Sustainable Fisheries GIT

The Sustainable Fisheries Goal Implementation Team (SFGIT) draws together a diverse group of managers, scientists and fishery stakeholders to improve management and recovery of species in the Chesapeake Bay.

The team focuses on advancing ecosystem-based fisheries management by using science to make informed fishery management decisions that cross state boundaries.

Institutions represented on the SFGIT include state management agencies, federal agencies, industry groups, non-profits and academic institutions that meet as the full SFGIT twice a year.

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Workplans

The Chesapeake Bay Program is working to achieve the 31 outcomes outlined in the 2014 Watershed Agreement. The SFGIT is responsible for the sustainable fisheries goal associated five outcomes: Blue Crab Abundance, Blue Crab Management, Oyster Restoration, Forage, and Fish Habitat (jointly led with the Vital Habitats Goal Implementation Team).

2014 Watershed Agreement → 2015 Management Strategies → 2016 – 2017 Workplans

In 2015, Management Strategies for each outcome were finalized. These documents outline approaches and high-level actions that will be taken to achieve each outcome by the year 2025, including monitoring, assessment, reporting of progress, and adaptive management. The strategies are supported by two-year workplans summarizing specific commitments for 2016-2017.

Blue Crab

Plan and implement stock assessment.
Support annual review of blue crab stock status.
Evaluate allocation-based framework.

Oysters

Select tributaries.
Collect data, set targets.
Develop and implement plans.
Track and monitor restoration.

Forage

Define forage species
Develop indicators.
Determine status
Increase monitoring.
Inform decisions.
Map important habitats.

Fish Habitat

Identify threats.
Compile data.
Develop tools and thresholds.
Enhance protection.
Communicate fish habitat importance.

The December 2016 SFGIT meeting agenda was designed to highlight progress toward each of the fisheries outcomes, with a particular focus on the oyster restoration outcome on the first day.

Oyster Restoration Workplan

Oyster Restoration Outcome: 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.

Recent Activity

- Initiated tributary selection process in MD and VA
- Monitoring reefs post-restoration in Harris Creek
- Continuing restoration in Little Choptank and Tred Avon
- Setting targets and initiating tributary planning in VA
- Developed draft progress indicator for CBP
- Working with stakeholders to refine restoration plans
- Received GIT funding for shell budget study

Issues

- Securing funding for monitoring and implementation
- Shell and larval availability

Next Steps

- Final selection of tributaries
- Communicate results from Oyster Reef Ecosystem Services research
- Monitor toward success metrics
- Continue to implement restoration in selected tributaries

Please see Emilie Franke's presentation for more information.

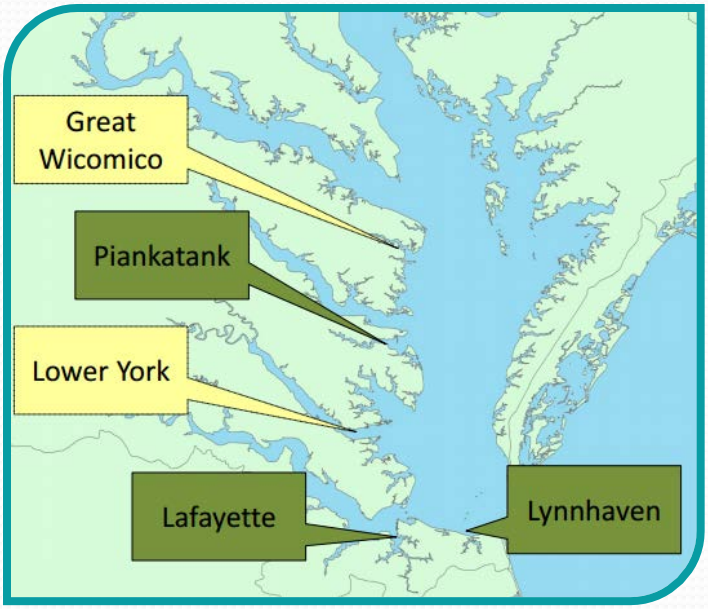
Virginia Oyster Restoration

Lafayette

Of the 80 acre total goal in the Lafayette River, 48 acres of naturally existing reefs meet the success criteria for restored reefs, and 22.5 acres have been actively restored through various projects. New construction of the remaining 9.5 acres is needed to meet the target.

Piankatank

The restoration goal will be between 514 to 1028 acres. A population survey is needed to determine the amount of acreage that is currently "functioning as restored" per the success metrics. The Nature Conservancy constructed 21.5 acres in 2014 and 3.5 acres in 2015. United States Army Corps of Engineers (USACE) Norfolk will construct approximately 25 acres in spring 2017 using an innovative spatial design which aims to maximize ecological benefits per unit cost.



Virginia's three selected tributaries, the Lafayette, Piankatank, and Lynnhaven have restoration work planned or in progress to meet restoration targets. The Great Wicomico and Lower York have been proposed for future restoration.

Lynnhaven

The Lynnhaven River restoration target will be between 90 to 200 acres. A draft Restorable Bottom Assessment was developed to further refine the acreage restoration target. USACE's Lynnhaven River Basin Ecosystem Restoration Project includes plans for an additional 31 acres of reef habitat in the future.

Great Wicomico

In the summer of 2015, 13 acres were constructed by USACE. 85 acres of oyster reef were originally constructed through previous restoration projects, and 61 of those acres meet the success criteria for restored reefs.

Please see Stephanie Westby and Susan Conner's presentation for additional information.

Maryland Oyster Restoration

Maryland's three selected tributaries: Harris Creek, Tred Avon, and the Little Choptank have received seeding and construction effort. Monitoring is currently occurring in Harris Creek.

Harris Creek

Restoration of 350 acres was completed in 2015. 2015 monitoring of the first cohort (12 reefs planted in 2012) found that all 12 reefs met the threshold density (15 oyster/sq. meter) and half of the reefs met the target density (50 oyster/sq. meter). The second cohort is currently being monitored.

Tred Avon

The Tred Avon River has a total target of 147 acres. As of 2016, 35 acres have been constructed, with 153 million spat on shell planted.

Little Choptank

The total acreage target for restored oyster reefs in the Little Choptank is 442 acres. 45 of those acres already met the conditions for being restored. Restoration has been completed on 178 acres as of 2016.

Please see Stephanie Westby and Susan Conner's presentation and look for an Oyster Restoration update to be published by the Maryland Interagency team in mid-2017.

Oyster Indicator and Dashboard

The Chesapeake Bay Program and SFGIT are committed to providing accurate, up-to-date, and accessible information to stakeholders and interested public. SFGIT staff have developed an indicator and dashboard to communicate oyster restoration progress in a format that's effective, consistent across jurisdictions, and straightforward to a broad audience.

Proposed Indicators

Process: *Where are we in the restoration planning and implementation process?*

Output: *How much restoration (acreage) has been completed?*

The indicator tracks progress towards the outcome of restoring 10 tributaries by 2025. The proposed indicator includes two components 1) a process indicator to track where each tributary is in the restoration process and 2) an output measure (acres restored) to quantify restoration progress toward established acreage targets in each tributary.

The Oyster Dashboard functions as the main communication tool of our progress. It identifies tributaries selected for restoration, provides links to restoration plans, displays progress, and quantifies completed reef acreage of the total target acreage. The Dashboard will be accessible on Chesapeake Progress.

Tributary	Tributary Restoration Plan	Reef Construction & Seeding	Monitoring & Evaluation	Completed/Target Acreage (2015)
Harris Creek (Md.)	Complete	Complete	In Progress	350/350
Tred Avon (Md.)	Complete	In Progress		2.6/147
Little Choptank (Md.)	Complete	In Progress		85.8/440
Piankatank (Va.)	In Progress	In Progress		211/TBD
Lynnhaven (Va.)	In Progress	In Progress		63/TBD
Lafayette (Va.)	In Progress	In Progress		70/80

The Oyster Dashboard conveys the SFGIT's progress towards achieving the outcome. Columns represent major steps in the restoration process (process indicator). Completed reef construction and seeding acreage in each tributary is measured against the total target acreage (output indicator) .

Oyster Reef Ecosystem Services

NOAA provided funding to several institutions to quantify the ecosystem services provided by restored reefs. Combined with additional studies from the NOAA Chesapeake Bay Office and Morgan State University, these projects will inform the scientific and public community on oyster reef ecosystem services .

Nine projects in Maryland and Virginia (listed below) explore the benefits restored oyster reefs provide to water quality, fish utilization, and local economies.

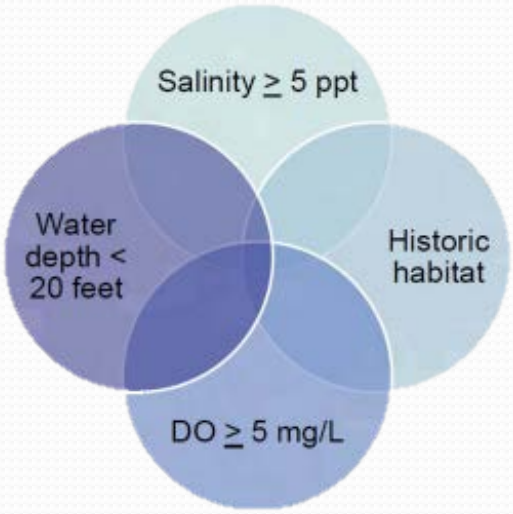
All projects are at varying stages of completion and will be made available in the near future upon completion. Preliminary results can be found in David Bruce's presentation.

Virginia Institute of Marine Science	• Ecosystem Services of Restored Oyster reefs in the Lower Chesapeake Bay
University of Maryland Center for Environmental Science/Virginia Institute of Marine Science	• Macrofaunal and Productivity Utilization, Secondary Production, and Trophic Linkages
Institute of Marine Science	• Fish and Crustacean Utilization, Secondary Production, and Trophic Linkages
University of Maryland Center for Environmental Science/Virginia Institute of Marine Science	• Integrated Assessment of Oyster Reef Ecosystem Services: Quantifying Denitrification Rates and Nutrient Fluxes
University of Maryland Center for Environmental Science	• Natural Engineers in Ecosystem Restoration: Modeling Oyster Reef Impacts on Particle Removal and Nutrient Cycling
Virginia Commonwealth University	• Pathways to Production: An Assessment of Fishery Responses to Oyster Reef Restoration and the Trophic Pathways that Link the Resource to the Reef
Smithsonian Environmental Research Center	• Application of Dual-frequency Imaging Sonar to the Study of Oyster Reef Ecosystem Services
NOAA Chesapeake Bay Office	• Fish Utilization of Oyster Restoration Sties in the Little Choptank River and Tred Avon River Oyster Sanctuaries
Morgan State University	• Choptank River Complex Habitat Focus Area: Quantifying Ecosystem Services

Tributary Selection for Restoration

To accomplish restoration of 10 tributaries by 2025, 4 more tributaries need to be selected by Maryland and Virginia for restoration (2 tributaries each). Both jurisdictions have developed ecological criteria for selecting 2 additional tributaries in each jurisdiction and are receiving feedback from stakeholders through their respective decision-making processes.

These criteria include favorable water depth, salinity, dissolved oxygen, and a history of oyster reef habitat. Other considerations for the candidate tributaries are previous investments, protection, larval retention, an assessment of historical reef habitat, and location diversity from previously selected tributaries.



Based on the Virginia Interagency Team's evaluation, the Great Wicomico and Lower York River are recommended as the next candidate tributaries for restoration in Virginia. Maryland's Oyster Advisory Commission is evaluating candidate tributaries and working to refine their recommendations. The expectation is that when these processes conclude each jurisdiction will have named 5 tributaries (total of 10 Baywide) to restore by 2025 per the Bay Agreement outcome.

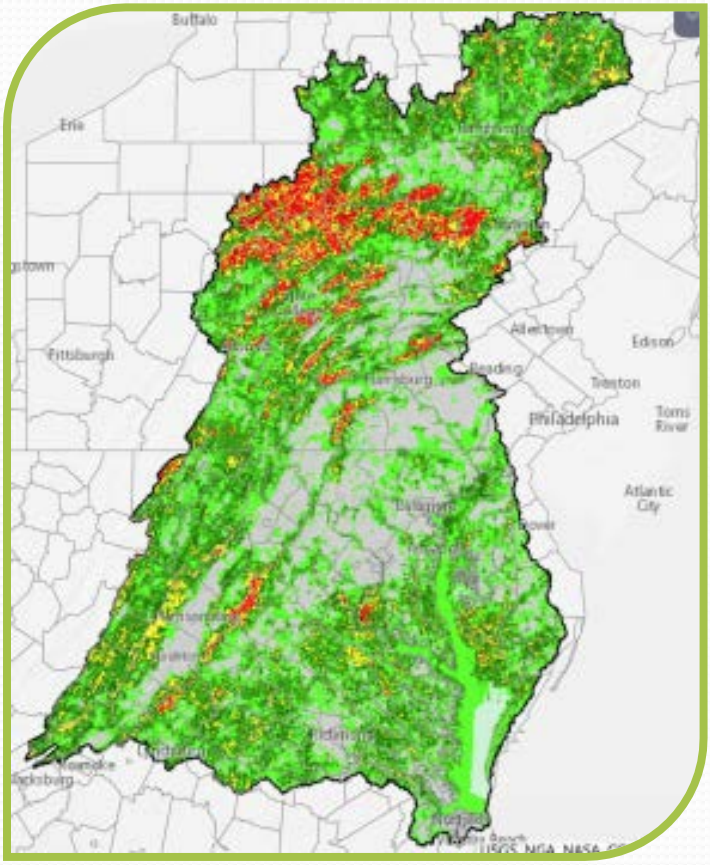
Please view Eric Weissberger's presentation on Maryland's process and Susan Conner's presentation on Virginia's process for additional information.

Oyster Outlook

In November 2016, SFGIT staff brought together fisheries managers and scientists from Maryland, Virginia, and the Potomac River to learn about each other's oyster management practices, challenges, and ideas for enhancing coordination where appropriate.

Managers identified common issues such as lack of shell, insufficient funding/resources, increased demand in the wild fishery, and the continued growth and potential for aquaculture. Managers discussed the need to work across jurisdictions to identify options to address shortage of shell and to discuss hatchery production limitations.

Cross Goal Implementation Team Collaboration



The Conservation composite map consisting of 10 data layers contributed by the Goal Implementation Teams. Red indicates strong overlap between layers.

The Chesapeake Bay Program consists of six goal teams which each focus their efforts on achieving a subset of the 31 outcomes in the 2014 Watershed Agreement. Kristin Saunders, Cross Program Coordinator at the Chesapeake Bay Program, develops strategies to enhance collaboration between the goal teams to improve the efforts of the program.

Kristin identified potential linkages between the goal teams to broaden membership voices, share limited resources, and shift focus to issues in addition to water quality.

Goal teams are collaborating to develop a map overlaying data layers from multiple outcomes to identify areas where concomitant benefits could be achieved through restoration and/or conservation efforts. The driving mission is to visualize the data, focus our joint efforts, and tell stories through our achievements.

To read more about how the goal teams are collaborating, please see Kristin Saunders' presentation.

Forage Outcome

SFGIT members broke into two groups to discuss the forage and fish habitat workplans. Members received a briefing on recent activity, issues, and projected next steps for each outcome. Discussions focused on how we can continue to progress on current activities.

Forage Activity	Issues	Next Steps
• Forage indicators and consumption profiles report released • Study to investigate drivers of forage population trends is underway • Convened quarterly Forage Action Team meetings • The Chesapeake Bay Program is producing a forage public outreach video • Collaborating with student to test forage sampling gear for application in citizen monitoring project • Provided public comment supporting Mid-Atlantic Fishery Management Council forage amendment.	• Communicating additional monitoring needs to Chesapeake Bay Program (shallow water and plankton)	• Determine how to utilize and apply forage indicator options • Determine if the management strategy and workplan satisfy requirement to develop a strategy for assessing the forage fish base available as food for predatory species • Complete forage video

Forage breakout groups emphasized the need to:

1) Identify regional differences in forage trends and predator consumption within the Bay,
2) Document the components of the "strategy" referenced in the outcome and explain how we will use the reports from the past two years to move forward, and
3) Evaluate water quality, habitat and other environmental drivers in addition to predation.

Fish Habitat Outcome

Fish Habitat Activity	Issues	Next Steps
• TetraTech completed a literature review and matrices on habitat stressors and threats. Team members are synthesizing the information into an executive summary. • Convened quarterly Fish Habitat Action Team meetings • Began project to highlight challenges facing tidal wetlands and recommend action by the Chesapeake Bay Program. • Recruited Gina Hunt to coordinate Fish Habitat activities and implementation • Engaged with Local Government Advisory Committee	• Large scope for outcome, need to focus workgroup efforts	• Continue developing Tidal Wetlands and Shorelines whitepaper. • Get input from team on communication products and audience. • Continue outreach to local governments, planners, and leaders.

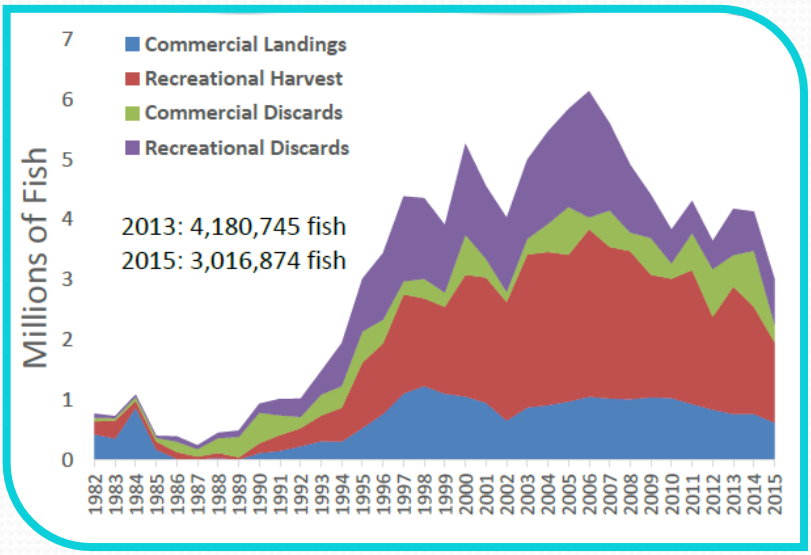
Fish Habitat breakout groups recommended that the team:

1) Continue with tidal wetland and shorelines project by refining the target audience,
2) Utilize communication techniques such as storytelling, connecting cultural and economic interests, and keeping the focus local to generate stronger engagement, and
3) Prioritize efforts on habitats that are strongly correlated with forage productivity.

Atlantic States Marine Fisheries Commission Update

Striped Bass

The 2013 striped bass stock assessment established a new target and threshold, which were reflected as an addendum to the fishery management plan. A 20.5% reduction in the Chesapeake Bay quota, 25% quota reduction for the coastal states, and a 1 fish bag limit coastwide were implemented in 2015. The Atlantic States Marine Fisheries Commission is currently receiving 2015 harvest numbers, however initial reports show that the overall reductions were achieved. The next benchmark assessment will be conducted in Fall 2018.



Striped bass landings across sectors for the Atlantic Coast.

Menhaden

The 2017 total allowable catch is set at 200,000 million tons, which is approximately a 6% increase from 2016. There will be a new socioeconomic study and stock assessment study in 2017. The Atlantic States Marine Fisheries Commission will review public comments in early 2017 regarding ecological reference points and options to allocate the resource among the states, regions, and user groups.

Cobia

Cobia will have complementary management by the South Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission. General trends indicate that harvests in state waters have been increasing in recent years. Public hearings are occurring in several states, and will be reviewed by the board in February 2017 to direct fishery management plan development.

Please see Patrick Campfield's presentation.

Blue Crab Workplan and Update

Maryland, Potomac River Fisheries Commission, and Virginia managers discussed the current status and plans moving forward for three blue crab topics:

- **Stock Assessment**: Jurisdiction staff will lead a stock assessment update focused on updating data inputs to rerun the stock assessment model developed in the 2011 benchmark assessment.

- **Evaluation of Allocation-based framework**: Maryland's Tidal Fish Advisory Commission, Virginia's Marine Resources Commission Crab Management Advisory Committee, and the Potomac River Fisheries Commission submitted concerns about a blue crab allocation management framework. Based on this input and discussion, jurisdictions will determine whether to continue with the evaluation and document their findings.

- **Male size limits**: In summer 2016, the Fisheries GIT received letters proposing an increase in male hard crab size limits Baywide. Chesapeake Bay Stock Assessment Committee discussed this proposal from a scientific perspective in September 2016. As of December 2016, there is not broad support among the jurisdictions to move forward.

Day 1 Meeting Takeaways

Actions in green
Key discussion points in blue

Oyster Workplan

- Significant progress made in MD and VA
- Select next tributaries in MD, continue implementing tributary plans, monitor restored reefs

Restoration Status

- Continue to utilize science-based and dynamic processes to incorporate existing resources and public input into restoration practices
- Significant progress has been made with early signs of success in Harris Creek
- Communicate scale difference in acreage targets between MD and VA tributaries
- Need to plan for increased monitoring requirements and cost
- Consider permanence of reefs for ecological benefit
- Interest on update for half moon reef oyster restoration project in Texas to compare notes
- Compile list of alternative substrate applications and effectiveness
- Organize a briefing for interested Goal Implementation Team members by NOAA representatives on Atlantic Sturgeon critical habitat designation in the Chesapeake and implications for oyster restoration and other activities

Oyster Indicator

- Add acreage numbers to the maps on Chesapeake Progress
- Add language explaining what acreage measures and clarifying "true" success measures and monitoring requirements after reef construction/seeding is complete
- Over longer term, develop an indicator that captures success metric data
- Explain other benefits provided by the reefs

Oyster Reef Ecosystem Services

- Denitrification on reefs increases with reef age/maturity
- Organisms on the reef are also important to denitrification
- Timeframe for seeing quantifiable increase in fish utilization is uncertain
- Send members link to grant reports

Tributary Selection

- SFGIT will compile and communicate formal feedback on tributary selection processes in MD and VA to jurisdictional leads.

Oyster Outlook

- Continue to promote aquaculture
- SFGIT Executive Committee recognized the need to identify options to address substrate (shell and alternatives) and hatchery limitations.

Day 2 Meeting Takeaways

Actions in green
Key discussion points in blue

Cross GIT

- Determine where can SFGIT best work with other Goal Implementation Teams and Chesapeake Bay Program entities
- Send fish-related conservation and restoration maps to Goal Implementation Team membership for feedback.

Chesapeake Bay Program Big Picture

- CBP is moving toward a more ecosystem management approach with greater emphasis on connecting water quality, habitat, fish and wildlife, climate and other social factors.

Habitat and Forage Breakouts

- Summarize notes from breakouts and review with workgroups at next quarterly check ins to provide guidance moving forward on the forage and fish habitat workplans

Atlantic States Marine Fisheries Commission Update

- Connect with the Atlantic Coast Fish Habitat Partnership for proposals in 2017 (SAV, salt marsh, oyster reefs, fish passage)
- Review Atlantic Coast Fish Habitat Partnership mapping projects to identify applications to Chesapeake efforts.

Blue Crab Status

- Complete review of stakeholder comments from industry and write up the jurisdictional "evaluation of allocation based management framework" based on these comments, review with key stakeholders behind the outcome, and provide status update to Chesapeake Bay Program Management Board.
- Begin stock assessment update tasks led by jurisdiction staff.
- Have SFGIT funding (1-oyster shell budget and 2-environmental impacts on blue crabs) awardees brief the executive committee/Chesapeake Bay Stock Assessment Committee in January or February on project plans and deliverables.

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Thank You!

Thank you to all of our facilitators, presenters, and participants for making this a successful meeting with productive and informative discussions!

Meeting presentations and materials can be found at the meeting website.