June 2017 Fisheries GIT Meeting Summary

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. It 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 and federal management agencies, industry groups, nonprofits, and academic institutions that meet as the full SFGIT twice a year.

Meeting Topics

Outcomes

2014 Watershed Agreement → 2015 Management Strategies → 2016 – 2017 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).

In 2015, outcome Management Strategies were finalized. These strategies 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.

The June 2017 SFGIT meeting agenda was designed to have the team consider fisheries from a broader ecosystem perspective. The first day focused on fish habitat, starting from a large regional perspective to a case study on Virginia's Eastern Shore. The second day brought in research and strategies for achieving our blue crab and forage goals.

Blue Crab

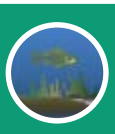
Plan and implement stock assessment.
Support annual review of blue crab stock status.
Evaluate allocation-based framework.

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.

Mid-Atlantic Fishery Management Council

States represented in the Mid-Atlantic Fishery Management Council.

The Mid-Atlantic Fishery Management Council (MAFMC) is the regional fishery body responsible for developing fishery management plans and recommended measures for managed species inhabiting the area from 3 to 200 miles from the coast of North Carolina to New York.

Of the 13 species managed by MAFMC, 11 spend at least one life stage in nearshore or estuarine habitats, which emphasizes the need for a comprehensive ecosystem approach to ensure sustainable and productive managed species populations.

MAFMC has been exploring ecosystem approaches to fisheries management (EAFM) since 2006 through a variety of methods (below) that explore EAFM, integrate stakeholder input, promote habitat science information/data sharing across regions, evaluate fish/habitat relationships through pilot projects, develop habitat policies, and provide guidance moving forward.

To lead their recent progress, an EAFM Guidance Document was published in 2016 to link climate, forage, habitat, and other ecosystem interactions. The Council's most recent efforts include Essential Fish Habitat redevelopment, which will improve designations and integrate state and federal survey, environmental, physical, and spatial data, as well as model-based approaches.

Please see Jessica Coakley's presentation for more information.

Atlantic States Marine Fisheries Commission

The Atlantic States Marine Fisheries Commission (ASMFC) was formed in 1942 with an interstate compact designed to coordinate the conservation and management of 27 nearshore fish species from Maine to Florida. While single-species management is the primary method used to ensure sustainable populations of these managed species, demand has increased to incorporate ecosystem services and impacts into evaluation and management.

To respond to this demand, the ASMFC has developed and published a variety of resources online including species habitat fact sheets and habitat publications to inform sustainable management. In addition, ASMFC has expanded their habitat strategies to include shad habitat plans, a habitat program focusing on education, outreach and advocacy, and a partnership with the Atlantic Coastal Fish Habitat Partnership (ACFHP). ACFHP supports science and data, on the ground conservation, and outreach and communication for fish habitat.

ASMFC recently published a report on Atlantic Sciaenid Habitats.

In their latest efforts, ASMFC has targeted habitat bottlenecks as a means of focusing both research and management in areas most likely to yield the greatest returns. These habitat bottlenecks constrain a species' ability to survive, reproduce, or recruit to the next life stage.

Habitat Bottlenecks

Summer and Winter Flounder
Environmental Bottleneck: Hypoxia in nursery areas
Growth of juveniles is reduced by 25-50% at 3.5 mg O2/l and 50-100% at hypoxic conditions.

Horseshoe Crabs
Environmental Bottleneck: Spawning beach availability and distribution
High quality spawning beach availability dictate stock status, spawning success, and recruitment.

Atlantic Sturgeon
Physical Bottleneck: Dams and dredging
Environmental Bottleneck: Water quality
Barriers can reduce spawning; low dissolved oxygen and high temperatures can cause increased mortality.

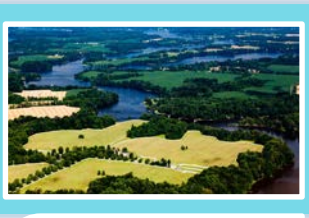
Please see Lisa Havel and Pat Campfield's presentation for additional information.

Fish Habitat Outcome

The Fish Habitat Action Team (a workgroup under the SFGIT) is working to achieve the Fish Habitat Outcome under the Watershed Agreement to improve effectiveness of fish habitat conservation and restoration efforts through informed communication.

Progress

The team is working to compile relevant research, identify trends, and disseminate information to a wider audience. Recent actions from the team include:



Researching fish habitat threats and stressors among selected species

Synthesizing results from a shoreline and land use impact study

Identifying critical spawning, nursery, and overwintering areas

Planning a workshop to evaluate factors influencing habitat function

Challenges

Fish habitat experts have identified roadblocks in their efforts, including a lack of:

- An effective mechanism to communicate fish habitat priorities to localities
- A defined measure of progress
- A direct connection between fishery managers and habitat decision makers

Next Steps

Select priority stressors
- Impervious surface
- Shoreline condition

Evaluate current habitat practices
- Propose collaboration with water quality leads

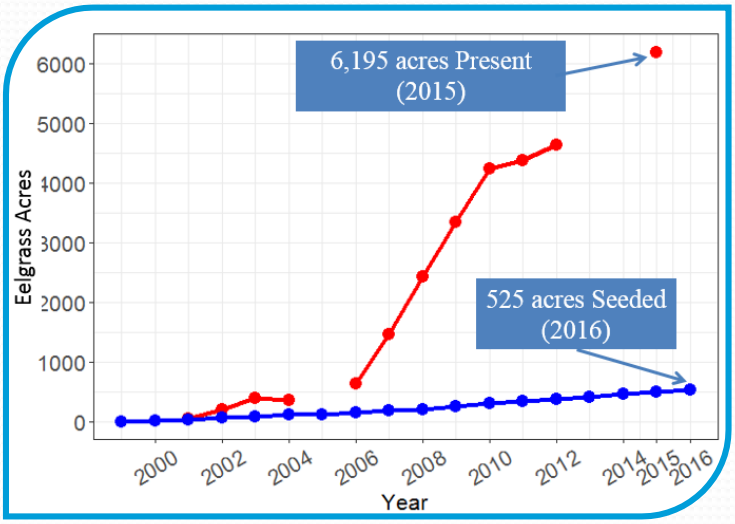
Conduct Habitat Function Workshop
- Inform priority habitat stressors

Communications Strategy
- Connect with local leaders
- Fish habitat publications

Please see Bruce Vogt's presentation to find out more about the Fish Habitat Outcome.

Eelgrass Habitat and Bay Scallops

In the 1920s to the early 1930s, Virginia was a major producer of bay scallops, producing as many as 91 million scallops in 1930. During that time, eelgrass beds were thriving and offered bay scallops protection from predators and quality habitat. However, a wasting disease swept through the eelgrass beds, followed by a hurricane that decimated the eelgrass and bay scallop populations on Virginia's Eastern Shore.



This plot displays the increase of eelgrass acres in the restoration area. The blue line indicates the number of manually planted eelgrass seeds. The red line indicates the total number of acres of recorded eelgrass beds.

A Seaside Partnership formed to reverse the loss of eelgrass habitat from the past century. Combined with volunteer efforts, the Seaside Partnership annually collects seeds from eelgrass beds, and plants seeds in selected locations from South Bay to Hog Island Bay. Manual plantings have promoted natural seeding, yielding a ten-fold increase from the manually planted 525 acres to a total acreage of 6,195 acres recorded in 2015.

After eelgrass restoration efforts were developed, the partnership established a broodstock of bay scallops to introduce annually through larval dispersal, free planting, and caged deployment. Results of the annual bay scallop survey suggest that the population has transitioned from a collapsed state to a vulnerable state. Scallops have been observed outside the restoration areas, indicating that a self-sustaining population could be possible in the future.

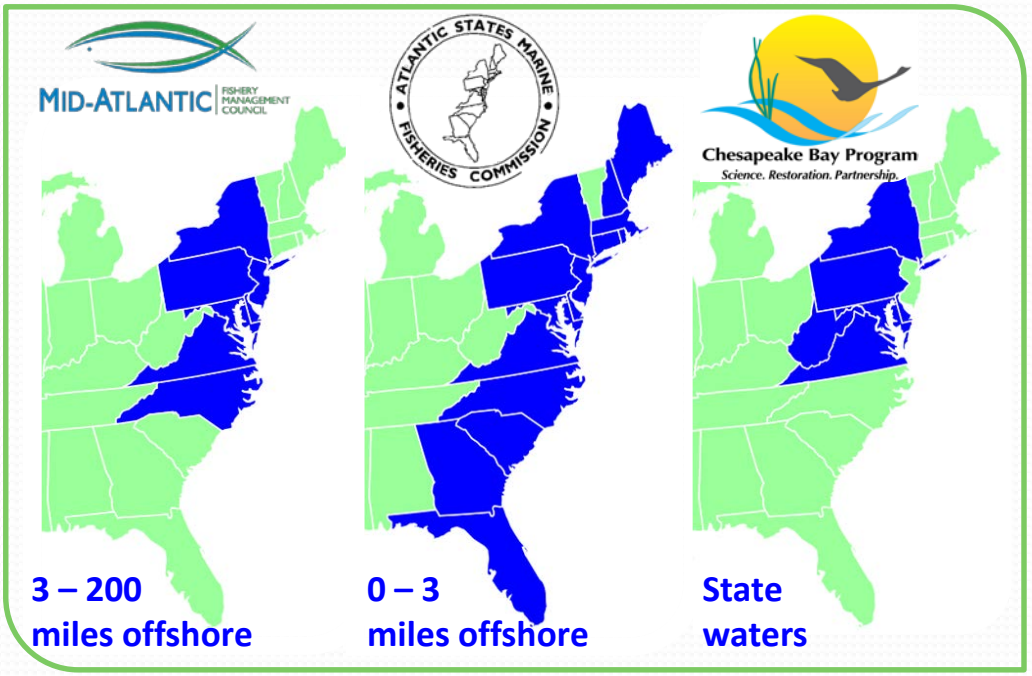
A juvenile bay scallop attached to an eelgrass blade.

Please see Bo Lusk's presentation for more information on this restoration effort.

Inshore and Offshore Fish Habitat Connections

The SFGIT membership explored fish habitat from a large regional lens down to a local scale, though presentations by MAFMC, ASMFC, the Chesapeake Bay Program's Fish Habitat Outcome, and the Seaside Partnership.

Members noted common themes from the discussions that followed the presentations and identified strategies to move forward (below).



Maps of the states involved in the regional fishery management advisory bodies and the Chesapeake Bay Program.

Common Themes from Regional, Chesapeake Bay, and Local Fishery Management

Engage on a local level

- Offer assistance to localities to achieve their goals while complementing fish habitat efforts

- Promote restoration and conservation by catering communication efforts the specific audience

- Incorporate economic value of fisheries and habitat into communication

Improve partner collaboration

- Take steps to better integrate fisheries and habitat management

- Prevent duplication of efforts through regular partner interaction

- Work with partners to bring regional priorities to local communities

Enhance communications

- Propose solutions, when presenting new information

- Ensure the that rationale and applications of new information are clear to all stakeholders

- Emphasize the connection between habitat and fisheries production

Achieving Our Outcomes

Blue Crab

Progress	Challenges	Next Steps
• Successfully implemented current management framework with 2011 reference points • Evaluated allocation-based framework • Ongoing GIT-funded study to evaluate ecosystem impacts on blue crab	• Insufficient funding available to conduct a full stock assessment • Need for additional economic data/analysis	• Jurisdictions will refine terms of reference • Continue managing for a consistently high female abundance • Evaluate ecosystem factors affecting blue crab

Oyster

Progress	Challenges	Next Steps
• VA selected two more tribs for restoration • MD and VA are working on restoration in selected tribs currently • Monitoring is ongoing for the three-year old oyster reef cohorts	• Insufficient funding and shell substrate resources • Lack of public support for alternative substrate	• Communicate the multiple ecosystem benefits generated by oyster reefs • Develop a synthesis of alternative substrate research • Work with partners to ensure funding

Forage

Progress	Challenges	Next Steps
• Identified important forage in a workshop • Funded two studies to advance understanding • Conducted small-scale studies with citizen scientists • Produced a forage video to inform community	• Lack of monitoring data (shallow-water habitat and plankton) • Information has not been disseminated to forage stakeholders	• Compile the results of the forage studies into public-friendly materials • Evaluate practical management options given study results • Expand forage monitoring capabilities

Blue Crab Recreational Harvest Estimates

The fishery managers for Maryland, Virginia, and the Potomac River use blue crab recreational harvest estimates when calculating overall blue crab harvest and evaluating potential management actions. Current estimates of the recreational harvest are assumed to be approximately 8% of the total Baywide commercial harvest. Since recreational harvest of female blue crabs is no longer allowed in Maryland or in the Maryland tributaries of the Potomac River, recreational harvest is assumed to be 8% of total male harvest in those jurisdictions.

The Smithsonian Environmental Research Center (SERC) evaluated the recreational blue crab harvest estimate for the Maryland portion of the Chesapeake Bay to determine the accuracy of the current estimated recreational harvest value.

Using a mark-recapture study that incorporated spatial and temporal considerations, SERC released 8,741 tagged crabs and assessed the portion of commercial and recreational reported captures. Based on the results, it was recommended that blue crab fishery managers should shift their recreational estimate to using 8% of the total harvest in Maryland instead of 8% of the male total harvest estimate.

Please view Matt Ogburn's presentation for further information on the study.

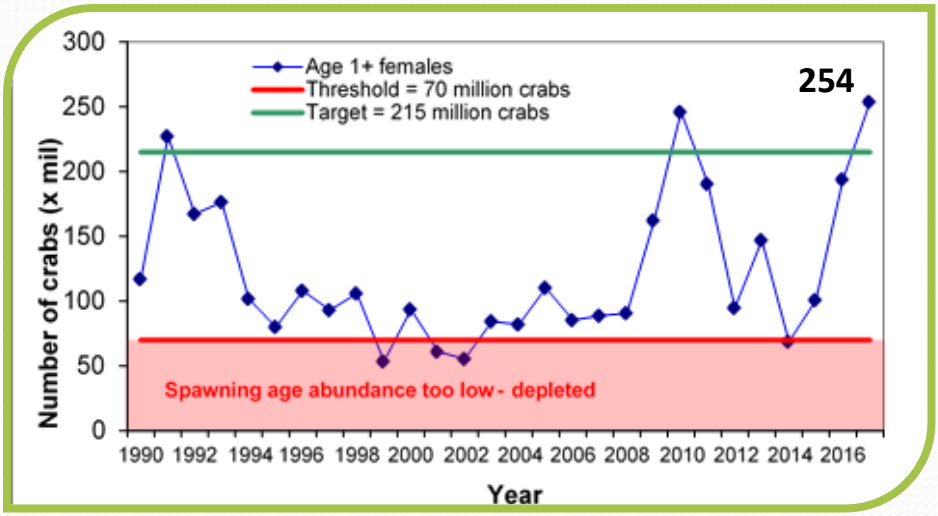
Gear	Commercial	Recreational
Trotline	75%	62%
Pot	25%	18%
Trap		12%

Of the 8,741 released crabs in the study, 1,552 crabs were captured and reported by commercial fishermen, and 444 crabs were captured and reported by recreational fishermen. The above table details the gear type used in reported recaptures.

2017 Blue Crab Advisory Report

The Chesapeake Bay Stock Assessment Committee (CBSAC) published the 2017 Blue Crab Advisory Report that summarizes the 2016 Winter Dredge Survey, harvest data, status of the blue crab stock, management recommendations, and data/research needs in June 2017. The stock is not depleted and overfishing is not occurring.

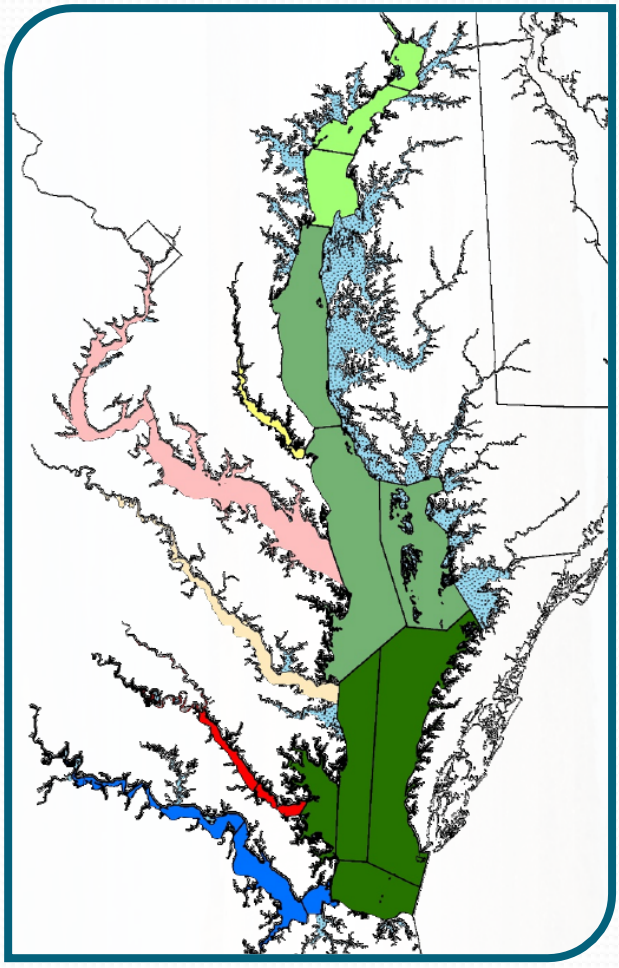
In 2017, the abundance estimate for female age 1+ crabs was 254 million, which is above the 70 million target and the 215 million target. This was a 30% increase from the 2016 estimate of 194 million. The 2016 female exploitation rate was 16% (below both the target of 25.5% and threshold of 34%).



Short-term recommendations from CBSAC include continuing an adaptive risk-averse approach to management and considering scaling back the 2017 fall regulations in order to protect the age 0 crabs, which experienced a 54% decrease from the 2016 abundance of 271 million crabs. The data, long-term recommendations, and identified critical data and analysis needs for future assessment and management can be found in Glenn Davis's presentation.

To read more about how the Blue Crab Advisory Report, see Glenn Davis's presentation.

Environmental Drivers of Forage Dynamics in the Chesapeake Bay



This map shows the spatial diversity of the study. The mainstem of the Bay was divided into three portions, and large rivers of the Chesapeake were analyzed in the study.

Please find more information on this study in Ryan Woodland's presentation.

The University of Maryland Center for Environmental Science Chesapeake Biological Laboratory conducted a study focused on relating patterns in forage abundance to environmental conditions and researchers have found evidence that fish and invertebrate forage abundance in Chesapeake Bay and its tributaries are closely linked to annual climate. An emerging pattern suggests that cooler springs set the stage for higher abundance of a variety of forage species during the following summer.

Freshwater flow also appears to have an effect, with a positive relationship between annual spring-flow volume and annual abundance of anadromous forage fish such as blueback herring, alewife, and juvenile white perch, as well as some invertebrate forage species such as the small *Macoma* clam.

Interestingly, there is also some evidence that the diet of predatory fish changes depending on where the predators are located in the Bay and that their diet is correlated with some of the same climate indicators that are correlated with forage abundance. These findings suggest a 'bottom-up' link between climate conditions, forage abundance, and ultimately, the diet of predatory fish in Chesapeake Bay.

Forage Workplan and Status

Forage Activity	Issues	Next Steps
• Forage Action Team met to discuss research at regular meetings • UMCES concluded a study that investigated environmental drivers of forage population trends at various spatial and temporal resolutions. • Watershed organizations throughout the Chesapeake Bay are working with Forage Action Team staff to develop a citizen sampling project for forage in nearshore woody debris, SAV, and marsh habitats. • The Forage Action Team and the Chesapeake Bay Program Communications team collaborated to design and develop a forage video in the Chesapeake Bay Program's "Bay 101" educational series. • The Forage Action Team developed a strategy, which functions as a framework for achieving the Forage Outcome.	• Lack of predator diet data from tributaries and shallow waters • Lack of zooplankton monitoring data	• Complete evaluation of progress and present to the Chesapeake Bay Program • Request input from team on communication products and audience. • Identify opportunities to work with citizen science groups to minimize data gaps • Identify and support research linking forage to habitat condition

Please view Emilie Franke's presentation for further information on forage progress in the Chesapeake Bay.

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MAFMC Map – Mid-Atlantic Fishery Management Council
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Atlantic Sciaenid Habitat Report Cover – Atlantic States Marine Fisheries Commission
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Bulkhead – David Malmquist
Herring Spawn in Choptank River – Dave Harp
Eelgrass – Delaware Inland Bays

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Juvenile Bay Scallop on Eelgrass - Nantucket Community Association
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Chesapeake Bay Forage Study Area – Ryan Woodland
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Alewife – Chesapeake Bay Program (Will Parson)
Marsh – Chesapeake Bay Program (Will Parson)

Thank You!

Thank you to all of the Sustainable Fisheries Goal Implementation Team facilitators, presenters, and participants for making this meeting successful!

Meeting presentations and materials can be found on the meeting website at https://www.chesapeakebay.net/what/event/june_2017_sustainable_fisheries_goal_implementation_team_meeting.