

Sustainable Fisheries Goal Implementation Team (Fisheries GIT) Meeting  
December 3<sup>rd</sup>-4<sup>th</sup>, 2013  
Chesapeake Biological Lab – Solomons, MD  
Meeting Materials: <http://www.chesapeakebay.net/S=0/calendar/event/21025/>  
SFGIT Website: [http://www.chesapeakebay.net/groups/group/sustainable\\_fisheries](http://www.chesapeakebay.net/groups/group/sustainable_fisheries)

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## Meeting Summary

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### **Background**

On December 3-4, 2013 the Sustainable Fisheries Goal Implementation Team (SFGIT) of the Chesapeake Bay Program met at the Chesapeake Biological Lab in Solomons, MD for its 8<sup>th</sup> biannual meeting.

The SFGIT is composed of the state fisheries managers from around the Bay and chaired by the director of the NOAA Chesapeake Bay Office. The Fisheries GIT draws together a diverse group of managers and scientists to improve management and recovery of oysters, blue crab, menhaden, striped bass, and alosines 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. Through this approach, the Fisheries GIT is focused on managing sustainable Chesapeake Bay fish populations that support viable recreational and commercial fisheries and provides for natural ecosystem function.

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### **Meeting Objectives**

The objectives for this full Fisheries GIT [meeting](#) were to discuss:

- **Oysters:** management across the jurisdictions; updates on oyster restoration progress in both MD and VA; the latest science, modeling, and economics of oyster ecosystem services.
- **Invasive Catfish:** research updates; the work of the Invasive Catfish Task Force and their management recommendations.
- **Chesapeake Bay Program:** review the draft New Agreement; update of the American Shad Abundance Indicator.
- **CBSAC:** prioritization of blue crab research needs and the role of economics in blue crab management.
- **Advances in Modeling:** economic model that explores the role of economics in blue crab management; coupled economic and ecological model.
- **Forage Fish:** current status, research, and monitoring of forage fish in the Bay in context of the upcoming new Chesapeake Bay Watershed Agreement.
- **Striped Bass:** results of the ASMFC striped bass stock assessment and management implications.

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### **Oysters**

#### Management

The oyster section began with a discussion of oyster management across Maryland, Virginia and the Potomac River Fisheries Commission (PRFC). The Executive Committee members representing these jurisdictions spoke across the three aspects of oyster management: the fishery, restoration, and aquaculture. While each jurisdiction's management is unique, all have similar components, including the use of sanctuaries, public harvest areas, and a growing aquaculture industry. Many of the management challenges also span the three jurisdictions, including a limited shell budget, lack of harvest targets and biological reference points, environmental/spat set variability, and law enforcement.

## [Maryland and Virginia Restoration Updates](#)

Both the MD and VA Interagency workgroups are continuing their work to plan and implement restoration efforts. The draft new Chesapeake Bay Watershed Agreement has an oyster outcome of 10 restored tributaries by 2025. MD is currently implementing restoration plans in Harris Creek, and as of the end of 2013, 50% of reef construction and seed planting is complete. The Little Choptank and Tred Avon have also been selected for tributary restoration, and their tributary plans are being drafted and finalized. All selected tributaries in Maryland follow the same tributary planning process which establishes discrete acreage goals in specific areas of the tributary through consulting with scientists and keeping the public involved.

The Army Corps presented the status of restoration work in VA. Both the Great Wicomico and Lynnhaven had restoration projects completed previously, and the Army Corps is now making plans to enhance the existing restored reefs and/or construct additional reefs in these tributaries. The Corps is planning to establish future restoration projects in the Piankatank to build on the Nature Conservancy's existing restoration site, as well as in the Lafayette, which has undergone some restoration work as part of the Elizabeth River Project.

## [Oyster Reef Ecosystem Services Science](#)

The NOAA Chesapeake Bay Office is leading a collaborative multi-jurisdictional research project called the Oyster Reef Ecosystem Services Project (ORES) that aims to quantify oyster ecosystem services such as enhanced fish production, denitrification, and water filtration. In MD, research will be focused in the [Choptank River complex](#). Multiple studies conducted by different researchers will monitor the habitat complexity, water column, and fish assemblages in pre and post restoration sites to determine if restoration has enhanced these services. In VA, research will span the [Great Wicomico, Lafayette, Lynnhaven, and Piankatank](#) to compare fish utilization and secondary production between these locations. The SFGIT discussed the differences between high and low relief reefs, and the challenge of finding suitable bottom for restoration.

## [Oyster Population Modeling](#)

The SFGIT was briefed on the results of an Army Corps Chesapeake Bay Oyster Population Model that analyzed the impacts of different management strategies on the population dynamics of the Great Wicomico oyster population. The model looked at the success of the oyster population based on the allocation and configuration of oyster sanctuaries and rotational harvest areas. Based on the model results, the optimal management strategy is a combination of both rotational harvest areas and sanctuaries in the tributary. The project emphasized the need to consider larval dispersal when managing reefs, and that the spatial position and density of sanctuaries do matter. The SFGIT discussed the implications of these results, and that jurisdictions need to think about what they are trying to optimize, whether it be harvest, oyster abundance, number of recruits, etc.

## [Valuing Ecosystem Services](#)

The SFGIT then heard about work aimed to assign economic value to oyster ecosystem services and the benefits of oyster reefs. An analysis of surveys of recreational fishermen showed that they highly value oyster reefs and that there is benefit to expanding hard bottom availability for these fishermen. Other studies point out that oyster reefs are also valuable for nutrient cycling and removal, and the optimal value of oyster reefs is their harvest value plus their nitrogen removal value. With this in mind, oyster population/ecosystem models show that it is optimal to sustainably harvest a reef after it has matured for a certain number of years. Waiting for this time would allow both the harvest value and

nitrogen removal value to be captured. The SFGIT discussed some of the challenges of oyster reefs being considered offset mechanisms under the Total Maximum Daily Load regulations.

### ***Oyster Next Steps***

- Broadly communicate success of restoration in MD and VA. Develop communication tools/products that show the public restoration results toward the tributary goal (an oyster restoration progress indicator).
- Clarify differences between restoration, managed fishery and aquaculture in public messaging
- Begin tributary planning in Virginia (i.e. Lafayette) and look into refining restoration targets for other VA tributaries based on progress to date and success metrics.
- Continue to quantify value of restoration work through collaborative scientific investigations of ecosystem services and economic benefits of oysters in tributaries being restored.
- Evaluate and develop a plan for control sites for assessing ecosystem services in restoration tributaries.

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### ***Invasive Catfish***

#### **Research Updates**

This section began with four catfish research updates that summarized the current status, results, and management implications of these projects. [Greg Garman](#) presented the results of a GIS-based vulnerability assessment to pinpoint areas of high risk of invasion and of high ecological value. These areas would have priority in allocating limited resources to monitor/protect from catfish invasion. [Rob Hale](#) then presented the findings from his study on contaminants in blue catfish in Virginia (James, Rappahannock, and Potomac). The study found that catfish on the Potomac have a different isotope composition than the other tributaries, and that the Potomac catfish have relatively high levels of contaminants. The results across all tributaries were generally consistent with current consumption advisories, although these advisories do not take into account individual fish and human consumption variability.

The final two research updates focused on diet analyses of catfish. [SERC](#) is currently doing a study in MD (upper Bay, Nanticoke, and Patuxent) to analyze the diet, distribution and movement of catfish. On the Nanticoke, their results show that fish species are more prevalent in the diet of blue catfish compared to white catfish, and their diet indicates there is some impact on populations of forage and commercial species. [Virginia Tech](#) then presented their diet study which to date has accumulated just under 5000 catfish stomach samples. The study will continue to address the question of catfish diets in the winter and differences in gastric evacuation rates.

#### **Invasive Catfish Task Force Updates**

The Task Force has been working since the June 2013 full Fisheries GIT Meeting to improve public messaging and outreach informing the public of the ecological risks of blue and flathead catfish. A pilot removal study was attempted in Dragon Run in August 2013, but the conditions were not ideal for electrofishing. The Task Force met in October and discussed their management recommendations and findings. Their findings include, among others: catfish populations are larger than originally thought; status of invasion differs among tributaries; no biomass reduction method currently exists; economic benefits of the trophy fishery are significant.

The Task Force has organized their [management recommendations](#) into four main goals, each of which requires series of actions and inputs that would lead to meet that goal. The goals are 1) removals

and population reductions; 2) mitigate spread to currently uninhabited waters; 3) promote a large-scale commercial fishery and market; 4) increase public outreach and awareness.

The SFGIT discussed the different public outreach efforts in each of the jurisdictions, and how to move forward with messaging to inform watermen that live transport of these fish is illegal. The team also discussed the lack of reduction targets and what reduction level would be necessary to significantly affect catfish populations.

### ***Invasive Catfish Next Steps***

- Coordinate individually with jurisdictions to increase the number of anglers who know this species is invasive and illegal to introduce.
- Investigate solutions and identify barriers to increase market value, develop new markets, and establish fishery for blue catfish.
- Pursue grants/funding/support from groups like Aquatic Nuisance Species Panel, Sea Grant, federal and state agencies.

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## ***Chesapeake Bay Program***

### New Agreement

The SFGIT was briefed on the current status of the New Agreement and the five fisheries outcomes included in the Agreement. The fisheries outcomes are blue crab abundance, blue crab management, oysters, forage fish, and fish habitat. The Agreement is set to be signed in late spring/early summer of 2014 by the seven Bay jurisdictions, EPA (representing the federal government), and CBC. SFGIT members are encouraged to participate in the next public comment period, which will begin in late January/early February and last for 45 days.

### American Shad Indicator

The [American Shad Indicator Action Team \(ASIAT\)](#) was tasked by the Bay Program Management Board last year to review and update the American Shad [Abundance Indicator](#). This indicator tracks shad abundance by individual tributaries, where sufficient data are available, as well as a Baywide abundance index. ASIAT completed this round of updates to the indicator this fall. This round of [revisions](#) included adding the Rappahannock and Lower James to the indicator and increasing the restoration targets for the Virginia tributaries. The Baywide index is now calculated by weighting the tributaries by watershed size as a proxy for available habitat, instead of by commercial catch rates.

The SFGIT appreciated this work by the ASIAT, and discussed slightly increasing trend of the Baywide index, driven largely by the strong positive trend in the Potomac. The Bay wide index is also greatly influenced by the very low numbers in the Susquehanna. The team also discussed the new weighting scheme by watershed size and if the weights for each tributary seem reasonable.

### ***Bay Program Next Steps***

- Continue to update the Shad Indicator to include more tributaries and ensure the most representative data is used.
- Identify options to replace/revive capacity of the former Ecosystem based Fishery Management (EBFM) Fisheries Ecosystem Workgroup.
- Need to monitor benefits of restoration projects. Draft letter from Fish GIT members on Chesapeake Bay Program's monitoring review effort with need for living resource monitoring and other non-water quality outcomes.

- SFGIT members inform their organizations/jurisdictions about the New Agreement and participate in the public comment period beginning in late January 2014.

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### **CBSAC**

The Chesapeake Bay Stock Assessment Committee (CBSAC) has been working over the last few months to prioritize the blue crab research needs that are stated each year in the Blue Crab Advisory Report. The determined the highest priorities as: 1) gear efficiency/selectivity of the WDS; 2) overwintering mortality; 3) summer survey data. CBSAC [met in November](#) to discuss how to address gear selectivity in the Winter Dredge Survey (WDS). CBSAC now has a proposed [new sampling design](#) for the next WDS. The design involves a paired vessel survey with an overlapping transect design in a checkerboard pattern. This will be more accurate than the current design, which requires the vessel to trawl in exactly the same area multiple times. It is very difficult to go over the exact same location on each of the tows, which can lead to an inflated number of crabs caught and biased depletion estimates.

The SFGIT was very supportive of this new sampling design, and discussed the feasibility and effort required compared to the previous sampling design. The new design will be implemented in this year's WDS and the results will be analyzed next spring.

### **CBSAC Next Steps**

- CBSAC to begin multi-year gear selectivity analysis beginning with new sampling design trials in winter 2013 and analysis of the results of the trial sampling design in spring/summer 2014.
- CBSAC analyze summer trawl data and assess WDS ability to track juvenile abundance.
- Develop plan (terms of reference) and timeline for next blue crab benchmark stock assessment.

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### **Advances in Modeling**

#### Economics and Blue Crab Management

The SFGIT was briefed on an economic model that analyzes both the biological and economic outcomes of different blue crab management policies. The model seeks to incorporate socioeconomic factors into management. The model takes a suite of blue crab management policies and gives an output of the sustainable yield of crabs and the associated sustainable revenue of that yield. The model suggests that the most desirable policies are less restrictive minimum size policies, a short female season, and a long male season. This model also looks at the amount of precaution prescribed in managing the blue crab fishery and how changing the amount of precaution affects the catch limit.

The SFGIT discussed the drivers of blue crab markets on a coastwide basis and the interactions among different parts of the blue crab market. They also discussed the role of natural mortality in the fishery and how that is incorporated into this model and into management policies.

#### Coupled Economic-Ecological Chesapeake Bay Model

The SFGIT heard from University of Wyoming researchers who have created a framework for a coupled economic-ecological model that incorporates both the biological interactions and human dimensions of the Chesapeake Bay Watershed. The ecological part of this model is already developed. The addition of the economic portion would allow the human dimensions to be quantified and evaluate the effects of policy changes. The model would include both commercial and recreational harvest policies and evaluate how these changes would affect the whole watershed system. The SFGIT discussed

the various factors that affect fisheries and fishing effort. They pointed out that public access is an important aspect to consider when analyzing fishing effort in different places.

### ***Ecosystem Modeling Next Steps***

- Work with the modeling teams to identify and develop specific management scenarios that can be investigated with existing models.
- Develop economic viability products that suggest improved revenue strategies for watermen, connecting with harvest accountability projects where necessary.
- Identify applications of economic viability models to management.
- If needed, respond to questions from the modeling teams regarding fisheries-related inputs or outputs of the models.

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## ***Forage Fish***

### **Striped Bass Consumption Data**

Jim Price presented his data on striped bass consumption based on collection and analysis of striped bass stomach content as part of his predator-prey monitoring program. This is a large and potentially important data set that spans 2006-2013 in the mid-Bay. His data show seasonal patterns of prey consumption and that although blue crabs do not provide much nutritional value, they can be numerous in striped bass diet. The low consumption rates of blue crab by striped bass in the spring of 2012 indicate high juvenile crab mortality in the winter of 2011.

The SFGIT discussed his results and the potential to apply this data set to other research questions. Initial analysis of this data set suggests a changing food web, and this work emphasizes the potential for nutritional reference points and further research on predator demand and forage availability.

### **Current Status, Monitoring, and Management**

The SFGIT heard an overview of current trends, status, and monitoring of forage fish in the Chesapeake Bay, followed by a discussion of current management frameworks from the broader coastwide perspective. Ed Houde of CBL defined forage fish as small, schooling pelagic fish that feed on plankton and transfer energy to the upper trophic levels. They have very high direct and indirect economic value, and their abundance can directly affect their predators, other fish species and bird species. Research needs for these species in the Bay include better estimates of abundance and predator demand, ocean/ estuarine connectivity, forecasting long-term trends, and sensitivities to habitat loss and climate change. Existing juvenile surveys need to continue and additional Baywide surveys, ingress monitoring, predator abundance, and diet analysis would be ideal.

Pat Campfield of ASMFC gave an overview of ASMFC's efforts that integrate forage considerations in their work. The menhaden multispecies model estimates predator mortality on menhaden, and ASMFC is looking to develop ecological reference points for menhaden as prey for other species. ASMFC also did a weakfish forage analysis, which determined that weakfish consumption of bay anchovy is declining, while the consumption of invertebrates is increasing. Other regions of the US and some of the fishery management councils officially recognize forage fish in their management plans.

The SFGIT discussed proposed lists of forage species that should be considered in light of the forage fish outcome in the New Agreement. They discussed different approaches to choose representative species to focus on. The team discussed whether to include only pelagic species, or both benthic and pelagic species in the SFGIT's list of focus forage species; they also discussed whether this

list should include invertebrates in addition to fish species. The team also discussed the current trends of forage fish and what abundance level should be considered “normal” or desirable.

### Forage Fish and Habitat Loss

The SFGIT was briefed on an application of the Chesapeake Atlantis Model (CAM) to show the effects on Chesapeake Bay species from habitat loss. CAM is a holistic ecosystem model that can compare the tradeoffs of different management options. In this scenario, CAM predicted the effects on different species from the loss of marsh habitat in the Bay. Multiple forage fish species, including bay anchovy, silversides, and white perch, were among the species most significantly affected by this loss. The model tracked these effects on the aggregate biomass, numbers by age class, and physiological conditions of the species. For bay anchovy and silversides, the CAM results show that in the long-term, the biomass and numbers of fish no longer peak every year or every few years, as they would in full marsh habitat conditions. This is most likely due to recruitment failure.

This model can help evaluate the impacts of state and local management decisions. The SFGIT discussed the possible reasons why habitat loss significantly affected forage fish. These reasons included the loss of juvenile habitat and lack of protection from predators.

### **Forage Fish Next Steps**

- Identify additional analyses of striped bass gut content data from Price and Uphoff working with CBSAC and other biologists.
- Articulate message about why we care about forage fish and base of food chain.
- Define forage base
  - 1) Identify key “representative” commercial and recreational predatory fish species and birds?
  - 2) Identify primary prey for these species and rank relative importance
  - 3) Characterize what we know and don’t about ranked list
  - 4) Focus on what we know most about first
  - 5) Identify fish (forage thresholds) and habitat management strategies for key forage
- Work with the modeling teams to identify and develop specific management scenarios that can be investigated with existing models.

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### **Striped Bass**

The Chair of the ASMFC Striped Bass Technical Committee presented the [results of the 2013 benchmark stock assessment](#). ASMFC’s Striped Bass Fishery Management Plan Coordinator then presented [ASMFC’s management response](#) to this stock assessment.

The coastwide Spawning Stock Biomass (SSB) peaked in 2005 and has been declining since. ASMFC uses reference points for fishing mortality (F) and SSB. This year’s stock assessment proposed new F reference points, with a new target F of 0.18, which is a decrease from the current target of 0.34. The SSB level is projected to decrease to the threshold level in 2013. It is projected that SSB will slowly decline after 2013 but then will recover slowly again.

The SFGIT discussed the implications of the new F reference points and the decreasing SSB levels. After the new F reference points are adopted, action will have to be taken across the coast to adjust harvest to meet the new reference points. Stock specific reference points will be developed by May 2014 in Draft Addendum IV to ASMFC’s FMP, including specific Chesapeake Bay-specific reference points. Following that change, Draft Addendum V will consider management options to reduce F to the new target. Possible mechanisms include recreational fishery regulations and/or the commercial fishery

total allowable catch (TAC). These new management regulations would be implemented at the beginning of 2015.

The SFGIT also discussed the three-fleet framework that is used in the stock assessment (Chesapeake Bay, Coastwide, and Commercial Discards) and how these fleets were developed to address the differences in age/size of fish caught rather than differences between commercial and recreational. SFGIT members brought up the relatively conservative striped bass fishing rates currently seen in the Bay, and how this would affect the management implications of the new reference points specifically in the Bay.

### **Striped Bass Next Steps**

- Follow up on Striped bass addendums IV (modify stock specific F ref points) and V at June 2014 GIT meeting.
- Consider implications for the Bay based on modified fishing mortality target.
- Continue to consider ecological reference points (i.e. nutritional health indicators).

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### **Meeting Attendance**

Peyton Robertson  
Jack Travelstead  
Marty Gary  
Tom O'Connell  
Bruce Vogt  
Nancy Butowski  
Jorge Holzer  
Jack Frye  
Rob O'Reilly  
Bill Goldsborough  
Charlie Poukish  
Susan Conner  
Tom Powers  
Jessica Coakley  
Bob Greenlee  
Pat Campfield  
Jim Gracie  
Jim Price  
Bob Greenlee  
Lynn Fegley  
Larry Jennings  
Matt Fisher

Andy Lacatell  
Matt Mullin  
Ed Houde  
Troy Hartley  
Fredrika Moser  
Jen Armstrong  
Tom Miller  
Mary Fabrizio  
Hannah Martin  
Jennifer Greiner  
Stephanie Westby  
Howard Townsend  
Lisa Kellogg  
Rom Lipcius  
Todd Swannack  
Doug Lipton  
Rob Hale  
Matt Ogburn  
Mike Wilberg  
Rich Woodward  
John Tschirhart  
Dave Finnoff

Joe Grist  
Tom Ihde  
Alexei Sharov  
Jenn Aiosa  
Kate Farrow  
Dave Secor  
Shaun Gehan  
Rick Morin  
David Tomberlin  
Carlos Lozano  
Sarah Rains  
Danielle Zaveta  
Andre Buccheister

*Teleconference:*  
Greg Garman  
Emily Greene  
Melanie Frisch  
Eric Brittle  
Jim Cummins  
Geoff Smith