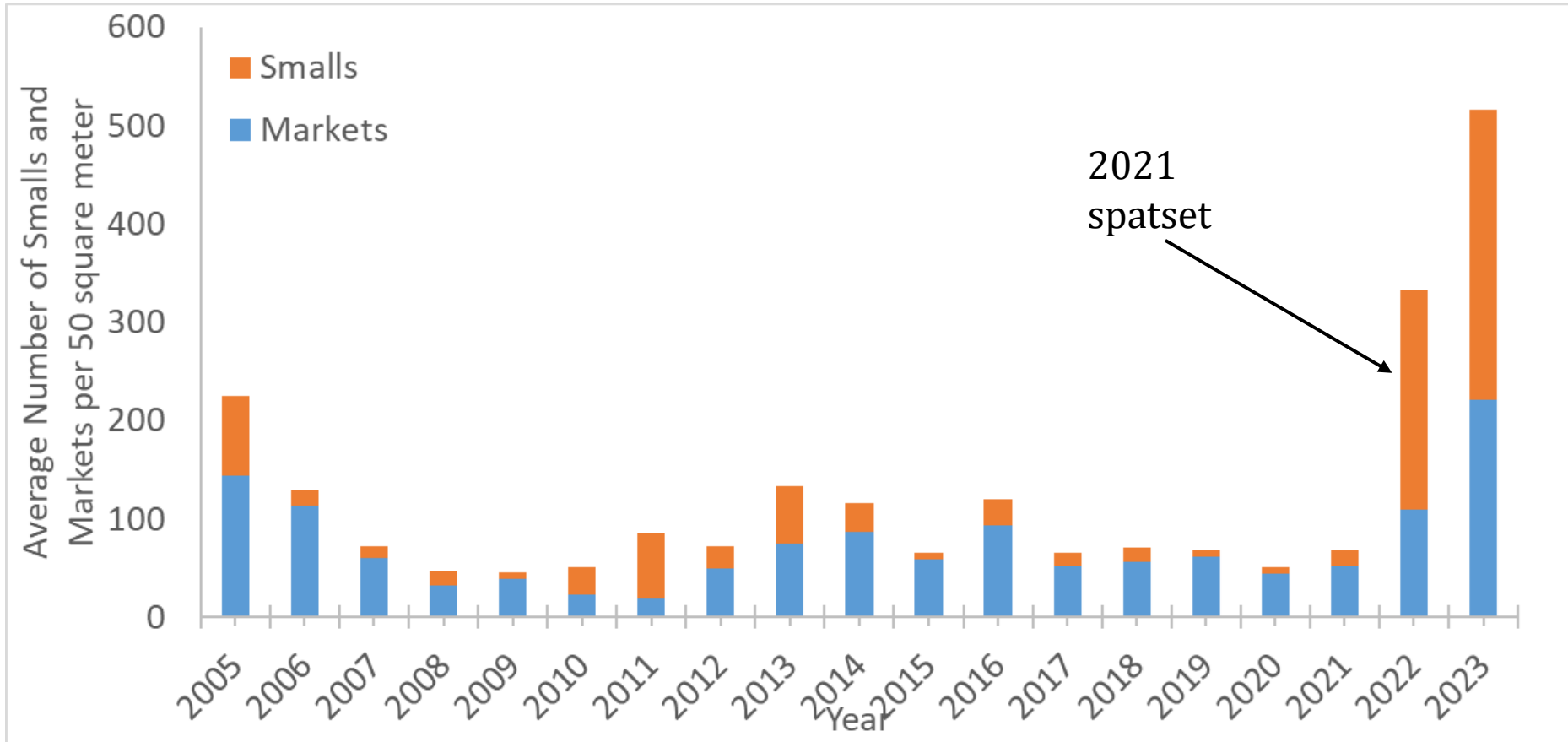
Natural Spatfall Per Bar



Spatfall on bars regularly sampled by the Fall Survey (1980-2023)

Higher spatfall in Miles River and along the eastern shore of Eastern Bay

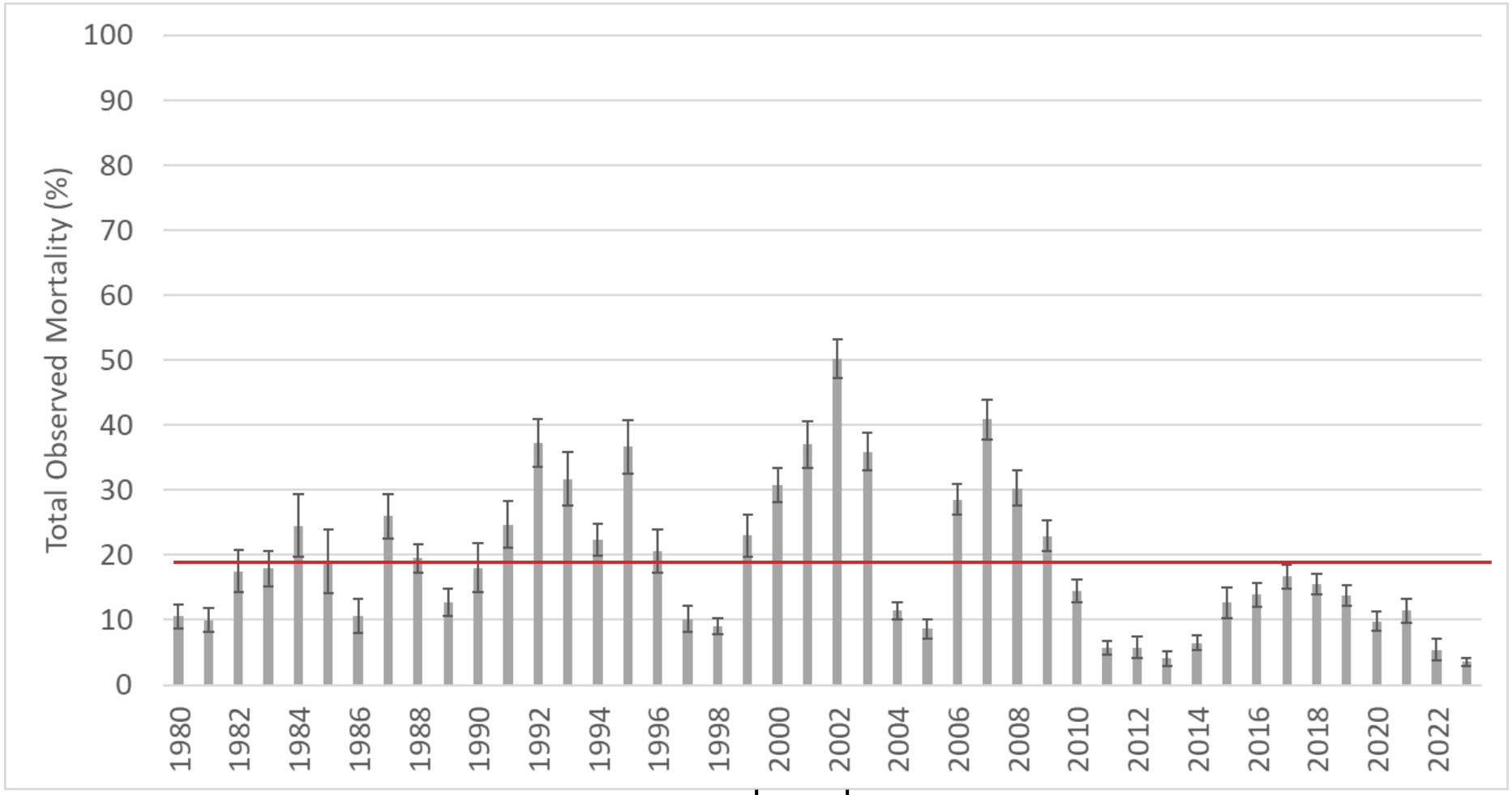
Markets and Smalls Abundance



Recent increase in small-sized and market-sized oysters



Mortality

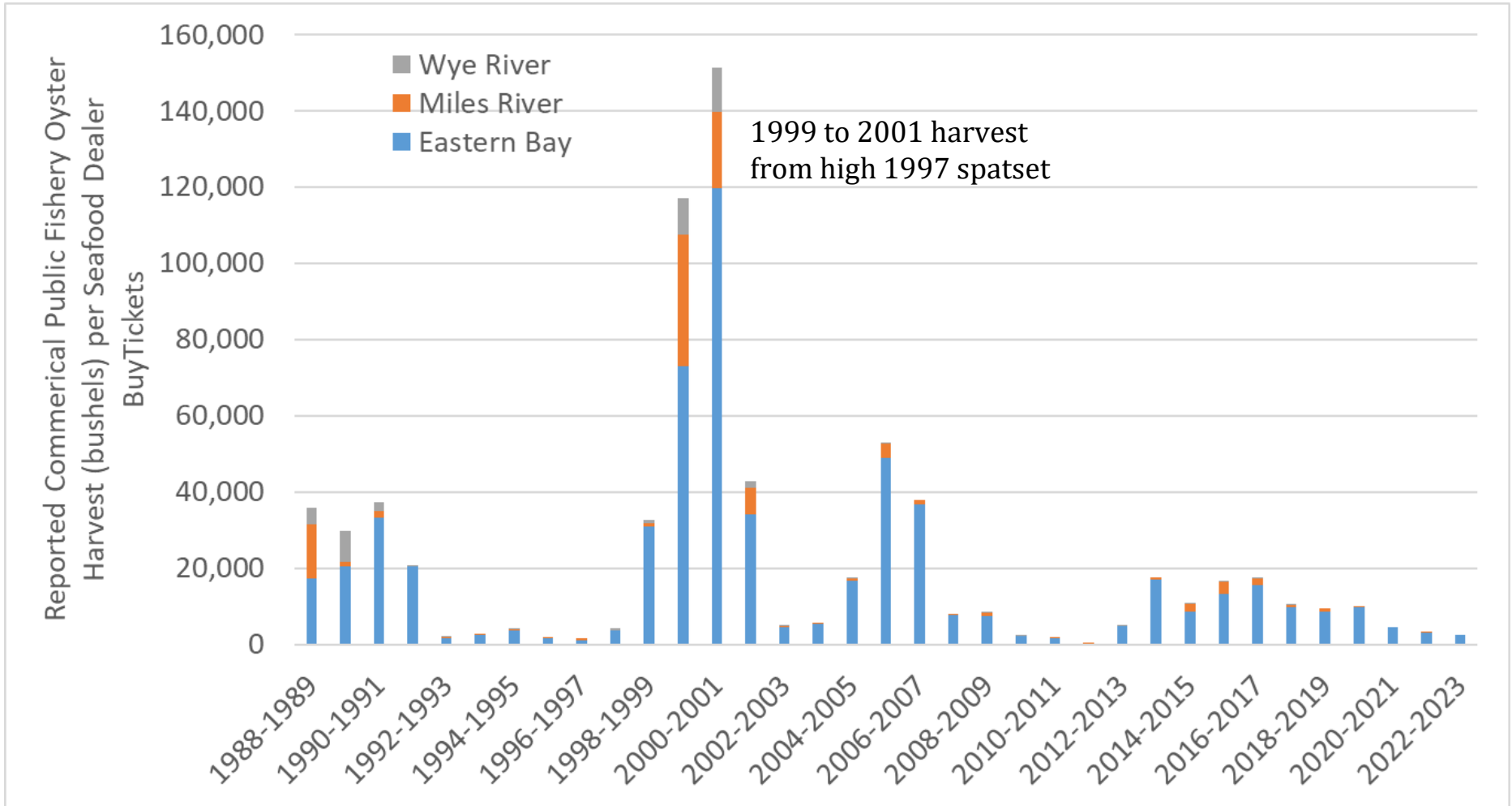


— Long Term Avg for Region

1999-2002 - 4 yr drought



Harvest - Dealer Buy Tickets

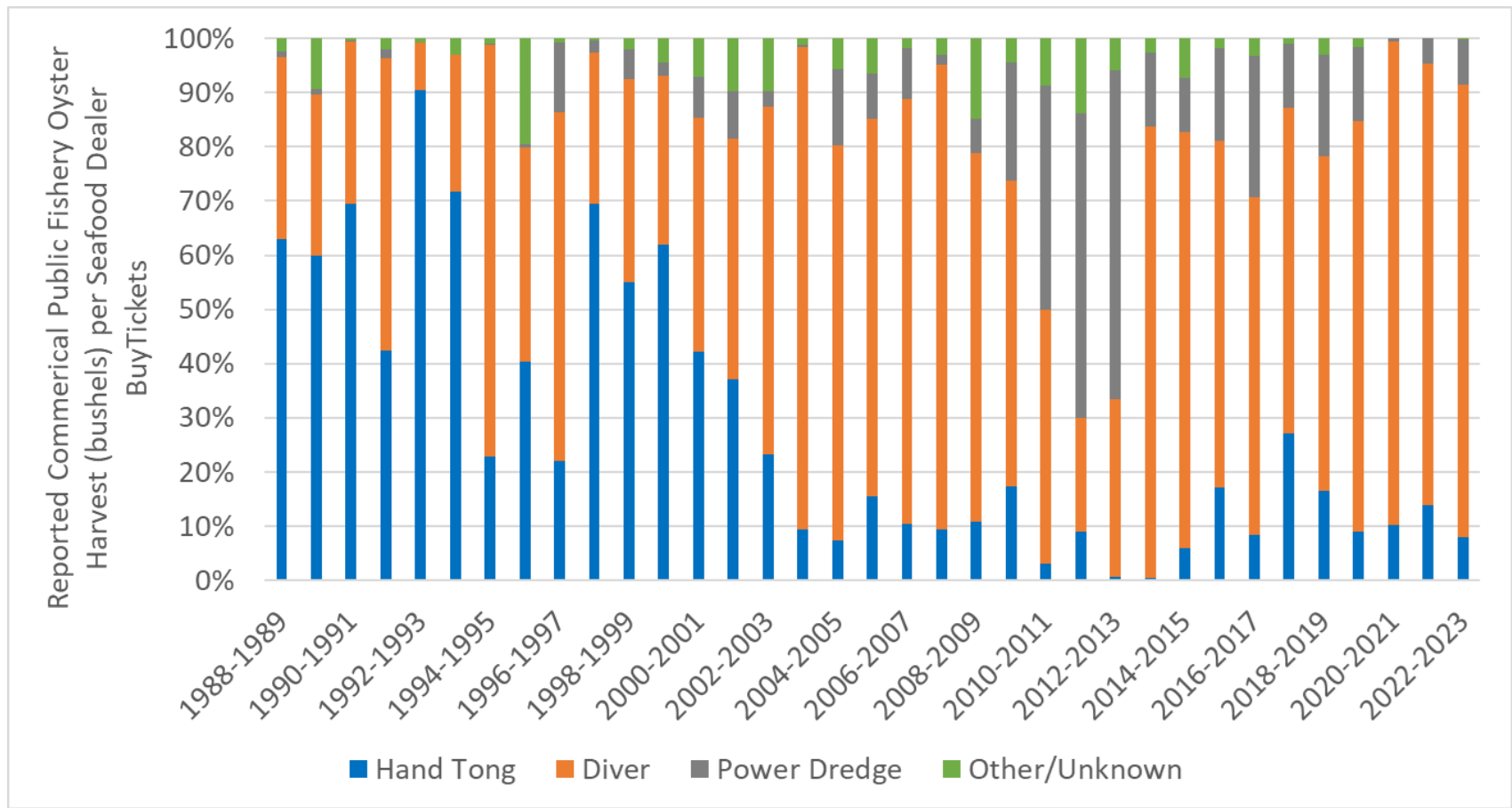




Harvest - Per Gear

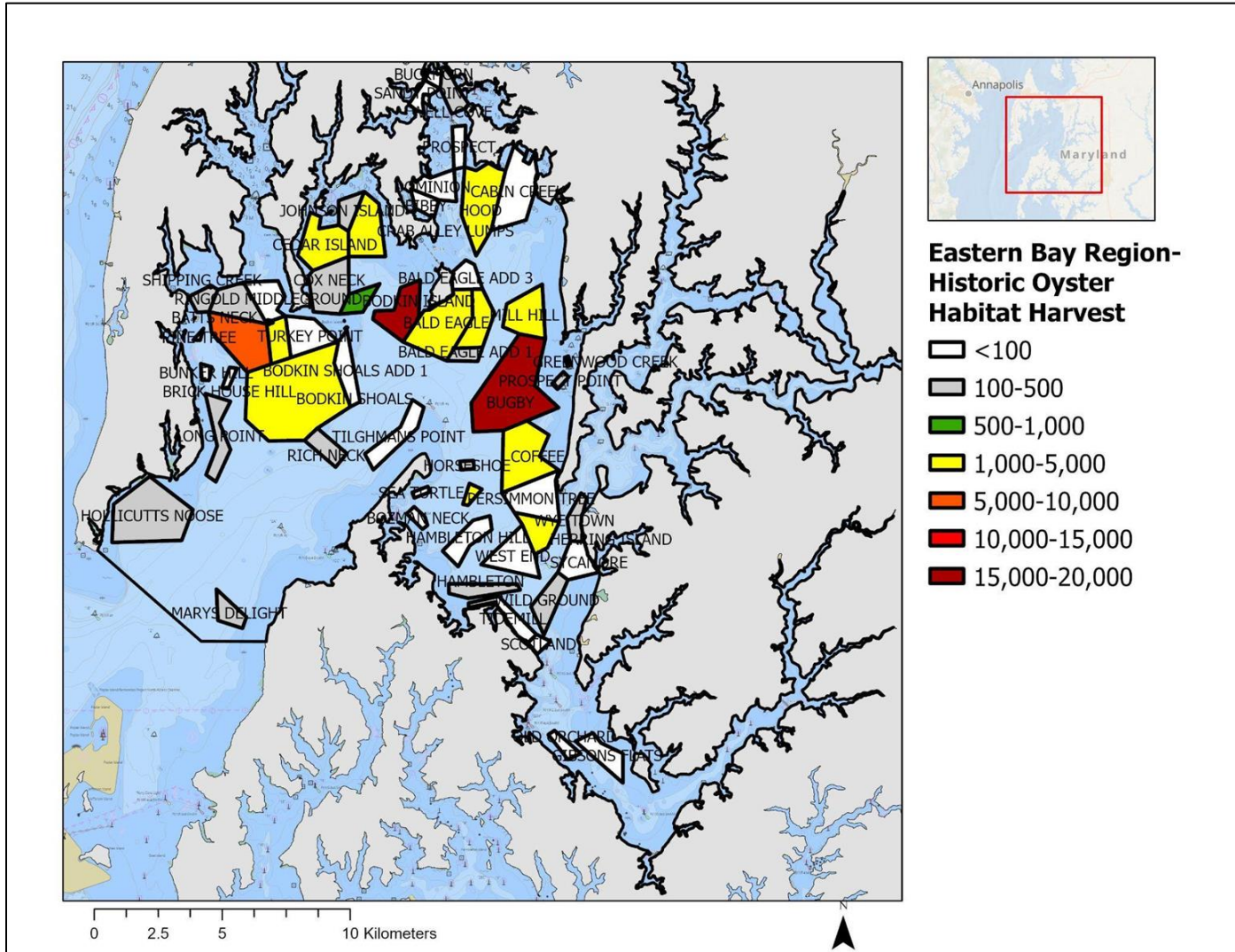
Switch from mostly Hand Tong to Diver

2011 - two power dredge study areas opened





Harvest - Per Bar since 2010



Consistently highest reported harvest bars: Bugby and Parson Island

Power dredge study areas: Wildground and Parson Island

Stock Assessment Results

Based on last assessment update in 2023

- Fishing at or below the target fishing rate
 - For 2023
 - For past 5 years

- Market abundance
 - Eastern Bay (039) = above the lower threshold
 - Wye River (099) = above the lower threshold
 - Miles River (060) = below the lower threshold (depleted status)



OAC Consensus Project

Option 43: East. Bay \$1M for rest. (spat), \$1M fishery (shell and spat)

This option is the same as the status quo except that there is additional shell and hatchery seed plantings on sanctuary and fishery bars in Eastern Bay. For this option there was \$1,000,000 spent each year on planting hatchery spat in sanctuaries with 250 million hatchery spat planted annually at 6 million per acre. For this option, there was \$1,000,000 spent each year on planting shell and hatchery spat in public fishery areas. There was \$400,000 spent on planting 100 million hatchery spat at 1 million per acre and \$600,000 spent on planting 60 acres with shell at 2000 bushels per acre.

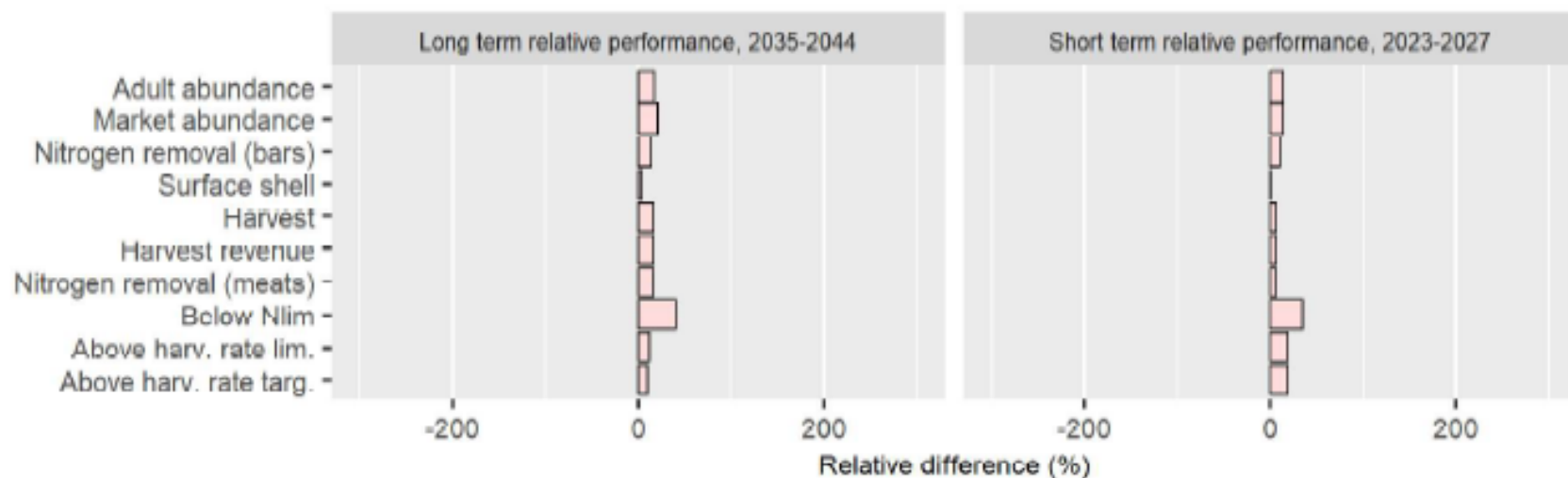


Figure 43: Performance of option 43 compared to status quo. Bars that are left and blue are worse than status quo and bars to the right and red are better than status quo.



Current Eastern Bay Project

\$1M /year - Sanctuary spat plantings

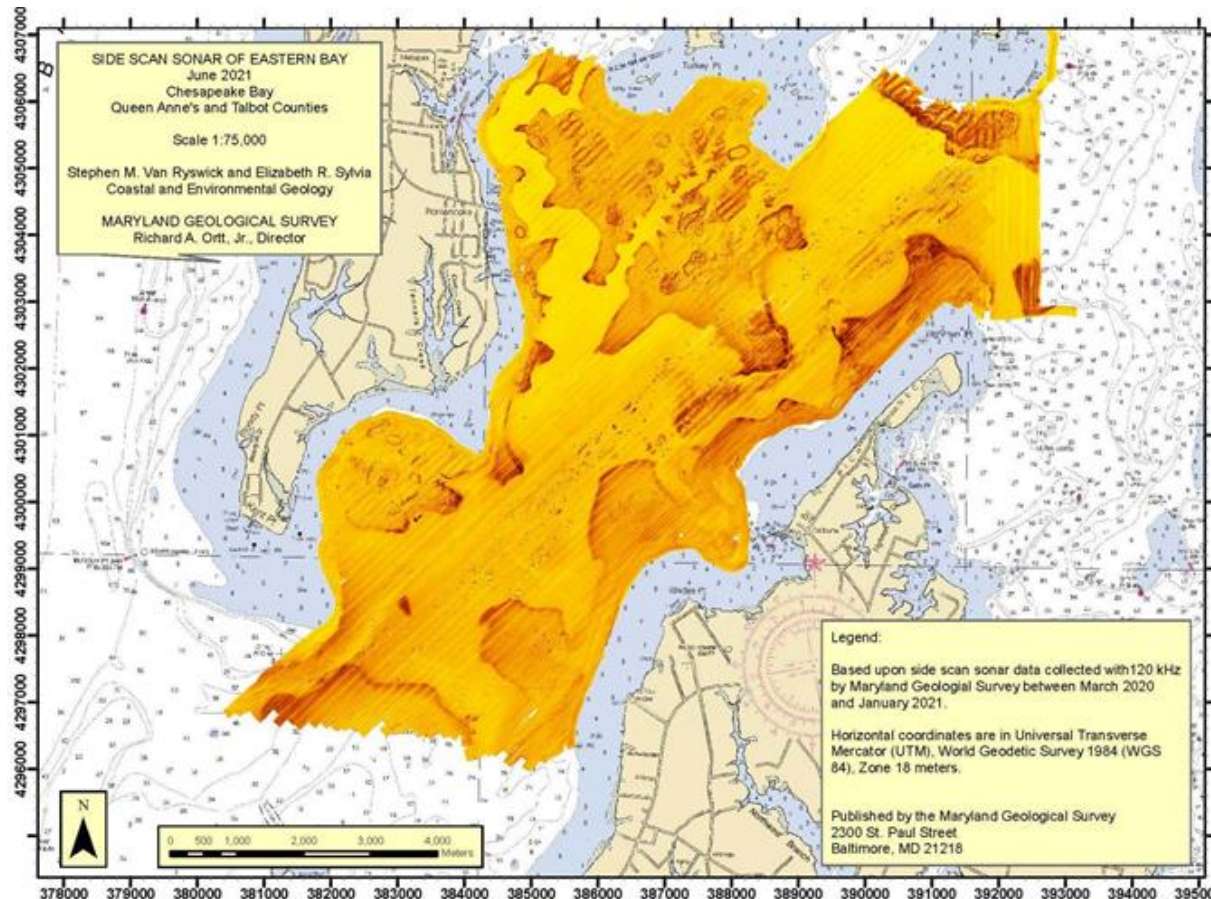
- 2023 - FY2023 funds allocated prior to the OAC project and law
 - 538 acres surveyed to determine if suitable to plant spat in future
 - Planted 212M spat
- 2024 - continued spat planting

\$1M/year - Fishery shell and spat plantings

- Starts in 2024 as funds were legislatively mandated in FY2024

Have requested FY2025 funding

Update Bay Bottom Survey



- Last completed in the 1970-80's
- Sonar survey to classify the bay bottom into mud, sand, shell, and other habitats
- Will be used to identify current oyster habitat
- Re-delineate oyster bar boundaries
 - Currently using 1906-1912 oyster bar boundaries

Additional Slides



Region

NOAA Code	Surface Acres	Public Shellfish Fishery Area (PSFA)	Historic Bar Acres		
			Total	In Sanctuary	In Public Fishery
039 - Eastern Bay	33,019	17,187	66 bars 15,524 acres	5 sanctuaries 3,255 acres	12,269 acres
060 - Miles River	12,662	5,458	26 bars 3,462 acres	1 sanctuary 373 acres	3,089 acres
099 - Wye River	3,510	0	23 bars 1,100 acres	1 sanctuary 1,100 acres	0 acres
Total	49,191	22,645	20,086	4,728 (24%)	15,358 (76%)
Leased Area	41.3				

Historic Bar Acres = as charted in the Yates Oyster Survey from 1906 to 1912 plus its amendments



Aquaculture Leases

- Eastern Bay
 - 17.5 acres of leases total (all water column)
 - 12.1 acres leased within sanctuaries
 - 5.4 acres leased outside of a sanctuary

- Miles River
 - 20.9 acres leased within a sanctuary (bottom leases)
 - 2.9 acres leased outside of a sanctuary



All Plantings - 1960-2022

Activity Type	Acres Planted	Volume Millions	Volume Bushels	Volume Cubic Yards
Aquaculture Oyster Planting (SOAR)	1	N/A	1023	N/A
Direct Larvae Set	2.5	3	N/A	N/A
Dredge Shell Addition*	4,936	N/A	10,610,236	40,503
Fresh Shell Planting*	889	N/A	902,549	N/A
Hatchery Seed Planting (SOS)	238	397	8,029	1,800
Mixed Shell	2	N/A	37,294	2,232
Wild Seed Planting*	4,217	N/A	279,953	N/A
Wild Seed Removed**	N/A	N/A	859,252	N/A

*Many missing values for volume planted from mostly the older data.

**Only have wild seed removed data from 1985-2001



Sanctuary Plantings

Activity Type	Acres Planted	Volume Millions	Volume Bushels
Aquaculture Oyster Planting (SOAR)	1	N/A	1,023
Dredge Shell Addition*	76	N/A	32,321
Hatchery Seed Planting*	133	533	~85,250

* Many missing values for volume planted
 Before 2021, MGO hatchery spat-on-shell plantings did not record how much was planted
 Dredged shell planted in 2000 only
 All sanctuaries established in 2010 except Mill Hill in 2000 and Cabin Creek in 2005.

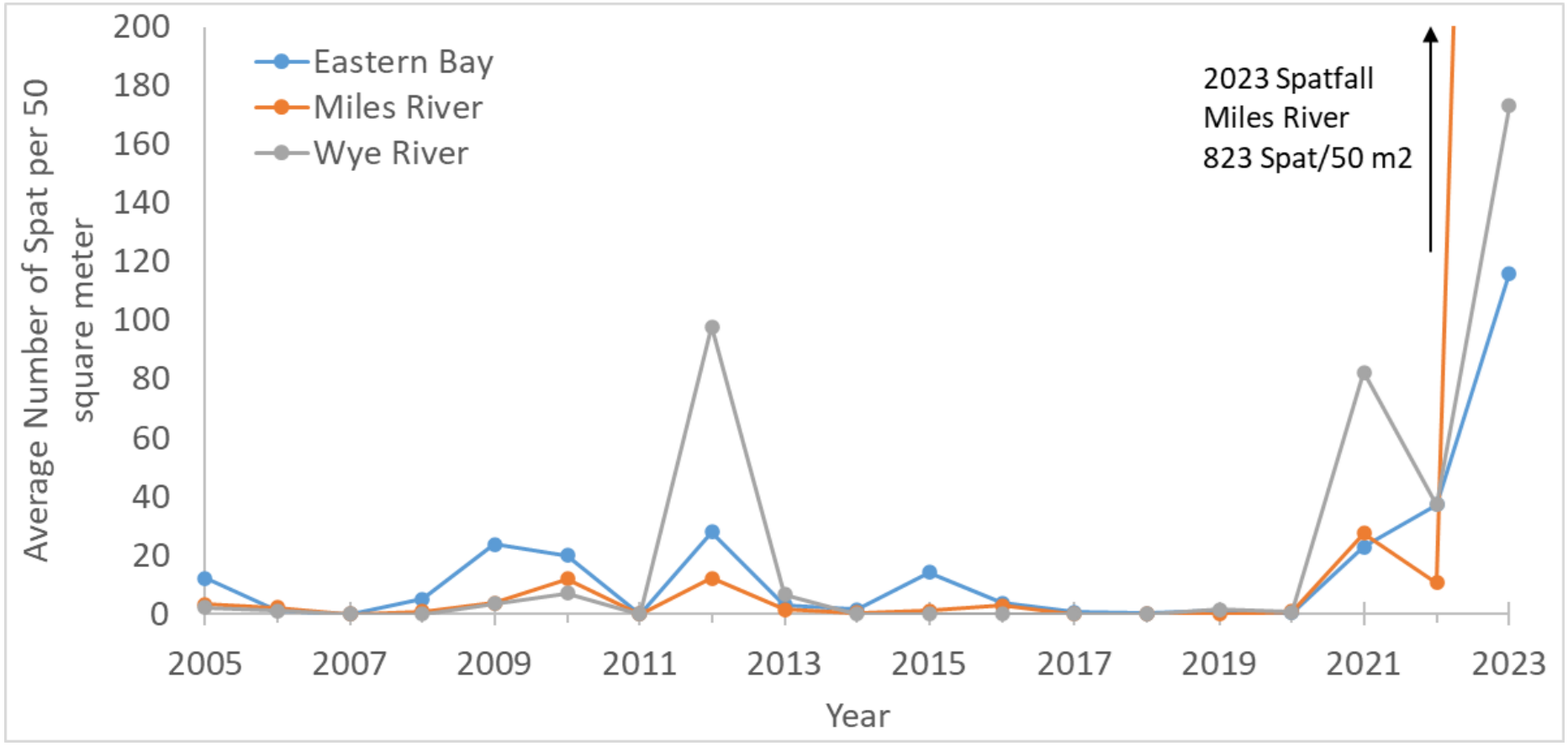


Fishery Plantings - 2010-2022

Activity Type	Acres Planted	Volume Millions	Volume Bushels
Direct Larvae Set	2.5	3	N/A
Fresh Shell Planting	34	N/A	40,674
Hatchery Seed Planting	83	163	~26,080
Wild Seed Planting	21	N/A	16,848
Used an estimate of 160 bushels of shell per 1 million hatchery seed			



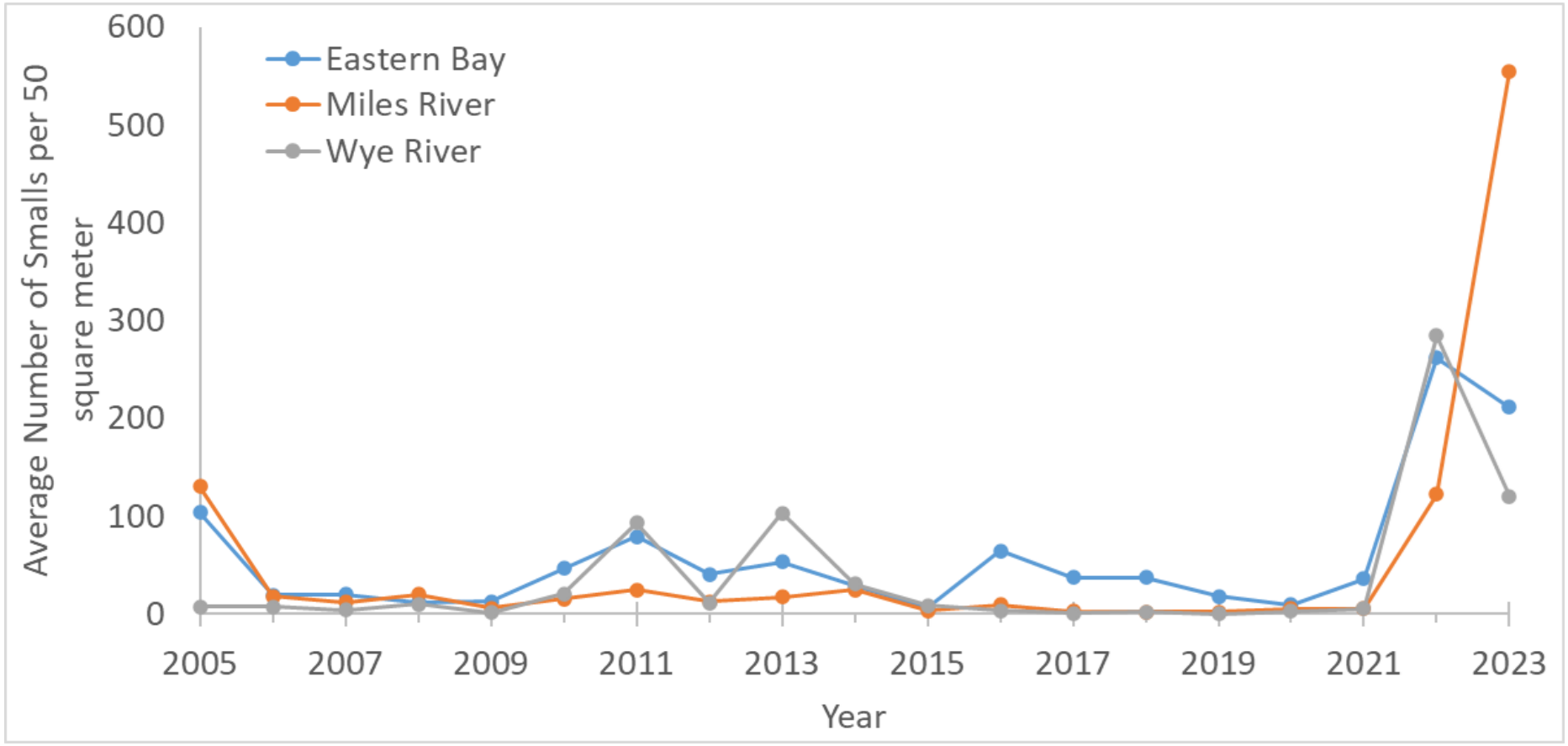
Natural Spatfall - 2005+



Excluding wild seed and hatchery seed planting sites on the year it was planted

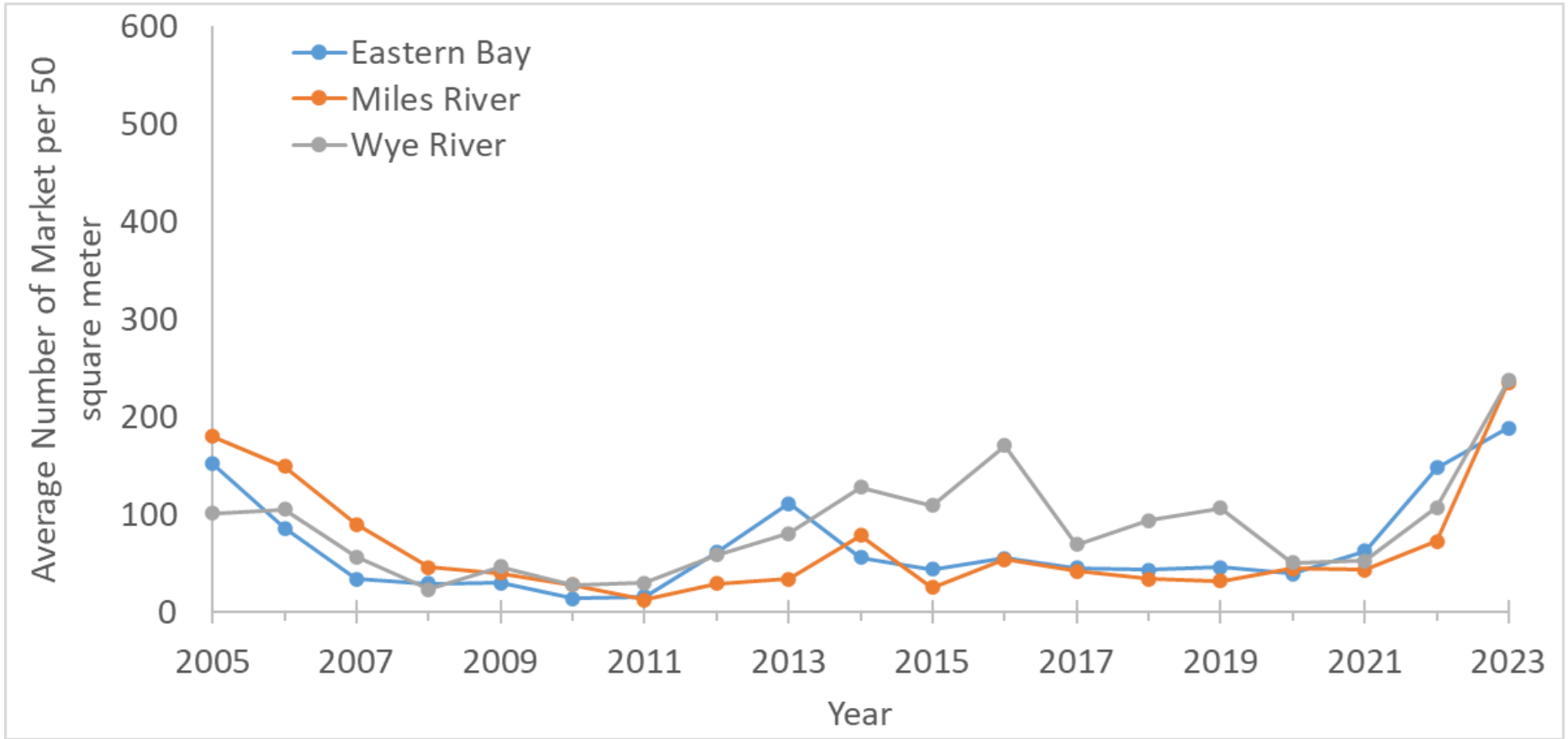


Small-Sized Oysters



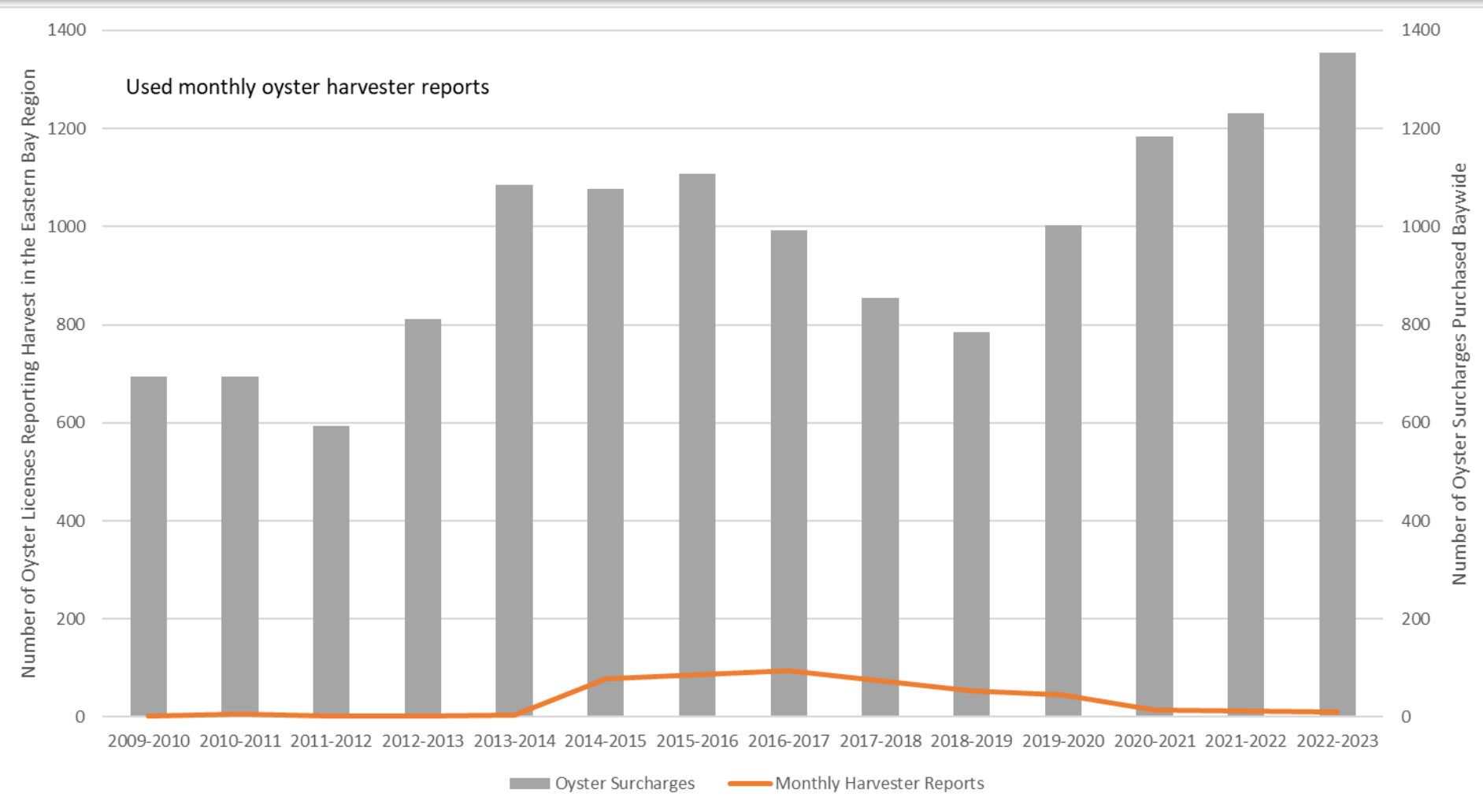


Market-Sized Oysters



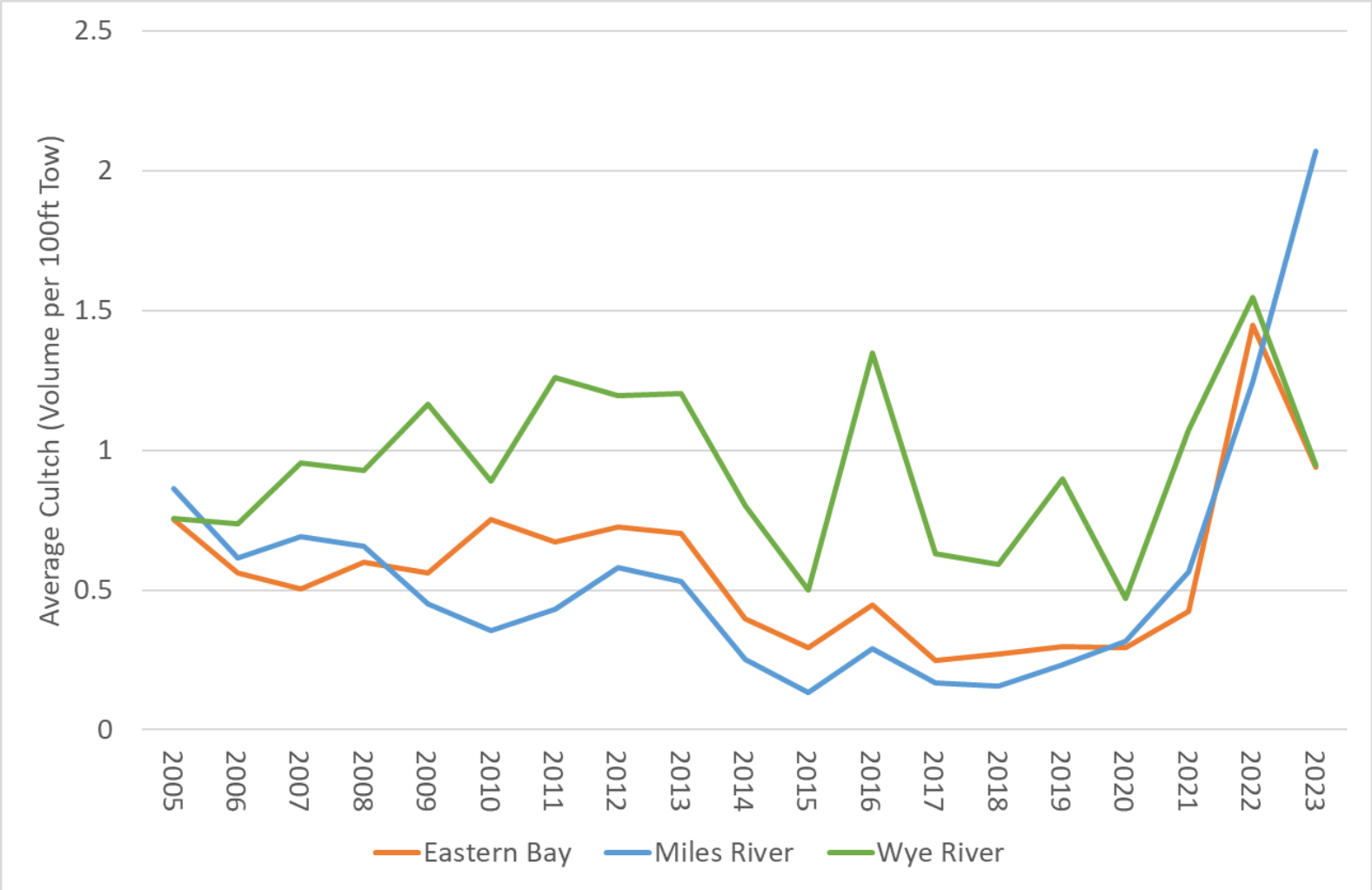


Number of Harvesters





Volume of Cultch



Cultch is defined as live oysters, boxes, and loose shell