



Chesapeake Bay Program
Science. Restoration Partnership.

Tributary Scale Oyster Restoration in the Chesapeake Bay: Setting Goals to Drive Partnerships and Collaboration

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Overview of Oyster Restoration Framework



Policy Drivers

- Executive Order 13508
- 2014 Chesapeake Bay Agreement
- Restore oyster populations in 10 tributaries by 2025

Fish GIT Established

- MD & VA Oyster Restoration Workgroups

Oyster Metrics

- NOAA, USACE, DNR, VMRC, Army Corps, UMD, VIMS + 17 consulting scientists;
- Developed Bay-wide, consensus definition of 'restored reef' and 'restored tributary';
- On-the-ground restoration is now being planned & built to meet these metrics

Through the Chesapeake Bay Watershed Agreement, the Chesapeake Bay Program has committed to...

Goal: *Sustainable Fisheries*

Outcome: *Oyster Restoration*

Continually increase finfish and shellfish habitat and water quality benefits from restored oyster populations. Restore native oyster habitat and populations in 10 tributaries by 2025 and ensure their protection.



Chesapeake Bay Oyster Metrics

The Chesapeake Bay oyster metrics report created a two-prong test for a restored tributary:

- 1. 50% to 100% of 'currently restorable bottom' is restored (to the reef-level success criteria). 'Currently restorable bottom' is, at a minimum, area with water quality suitable for oysters, and hard substrate.**
- 2. The restored acreage should be 8% to 16% of historic oyster habitat in the trib.**



Restoration: The Big Shift

Past (1997-2009)

- Small- unable to impact oyster populations
- Poor results
- Scattered
- Conflicting goals
- Avoid disease
- Illegally harvested
- Poor records keeping
- Little monitoring

Present (since 2010)

- Large
- Concentrated in select tributaries
- Clear goals
- Confront/manage disease
- Coordinated agency efforts including monitoring
- Adaptive Management of sites for success

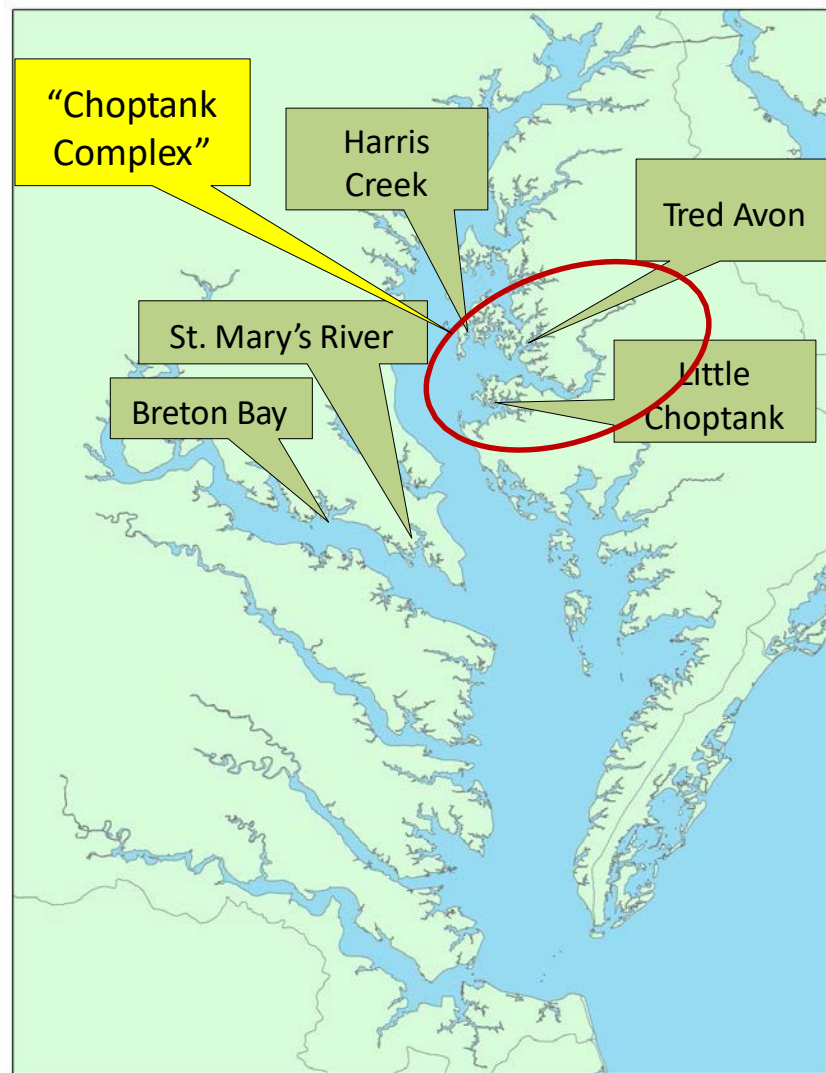
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Progress in Maryland

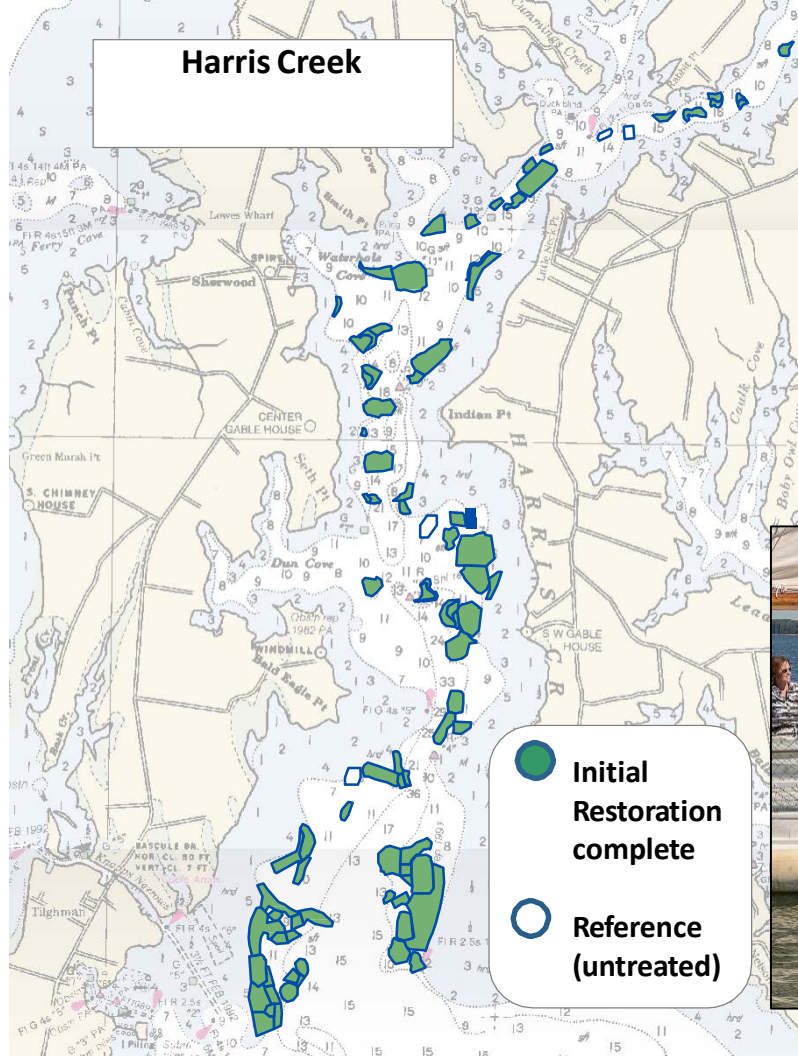
Maryland

Maryland Interagency Oyster Restoration Workgroup

- NOAA (*chair*)
- Army Corps of Engineers-
Baltimore District
- MD Dept. Natural
Resources
- Oyster Recovery
Partnership
- Trib-specific
consulting
scientists



Harris Creek

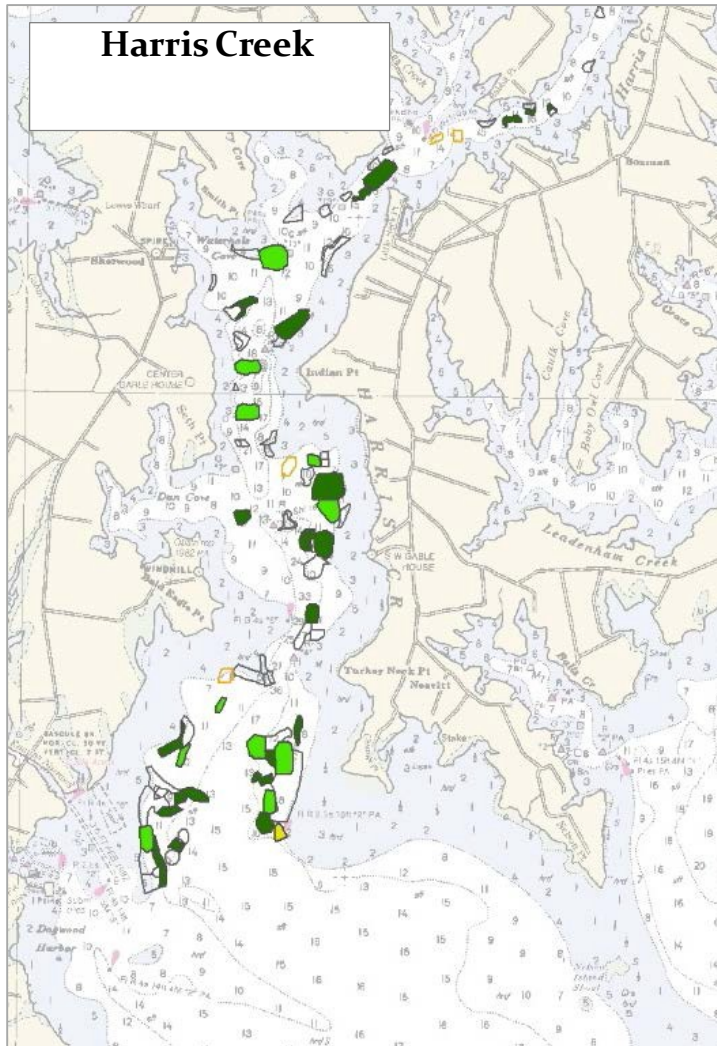


Initial Restoration Complete Sept 2015

- Started in 2011
- 350 acres
- 2.5 billion oyster seed (produced by Univ of MD & Chesapeake Bay Foundation)
- \$28.34 million



Harris Creek



Monitoring:

Each reef monitored three years and six years post restoration

- Built 2012 = monitored in 2015;
- Built 2013 = monitored in 2016;
- Built 2014 = being monitored now.

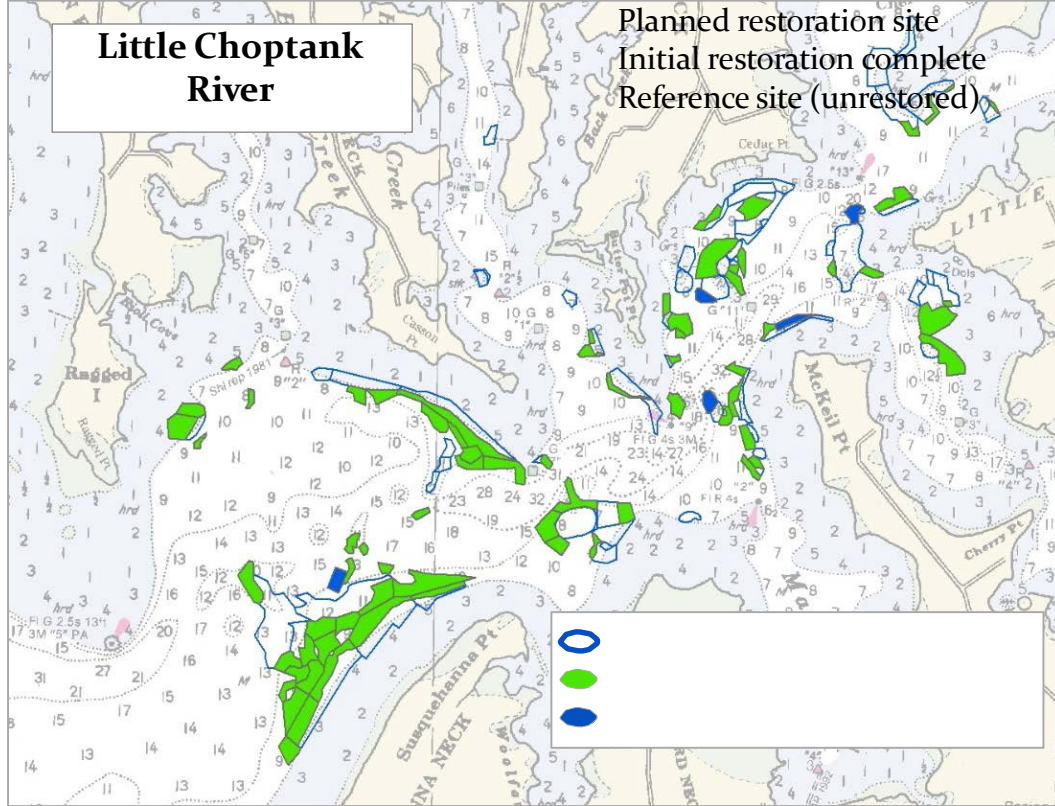
Results:

192 acres monitored to date (2015 & 2016 combined)

- 98% meet Oyster Metrics minimum threshold for biomass & density
- 60% also meet Oyster Metrics target for biomass & density;
- 2% fail to meet minimum threshold

Fun Fact: Reefs constructed using a stone base average over three times the oyster density found on the shell-base reefs.

Little Choptank River



Planned restoration site
Initial restoration complete
Reference site (unrestored)

Tributary Plan ('Blueprint')

- Oyster Metrics goal = 340-680 acres
- Restoration target = 440 acres

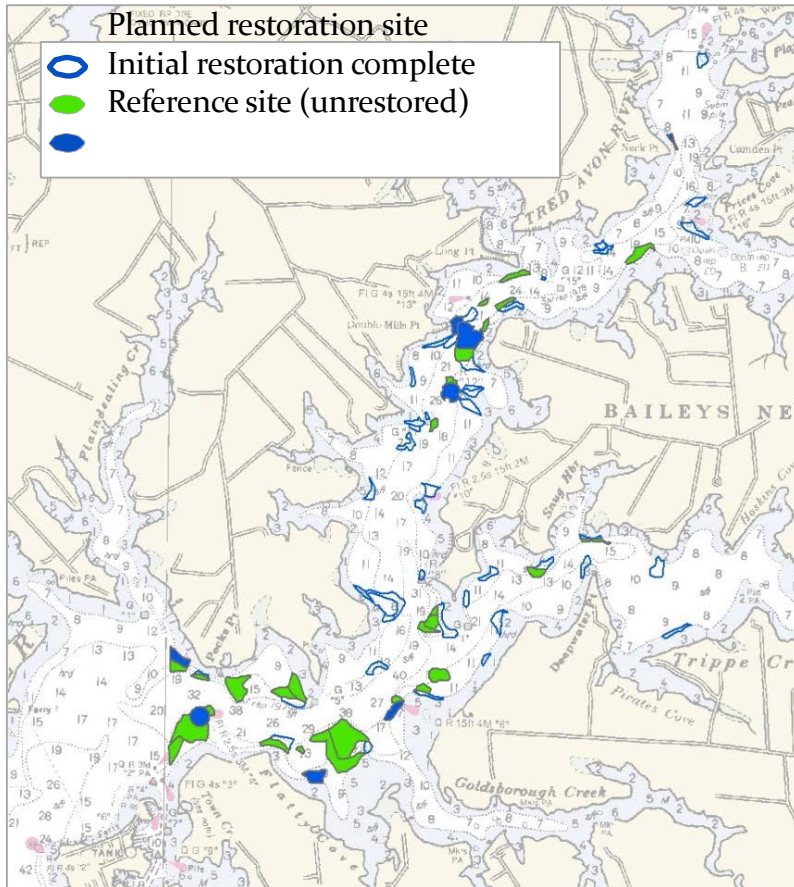
Implementation

- Restoration complete on 239 acres
- 1.1 billion spat on shell planted (produced by University of MD & Chesapeake Bay Foundation)



Photo:
Oyster Recovery Partnership

Tred Avon River



Draft Tributary Plan ('Blueprint')

- Oyster Metrics goal = 125- 250 acres
- Restoration target = 147 acres

Implementation

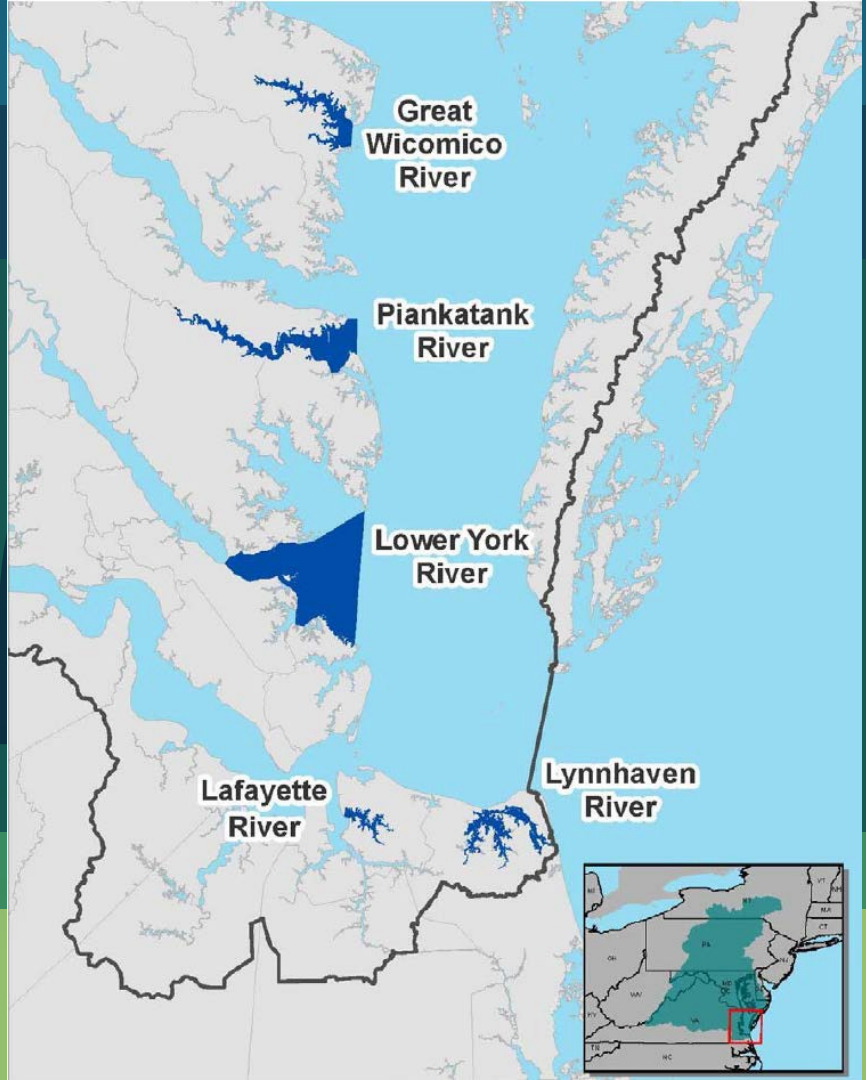
- Restoration complete on 80.8 acres;
- 380 million spat-on-shell planted (produced by University of MD & Chesapeake Bay Foundation)

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Progress in Virginia

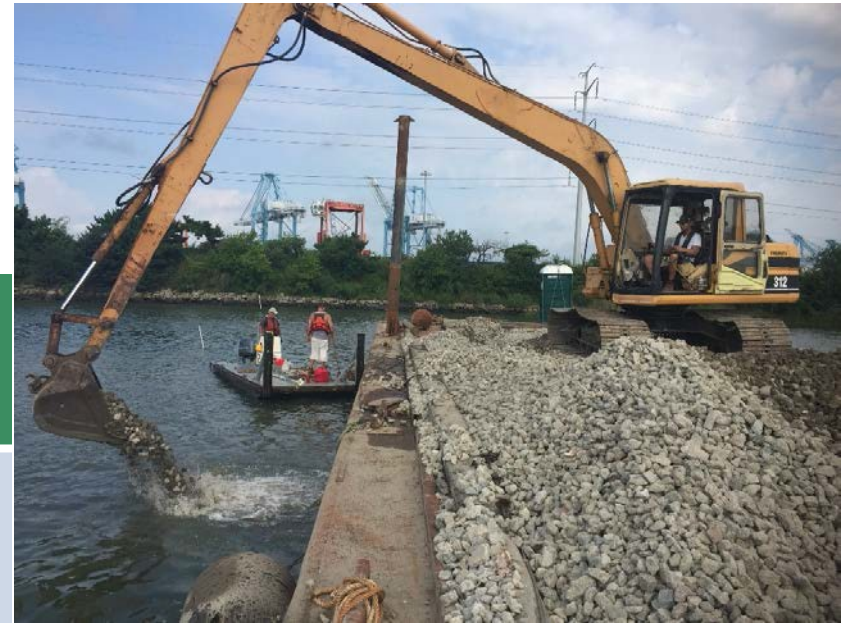
Virginia Oyster Restoration Map:

- Five Selected Tributaries: Piankatank, Lynnhaven, Lafayette, Great Wicomico, and Lower York.
- Restoration efforts to date focus on Piankatank, Lafayette, Great Wicomico and Lynnhaven Rivers.
- Stakeholders include:



Lafayette River

Restoration Goal	Total Restored	Remaining
80 acres	80.5 acres <i>(Relict = 48; Restoration Projects = 32.5)</i>	0 acres Monitoring will confirm metrics



- The Lafayette River Geodatabase was developed by the Workgroup with spatial information relevant to oyster restoration.
- ERP and CBF received \$400K to construct remaining 5.5 acres with National Fish and Wildlife Foundation Funding from the Chesapeake Bay Program. CBF also planted spat on shell and installed reef balls within the 5.5 acres.

Piankatank River (25 acres)

Restoration Goal	Total Restored	Remaining
409 acres	234 acres	175 acres



- In 2017, USACE constructed a 25-acre granite reef with spaced, linear rows.
- The Piankatank Geodatabase was updated with the latest information from USACE and VMRC.
- The Piankatank Oyster Workgroup analyzed VOSARA data to determine the tributary contains 234 acres of successful, existing reefs.
- The Workgroup reached consensus on the Restoration Goal and path forward.
- USACE will conduct monitoring in FY 18/19.

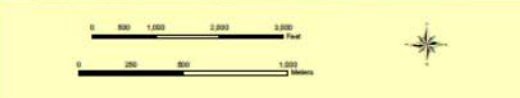


Legend

- Phase 1 Reef #2
- Proposed Reef
- VMRC Reef
- VMRC/TNC Reef
- VMRC Seed Reef



Chesapeake Bay Oyster Recovery Project
Piankatank River, Virginia
 May 2017



Project:
Virginia Shoreline
South Zone - NAD 83
U.S. Survey Feet

Base Map:
ESRI Online Imagery

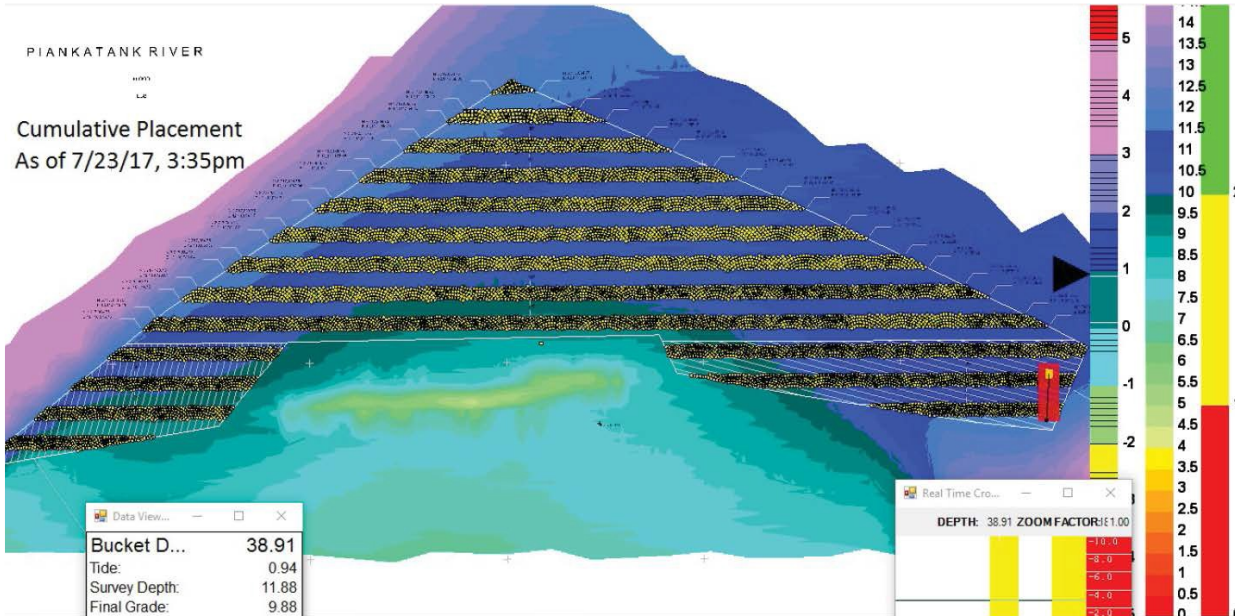
Project Manager: Kimberly A. Pison-Baggett
 E-mail: Kimberly.A.Baggett@usace.army.mil
 Phone: (757) 205-7673

Prepared by: Katie Dodge
 Geospatial Section

Map File: Piankatank_Sites_May_2017.mxd
 Map Date: May 17, 2017



Piankatank River



Employed the use of “Clamvision” for tracking placement by the contractor.

Piankatank River



Stakeholders from the entire Chesapeake Bay Watershed dedicating the reef in the Piankatank (June 2017).

Piankatank Reef Facts

- **25 acres of reef coverage in a spaced linear alignment**
- **29,034 tons of quarried granite used**
- **9.5 barges loaded to complete the project**
- **Each barge load=3,400 tons of granite**
- **Project Duration May 17 – July 24 (about 9 weeks)**
- **Total Cost: \$2,082,699**

Lynnhaven River

Restoration Goal	Total Restored	Remaining
152 acres	92 acres (56 acres subtidal +36 acres intertidal)	60 acres



- Lynnhaven River Now constructed 2 acres of reef habitat in the Western Branch of the Elizabeth River.
- NOAA completed survey work in high priority restoration areas in shallow areas of the eastern and western branches.
- USACE will conduct monitoring in FY 18/19.
- This river is the site of USACE's Lynnhaven River Basin Ecosystem Restoration Project which will result in 38 future acres of reef construction.

Great Wicomico River

Restoration Goal	Total Restored	Remaining
TBD	61 acres	TBD

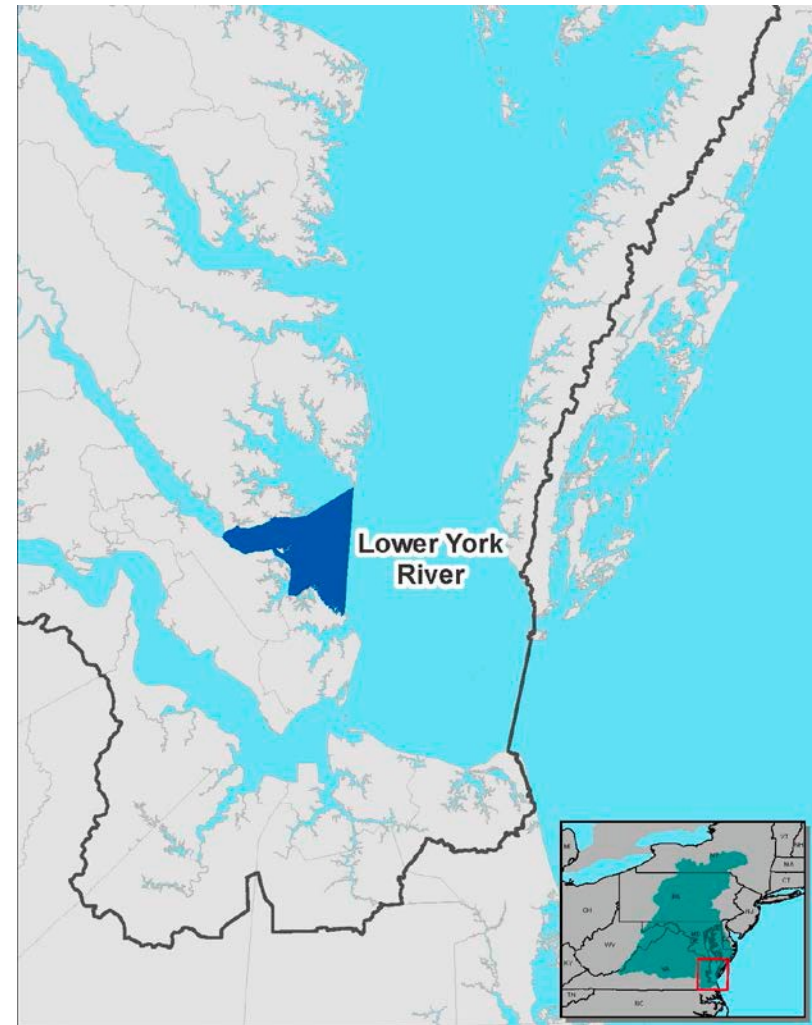


- Selected as one of the next tributaries for oyster restoration in Virginia.
- In 2003 and 2004, USACE used shell to create 85 acres of reef habitat.
- To date 61 acres meet the Oyster Metrics Success criteria. Reef rehabilitation and adaptive management has occurred over time.
- The population of oysters in Great Wicomico has been self-sustaining since 2004.
- Monitoring of reefs will be conducted in FY 18/19 in order to begin preparing the Draft Tributary Plan and establish a Restoration Goal for the river.

Lower York River

Restoration Goal	Total Restored	Restored in 2017	Remaining
TBD	TBD	0 acres	TBD

- The Western Shore Virginia Workgroup plans to initiate oyster restoration planning in the York in 2018.



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Summary of Progress Bay- Wide Progress



What is our Bay-wide progress?

Maryland

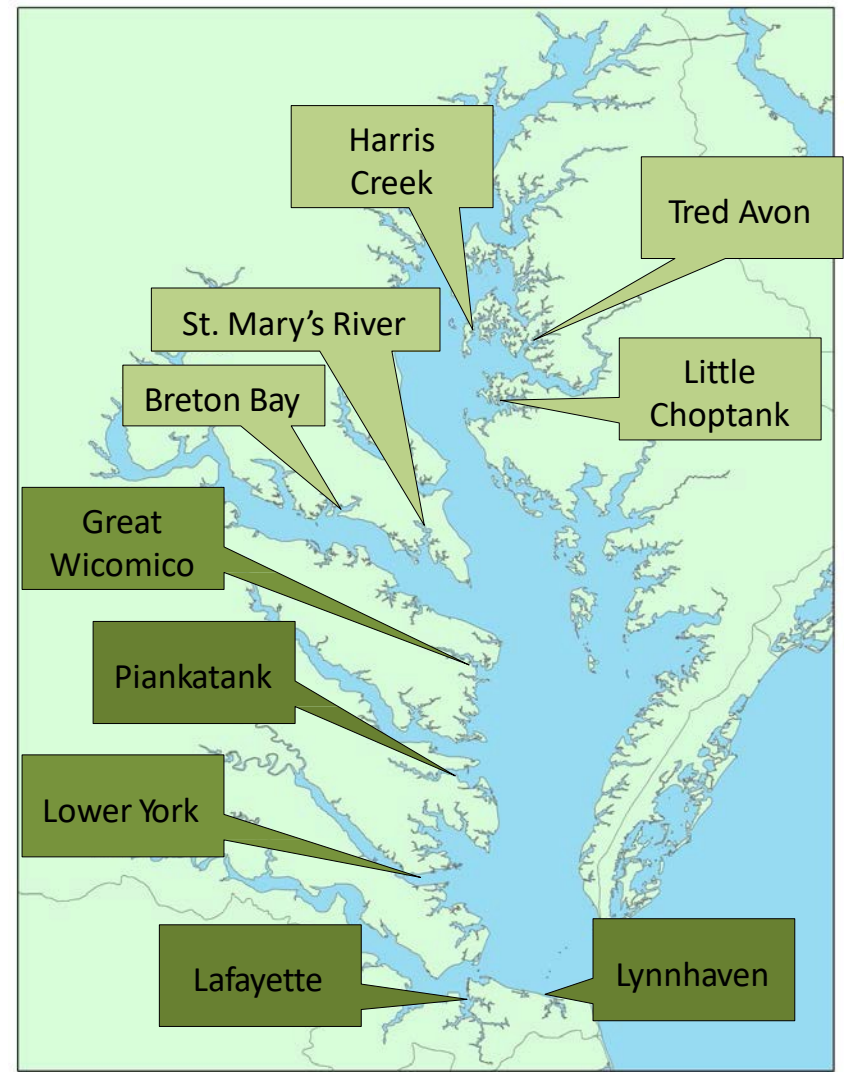
Selected Tributaries:

- Harris Creek
- Little Choptank
- Tred Avon
- St Mary's (*recommended*)
- Breton Bay (*recommended*)

Virginia

Selected Tributaries:

- Lafayette
- Lynnhaven
- Piankatank
- Great Wicomico
- Lower York





What is our Bay-wide progress?

- Ten tributaries selected/
recommended Bay wide.
- Four completed restoration plans
- Initial restoration complete in two
tributaries.
- 803 acres of restoration projects Bay
wide
- Monitoring phase started in one
tributary; 98% of monitored reefs
there meet Oyster Metrics success
criteria three years post restoration.

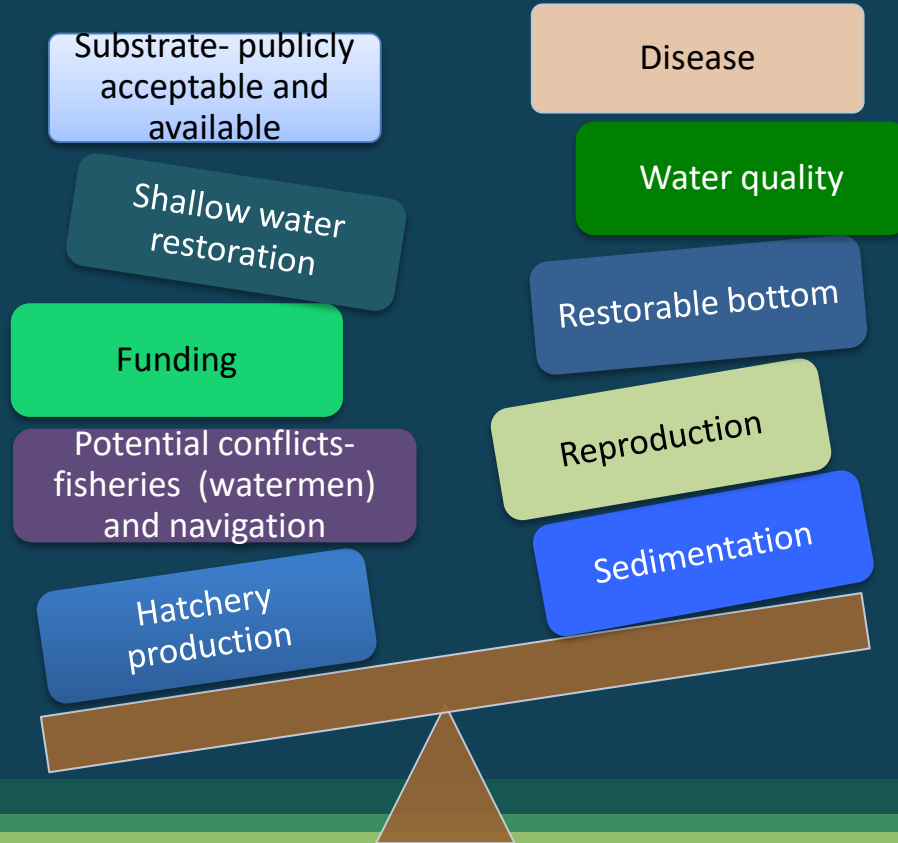


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Challenges:

Challenges



Questions?

