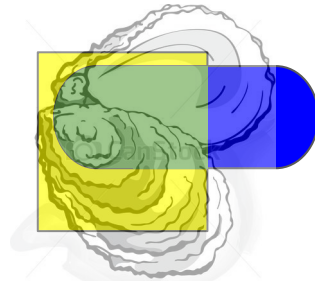


Adaptive Management: Updating the Oyster Restoration Framework (Not the Metrics)



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Executive Committee

- Updating the Oyster Restoration Framework is a result of observed gaps in restoration logic, standards, and consistency. We'd like to share what those gaps are and how we can best address them.
- Our request is an endorsement of this Updated Framework on those tributaries that are either unnamed or without a tributary plan.

Set Up

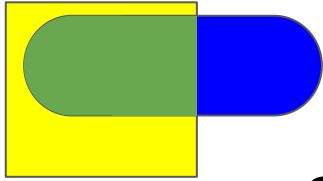
- Distinguishing and standardizing *how we set the goal* and *develop consistent targets* from *where we restore* and from *what is counted toward meeting the goal* are critical steps to advance Large-Scale Oyster Restoration.

Why Review

- Five years of conversations and data on restoration processes have generated an opportunity to discuss what's working, where challenges remain and ways to address them
- Standardizing the process, where practical, eliminates some level of subjectivity and inconsistency
- Terminology is important. Some terms have been used interchangeably confusing their intended purpose and/or misinterpreted
- Restoration is expensive and using everyone's investment and time effectively and efficiently is a key to success

Terminology

- **Goal Setting**- the process of determining the amount of **currently restorable oyster habitat** a system has and once had in an ecologically productive state
- **Currently Restorable Oyster Habitat**- **Evidence based oyster habitat** within the restoration constraints determined by the workgroups
- **Evidence Based Oyster Habitat**- the seabed observed by remote sensing and ground truth data informed by historical information that either currently or in the past contained productive oyster bottom
- **Historical Oyster Habitat**- oyster habitat that has occurred in the past
- **Restorable Bottom** -hard seabed that permits the best chance of subtidal oyster restoration success informed by suitability indices
- **Restoration Targets**- agreed upon percentage equal to or greater than half of the determined 100% of **Currently Restorable Oyster Habitat**



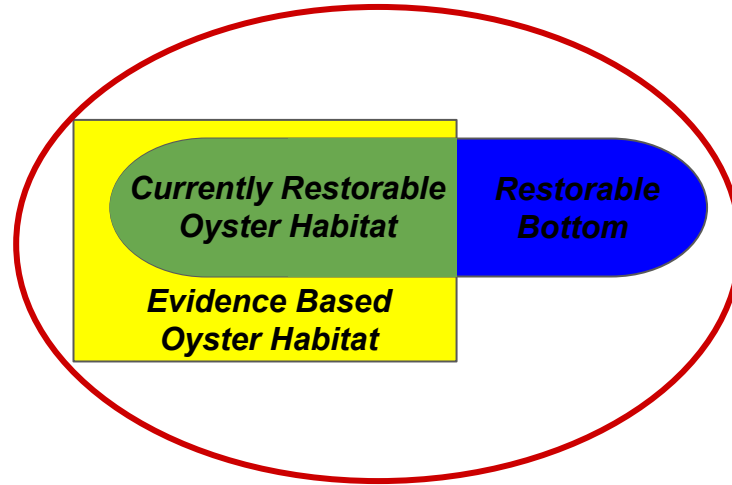
Standardizing Goal Setting: Setting and Tracking the Denominator

Part One in the Series: *Updating the
Oyster Restoration Framework*

Restoration Acreage Goal Setting (Subtidal Subtext)

- Original Method: Quantify *Restorable Bottom* to determine 100%
 - Variables:
 - 4' upper depth limit (approximate survey extent and approximate historic SAV habitat)
 - Tributary specific lower depth limit (proxy for DO and where you would restore)
 - Hard bottom (Includes sand & muddy sand seabeds in addition to viable oyster habitat)
- New Method: Quantify *Currently Restorable Oyster Habitat* to determine 100%
 - Variables:
 - Removes upper depth limit to be able to include historical oyster habitat
 - Quantifies all restorable oyster habitat above tributary specific lower depth limit (proxy for DO)
 - Excludes sand and muddy sand seabeds, unless evidence of some substantive shell quantity is observed
 - Does not designate *Restorable Bottom*, just sets the goal

Goal Setting Proposal- Set the Denominator



System that you wish to restore populations and ecological services



Area of **Currently Restorable Oyster Habitat**- sets 100% for any system



Area of **Evidence Based Oyster Habitat** (informed by historical oyster data)



Area of workgroup approved **Restorable Bottom** - designates the best place to restore in a system

Implications of the Proposed Goal Setting Method

- **Working groups operating in** dynamic and shallow tributaries with little *evidence based oyster habitat* are not artificially burdened with increased acreage associated with sand and muddy sand seabeds to determine their goal
- **Working groups operating in** larger, deep tributaries with significant *evidence based oyster habitat* do not have the added burden of including sand and muddy sand sea beds to determine their goal
- With **standardized** methods for setting the goal, flexibility to meet the goal is placed within the workgroup structure
- **Restorable bottom** gives the workgroup the flexibility to conduct/construct restoration in areas that avoid use conflicts

Is there a Metric Challenge with this change?

- **Current Metric Language**

- *In accordance with this analysis, the workgroup suggests that an operational goal of restoring 50 -100% of **currently restorable oyster habitat** represents a reasonable target for tributary-level restoration. [This is different than currently restorable bottom!]*

- **Behind the Language**

- *Specifically, the goal of oyster restoration at the tributary-level is to dramatically increase oyster populations and recover a substantial portion of the ecosystem functions provided by oyster reefs within the tributary.*
- *Our underlying assumption is that achieving this goal will require the successful functional restoration of a significant proportion of the historical oyster reefs within a tributary.*
- *It is necessary, therefore, to establish target levels for restoration activity within a tributary that constitute operational or intermediate measures of success that facilitate restoration planning and implementation.*

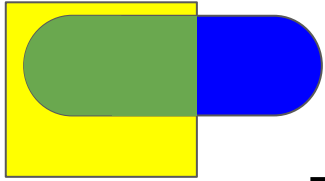
Implications- (Draft Numbers)

Numbers are in acres	Little Chop	Harris	Tred Avon	Lafayette	Lynnhaven	Piankatank
Tributary Plan RBA 100% Goal (final in MD only)	685	600	251	146	TBD	924
50% of goal	342.5	300	126	73	TBD	512
Plan target (acreage and %)	440/64%	350/58%	147/58%	80/55%	TBD	TBD
New Method (100%)	717	454	249	120	108	790
Minimum restoration target	358.5	227	125	60	54	395

Lynnhaven River numbers represent a starting point. 108 Acres are the Currently Restorable Oyster Habitat per the geodatabase and does not include any historical evidence based areas that may be included to an updated 100%

Tracking the Denominator

- Current method of tracking the denominator determined by the work group is to keep the 100% it is based upon as static
- The dynamic version of tracking the denominator (our targets) is to account for bottom lost to restoration by any number of reasons but specifically bottom lost to ground truth.
 - The area taken away should be reflected in the 100%, ultimately lowering our 50% target in a defensible manner.

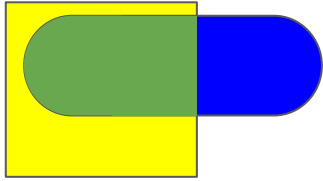


Restorable Bottom: Consensus On Where it's Best

Part Two in the Series: *Updating the
Oyster Restoration Framework*

Restorable Bottom

- No changes are proposed
- Workgroups define the extents and ranges of what is “restorable” subtidally within a tributary (defines *Currently Restorable Oyster Habitat*)
 - **Does NOT exclude intertidal restoration from occurring (spoiler: and being counted)**
- Workgroups maintain the flexibility to revise extents and ranges as they see fit
 - Includes the use of *Geographically Distinct Sub-segments* of a tributary

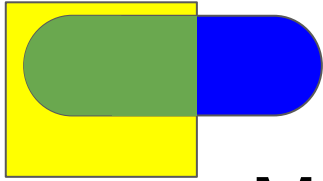


What's In a Target?

Part Three in the Series: *Updating the Oyster Restoration Framework*

Standardizing the Targets

- Federal Partners Target
 - For the purpose of the CBP Goal of 10 by 2025, consistent targets that provide a set buffer (some small % over the minimum) need to be the benchmark for handoff to a locality, state, NGO or other partner
 - In time of tight budgets, it will be difficult for Federal Partners to justify spending that exceeds the minimum target (with buffer)
- Other Partners Target (Set By NGOs, etc.)
 - Sets higher targets and builds off of the federal and state investment
 - Contributes to meeting the minimum target (these efforts will be counted)



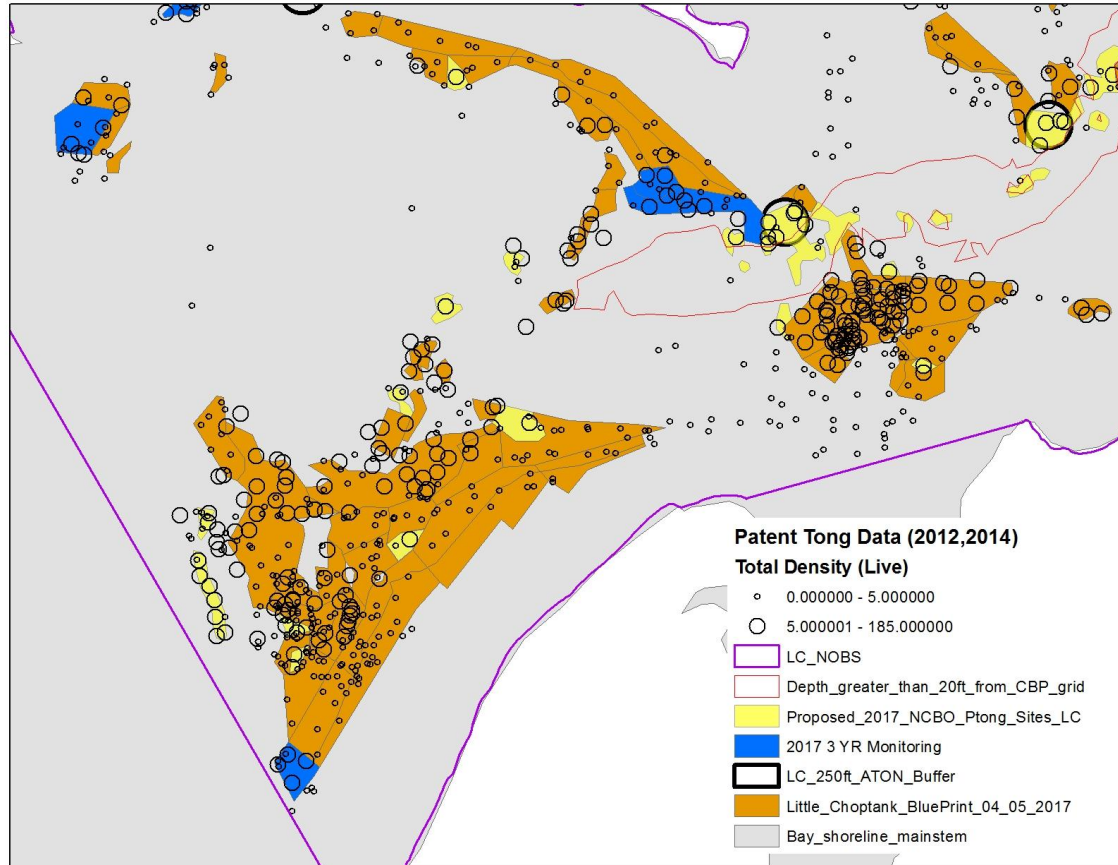
Monitoring Toward the Target: Adding to the Numerator

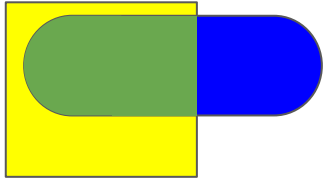
Part Four in the Series: *Updating the
Oyster Restoration Framework*

Monitoring Toward Target: It All Counts

- Count what's been restored (subtidal reefs and intertidal projects)
 - Current methods count the subtidal reefs
 - Intertidal area values per restoration type can be standardized
- Count what persists and/or benefits outside of where you've restored
 - If restoration is successful, adjacent oyster habitat may benefit and could meet the metric
 - Historic oyster bottom outside what is restorable may have annual monitoring that captures the persistence and size of a population; this counts
 - As we develop methods to monitor all of the restored sites with sufficient statistical rigor, we recognize a need to look at adjacent bottom that may benefit from its proximity to restored sites

Monitor Adjacent to Restored Sites (Yellow Polygons)





The Tributary Plan

Part Five in the Series: *Updating the
Oyster Restoration Framework*

Tributary Plans and Adaptive Management

The Little Choptank River Oyster Restoration Tributary Plan is meant to be an adaptive, living document. The expectation is that there will be many lessons learned, and that the plan will be adapted to reflect changing conditions and new information as restoration and monitoring progress. Continued dialogue with the consulting scientists, interested stakeholders, and the public is critical to this adaptive process.

*Comments on this document are encouraged at any time, and can be directed to
Stephanie Westby, Stephanie.westby@noaa.gov.*

Implications for the Tributary Plan

- Tributary Plan addresses each of the Four Parts
 - 100% Goal Acreage, Anticipated Restorable Bottom, Target with Buffer, Accounting
- Partners identify their potential contributions and/or responsibilities
 - Tributaries will have their benefactors which aren't always the same groups
 - Everyone should see themselves in the plan, including the NGO's contributing toward permanent ecosystem improvement (oysters on the bottom)

Wrap Up (the Ask revisited)

- Recognize our Regional Approach as the “New” Restoration Framework
- Endorse application of this Updated Framework to tributaries currently without tributary plans and to any newly selected tributaries