Blue Catfish Current Tasks

Public Outreach Document:

- Bryan King and the District Department of the Environment are putting together a blue and flathead catfish public outreach document (pamphlet) in order to raise awareness of their potential impacts on local waterways due to their invasive nature. This document is not intended to represent a policy standpoint, rather its purpose is to spread awareness, educate, and update the general public with fact based information on the continued efforts by fisheries managers to maintain native sustainable fisheries for generations to come.

ASMFC Resolution:

- The Atlantic States Marine Fisheries Commission (ASMFC) has put together a policy statement labeling blue catfish as invasive in Atlantic coast waters. The document states that the introduction of these species is likely causing negative impacts on species managed by the ASMFC (shad, river herring, striped bass, American eel, etc.). The ASMFC is against the introduction and transportation of non-native invasive species and believes that all practicable efforts should be made to reduce their population level and range.

Fill Research/Knowledge Gaps:

- Several studies aimed at beginning to answer questions regarding impacts of blue catfish on other native species or resources will likely be funded at the beginning of this fall.

Blue Catfish GIS:

- Greg Garman (VIMS) is creating an online decision support tool that integrates coordinated assessments of blue catfish and flathead catfish expansion risk and ecological resource valuation to identify high-risk/high-value opportunities for containment and mitigation programs focused on blue catfish and flathead catfish. The proposed 'Catfish Portal' should be both accessible to a wide range of stakeholders and dynamic to reflect the results of on-going or future monitoring and surveillance activities throughout the Bay region.

Blue Catfish Modeling:

- The objective of this study is to evaluate the potential impact of non-native species on the native fish community. We have an existing ecosystem simulation model (Chesapeake Bay Fisheries Ecosystem Model, CBFEM), which includes a catfish group that consists of blue and flathead catfish. The model is based on empirical data collected from the Chesapeake Bay and its tributaries. The current model simulates the ecosystem from 1950-2002. The preliminary model results suggest that a combination of increased, sustained fishing mortality on catfish as well dramatic decreases in nutrient loading will be necessary to have an appreciable reduction in the blue and flathead catfish stocks. These results

are very preliminary and should not be taken as management advice. These runs are for demonstration purpose only. The CBFEM is being updated to version 2 and will cover 2002 to 2008. The model input for the CBFEM v2 will also include improved input data for the Catfish group. Additional runs will be conducted to project the outcomes of potential future policy as well as take into account uncertainty in initial input parameters (esp. catfish diet composition, growth rates, and initial biomass).

Background

The Chesapeake Bay Fisheries Ecosystem Model (developed using Ecopath with Ecosim EwE) uses predator and prey relationships to quantify and project possible biomass accumulations related to forced or natural population fluctuations over a specified time period. This program will be used in an attempt to provide valuable insight concerning the outcomes of the four main management scenarios.

Goals

1.Sythesize an objective projection of the five specified management scenarios using EwE

A. -M1: Do Nothing

-M2: Complete Eradication

-M3: Isolated Removal

-M4: Increasing Fc% Fr%

-M5: Nutrient Reduction

2. Support Interjurisdictional Precautionary Management

B. -Input from various teams within the SFGIT

-Recommendations for modeling inputs and data synthesis has been obtained through close communication with VMRC, VDGIF, MDDNR, VIMS and NCBO staff

3. Provide management recommendations based off of the best combination of these model runs in order to mitigate and properly manage blue catfish

Updates and Completed Tasks

1.Recently completed the basic operating EwE model: spanning 2002-2009

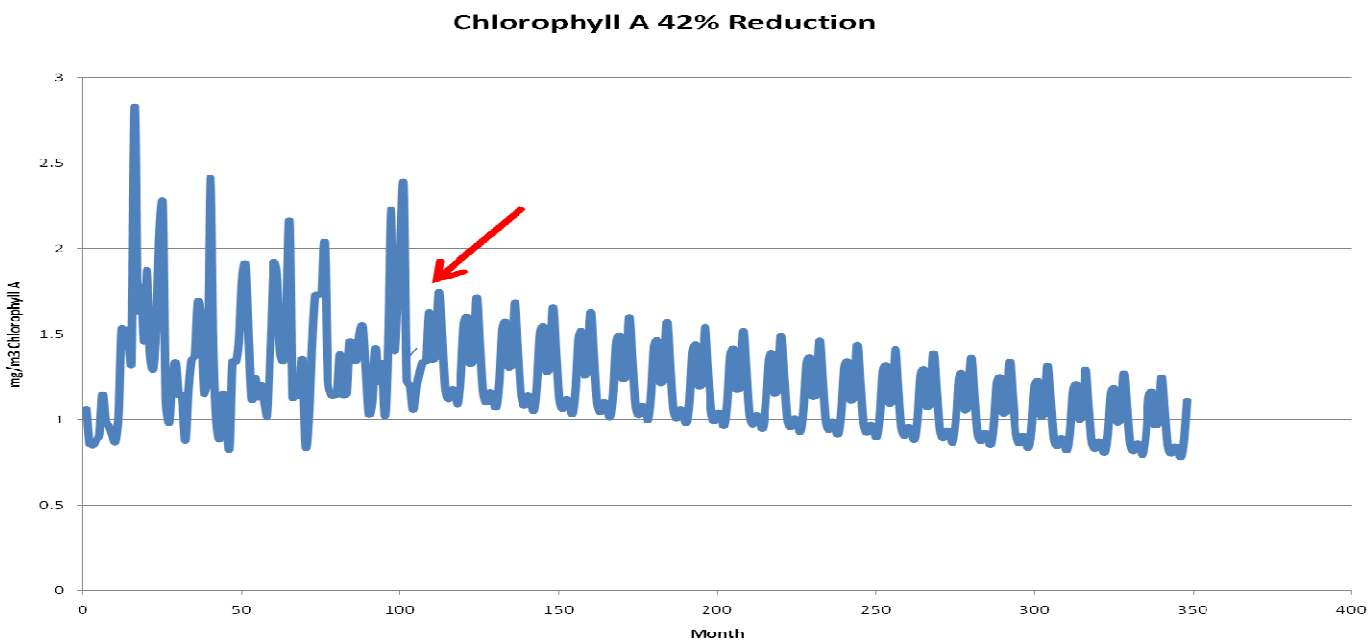
2.Updated model is balanced and running smoothly quantifying the relationships of 56 species including pooled catfish data for the Chesapeake region

3. Division of pooled catfish group into three categories including juvenile and adult blue catfish group.

4. Developed methods to divide and attribute unspecified commercial landings in MD and VA to blue catfish

5. Simulation and projection of a 42% decline in Chlorophyll A as compared to a seven-year average: Projected through 2030.

-Submitted the suggested 42% reduction to TMDL staff for verification and comparison with TMDL benchmarks.



In Progress

B. Manipulating and specializing data inputs for modeling management scenarios

1. **Tributary specific absolute abundance estimates are being completed.**

These estimates will be projected on similar tributaries with confirmed blue catfish populations based on a known year of introduction or confirmation.

2. **Obtaining age and weight relationships**

These relationships calculated from established populations will be used as an aide to estimate biomass for juveniles and adults.

Please contact the following Ecosystem Science team members with any questions or comments.

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Revised Modeling Outline

	Scenario	Iterations	Results
Do Nothing	M1	BC Biomass (BCE+50%)	M1.1
		BC Biomass BCE (Best current estimate)	M1.2
		BC Biomass (BCE -50%)	M1.3

These iterations simulate the different results of the "do nothing" scenario I have included the different biomass estimates as drivers in this model in order to analyze the sensitivity of the model to our current estimates of BC biomass. These outcomes could suggest the priorities for future research, as well as the feasibility of equilibrium in

Eradication	M2	BC Biomass (BCE)	M2.1

This run simulates what the outcome would be assuming the relationships between species remain constant after the BC have been removed.

Isolated Removal	M3	BC Biomass (BCE+50%)	M3.1
		BC Biomass BCE (Best current estimate)	M3.2
		BC Biomass (BCE -50%)	M3.3

M3 iterations could suggest if an active removal could aid in reducing the total biomass of the blue catfish. These results could aid in site selection where future site specific biomass estimates may be compared to those that had the best results from the simulated removals.

Increasing Fc% Fr%	M4	BC Biomass (BCE+50%)	M4.1
		BC Biomass BCE (Best current estimate)	M4.2
		BC Biomass (BCE -50%)	M4.3

These iterations explore the long term impact of an increase in recreational fishing mortality (Fr%) and commercial fishing mortality (Fc%). This could also suggest the feasibility of increasing Fc% and Fr%

Nutrient Loadings	M5	BC Biomass (BCE+50%)	M5.1
		BC Biomass BCE (Best current estimate)	M5.2
		BC Biomass (BCE -50%)	M5.3

The nutrient loading iterations are not outlined in the invasive catfish policy table but could be an important scenario to consider. Three different ranges of abundance estimates and one time series with an annual decrease in the level of nutrient input into the model. Should demonstrate any impacts that can be further investigated.

Total Model Runs
13

Sustainable Fisheries Goal Implementation Team Executive Committee

Policy ADOPTION STATEMENT

Invasive Species Policy Goals
for Maintaining Healthy Native Species

We, the undersigned, agree to develop and implement bay wide policies and management strategies aimed at reducing invasive catfish populations and mitigating their spread to protect against their ecological impacts.

We agree to work together to promote a productive and balanced bay ecosystem driven by science-based decisions. To achieve this outcome, we agree to:

- Initiate a public awareness campaign on invasive of blue and flathead catfish;
- Improve our scientific understanding of blue and flathead invasive catfish;
- Develop a set of management measures aimed at controlling populations and mitigating adverse effects of blue and flathead invasive catfish.

Potential Blue & Flathead Catfish Management Measures

- Implement control strategies
- Mitigate spread
- Develop GIS monitoring system to reduce invasion
- Develop 'kill on capture' or 'no catch and release' policy
- Increase commercial fishing pressure
- No transportation or unauthorized introductions of live catfish
- Control measures implemented in select smaller tributaries
- Establish size limits aimed at controlling certain age classes within population
- Finish outreach document and present/distribute to public
- Devise means of creating a catfish market
- Develop options to address contaminant burden concerns

Fisheries GIT Tasking CBSAC to Develop New Blue Crab Abundance Targets

Background:

In 2008, the Chesapeake Bay Stock Assessment Committee (CBSAC) recommended an interim abundance target (200 million age 1+ adults). The target level of 200 million was intended as an initial rebuilding goal (seen as something achievable in the short term). This target has been exceeded for three consecutive years.

In 2010, the Executive Order (EO) 13508 Strategy for Protecting and Restoring the Chesapeake Bay was released and established a Blue Crab Outcome. The outcome is to "Maintain sustainable blue crab interim rebuilding target of 200 million adult (1+ years old) in 2011 and develop a new population target for 2012 through 2025." The EO outcome was drafted based on a decision among NOAA and the jurisdictional management agencies (VMRC, PRFC, MD DNR) that any discussion and revision to the interim blue crab abundance target should be informed by the updated benchmark stock assessment slated for completion in 2011. The thinking was that coming up with a new blue crab target at the time of the EO strategy development would be putting policy ahead of science and that we should wait until a more informed discussion could occur before making any changes.

On August 9, 2011 a detailed 2011 Blue Crab Stock Assessment on the status of blue crabs in the Chesapeake Bay will be publically released. The Fisheries Goal Implementation Team (GIT) is hereby tasking CBSAC to fulfill the EO Outcome by revising the current "interim rebuilding target" based on the 2011 Stock Assessment results which may include a shift from the current total adult abundance target to a female based abundance target.

Recommendations:

CBSAC, under guidance from the Fisheries GIT, should review and provide recommendations for revised reference points based upon the 2011 Blue Crab Stock Assessment. The Fisheries GIT requests CBSAC to include those recommendations in a report to be completed by October 1st, 2011. This report should:

Near-Term (October, 2011)

1) Develop and recommend biological reference points using the 2011 Blue Crab Stock Assessment (Miller, et.al.):
    a. For female abundance and exploitation;
    b. Alternative reference points for overall abundance, as well as male abundance.
2) Provide a description of how the reference points recommended/proposed under task 1 differ from the current reference points.
3) Prioritize research needs and science gaps – as identified in the 2011 assessment and Center for Independent Experts (CIE) review.

Long-Term (June 2012)

1) Recommend decision rules to be implemented to address abundances that fall outside recommended thresholds.
2) Begin developing a means to attribute ecological parameters affecting blue crab abundance and attempt to quantify their impacts on targets and thresholds.

CBSACMembers:

Derek Orner - NMFS/NCBO
Amy Schueller - NMFS/SEFSC
Dan Hennen - NMFS/NEFSC
Alexei Sharov - MDNR
Lynn Fegley - MDNR (chair)
Tom Miller - UMCES/CBL
Eric Johnson - SERC
Rob O'Reilly - VMRC
John Hoenig - VIMS
Chris Bonzek - VIMS
Rom Lipcius - VIMS

The Sustainable Fisheries Goal Implementation Team (GIT) is focused on facilitating fisheries management that encourages sustainable Chesapeake Bay fish populations, supports viable recreational and commercial fisheries, and promotes natural ecosystem function. The Fisheries GIT provides the forum to discuss fishery management issues that cross state and other jurisdictional boundaries. The Fisheries GIT is also working to better connect science to management decisions and create a framework/mechanism for implementing ecosystem-based approaches to fisheries management.

Sustainable Fisheries Goal Implementation Team Executive Committee

ADOPTION STATEMENT Restoration Goals,

Quantitative Metrics and Assessment Protocols for Evaluating
Success on Restored Oyster Reef Sanctuaries

A product of the Oyster Metrics Workgroup
as convened by the
Sustainable Fisheries Goal Implementation Team
of the Chesapeake Bay Program

We, the undersigned, adopt the results and metrics provided by the Oyster Metrics Workgroup for the restoration of oysters within the Chesapeake Bay according to Executive Order 13508 *Strategy for Protecting and Restoring the Chesapeake Bay Watershed*.

We agree to work together to implement the management strategies and actions recommended by this workgroup to restore oyster populations in 20 tributaries of Chesapeake Bay by 2025, further adding to the need to develop clear restoration goals, quantitative metrics and assessment protocols.

We agree to accept this report, which serves to formally adopt success metrics and monitoring protocols for restoring the native oyster resource.

July 27, 2011

SustainableFisheriesGoalImplementationTeamExecutiveCommittee

FOR NOAA  _____

FOR MD-DNR  _____

FOR DC-DDOE  _____

FOR PRFC  _____

FOR VMRC  _____

FOR ASMFC  _____

FOR USACE  _____

_____

Goal	Success metrics (targets and/or thresholds)	Assessment Protocol	Minimum Assessment Frequency (assumes pre-restoration survey has also been done)
Operational Goals: Defined programmatic and planning outcomes for reef construction and tributary level restoration			
Reef-level 1 Appropriate amount of substrate and/or spat-on-shell was planted. 2 Presence of substrate and/or spat-on-shell within the target area.	Shell, alternative substrate, or spat-on-shell should cover a minimum of 30% coverage throughout the target reef area.	Patent tong or diver grabs	Within 6-12 months of restoration activity
Tributary-level target: 1 Appropriate amount of area within the tributary has met reef-level operational goals.	A minimum of 50% of currently-restorable area within a given tributary meets the reef-level goals defined above. Further, this 50% of the currently-restorable area within the tributary should constitute at least 8% of the historical oyster habitat.	GIS-based analysis of restoration activity within the tributary	Annual
Functional Goals: The desired ecological outcomes at reef and tributary scales			
Reef-level goals			
Significantly enhanced live oyster density and biomass	Target: An oyster population with a minimum mean density of 50 oysters and 50 grams dry wt/m^2 covering	Patent tong or diver grabs	Minimum 1, 3 and 6 years post restoration

	at least 30% of the target restoration area at 3 years post restoration activity. Evaluation at 6 years and beyond should be used to judge ongoing success and guide adaptive management. Minimum threshold: An oyster population with a mean density of 15 oysters and 15 grams dry wt biomass/m^2 covering at least 30% of the target restoration area at 3 years post restoration activity. (Note: This minimum threshold reflects the reality that many restoration reefs within VA currently support densities around this level. It is desirable to maintain these areas as sanctuaries in anticipation that successful tributary-level restoration may result in later increases in density.)		
Presence of multiple year classes of live oysters	A minimum of 2 year classes at 6 years post restoration.	Patent tong or diver grabs	Minimum 3 and 6 years post restoration
Positive shell budget	Stable or accreting shell volume.	Quantitative volume estimates shell (live and dead) per unit area	Minimum 1, 3 and 6 years post restoration
Stable or increasing spatial extent and reef height	Neutral or positive change in reef spatial extent and reef height as compared to baseline measurements.	Multi-beam sonar, direct measurement, aerial photography	Within 6 -12 months post-restoration, and 3 and 6 years post restoration
Tributary-level goals			
Expanding oyster population beyond the restored reefs	Will need to be determined as restoration proceeds.	Quantitative assessment of oyster populations throughout the tributary.	Will need to be determined from future assessments.
Return of the oyster population within a tributary to an enhanced stable state.	Specific targets will need to be developed on a tributary-specific basis as restoration proceeds.	Quantitative assessment of oyster populations throughout the tributary.	Will need to be determined from future assessments.
Enhanced ecosystem services in the tributary	Currently unknown. Specific targets will likely be informed by the results of experimentally-determined relations ecosystem services and structural metrics, such as oyster abundance and biomass.	Determine relationships between structural reef characteristics (e.g., reef size, oyster abundance, or	Currently unknown

		oyster biomass) and the quantity of various ecosystem services via controlled experiments and modeling studies. Then, use measured values of structural metrics to estimate levels of specific ecosystem services.	

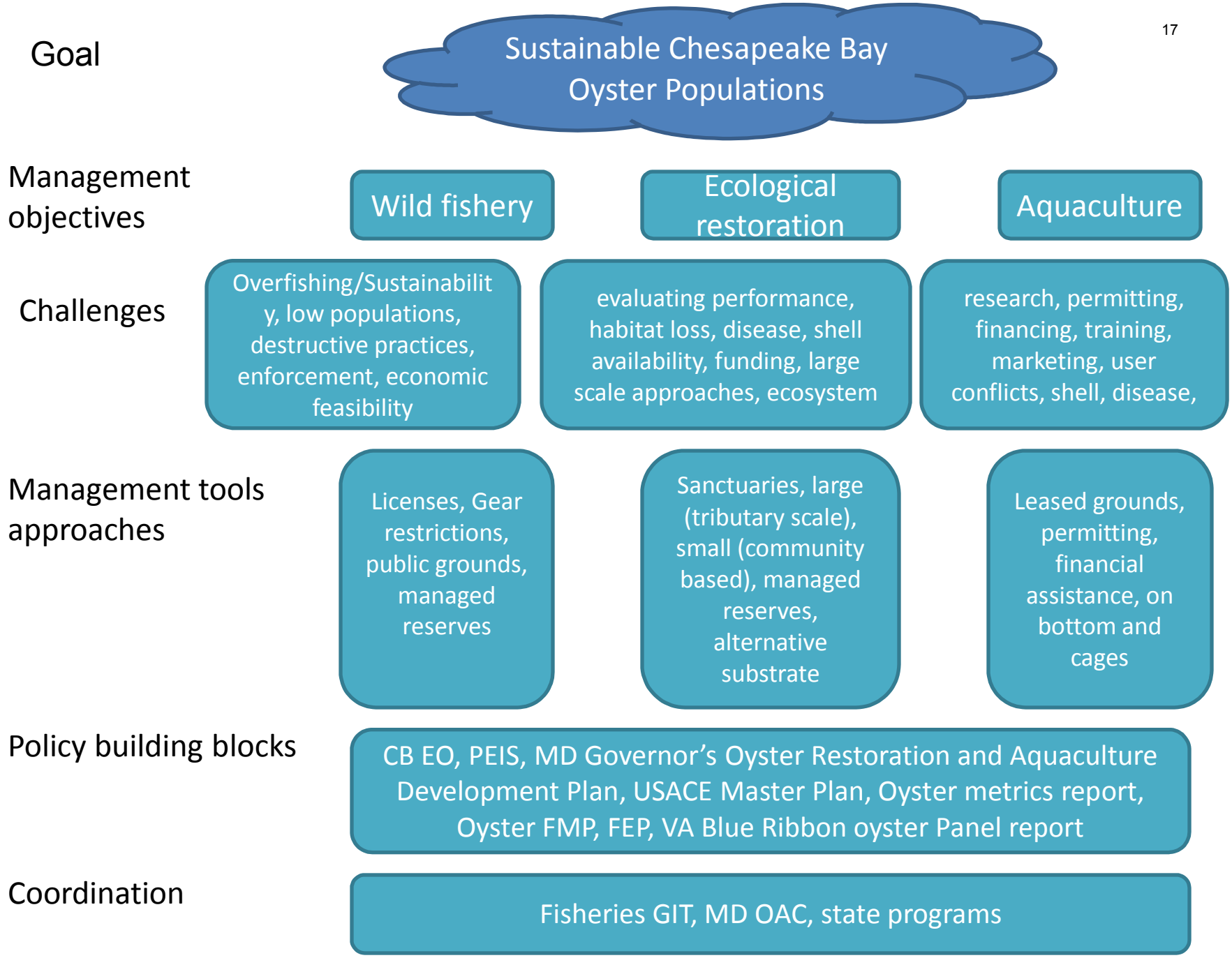
Chesapeake Bay Oyster Summit

Chesapeake Bay Oyster Summit

- What
  - Paint the canvas of what we want oyster restoration in the bay to look like
  - Define “joint” strategy to meet EO Goal (20 tributaries by 2025)
  - Identify opportunities for low hanging fruit or early victories
- Why
  - There is no one strategy or plan for bringing “sustainable” oyster populations back to the bay
  - Need to integrate fishery, restoration, and aquaculture objectives in face of significant challenges
  - Find common ground and understanding- United front yields strength
- Who
  - NOAA, USACE, MD DNR, MDE, VMRC, TNC, ERP, CBF, ORP, UMCES/CBL, VIMS, community organizations, industry/watermen, FWS, EPA, riverkeepers, local planners, Sea Grant, coastal programs, congressionals (could be under auspices of Fisheries GIT)
- When
  - Late fall or December Fisheries GIT meeting
- Where
  - DC

Ground Rules

- Be forward looking not retrospective…visualize the future
- Bring creative and innovative ideas and solutions
- Don’t let regional differences become barriers to progress
- Build from the bottom up…include all stakeholders from the beginning…Think Baywide, Act locally


Goal
Sustainable Chesapeake Bay Oyster Populations
Management objectives
Wild fishery
Ecological restoration
Aquaculture
Challenges
Overfishing/Sustainability, low populations, destructive practices, enforcement, economic feasibility
evaluating performance, habitat loss, disease, shell availability, funding, large scale approaches, ecosystem
research, permitting, financing, training, marketing, user conflicts, shell, disease,
Management tools approaches
Licenses, Gear restrictions, public grounds, managed reserves
Sanctuaries, large (tributary scale), small (community based), managed reserves, alternative substrate
Leased grounds, permitting, financial assistance, on bottom and cages
Policy building blocks
CB EO, PEIS, MD Governor's Oyster Restoration and Aquaculture Development Plan, USACE Master Plan, Oyster metrics report, Oyster FMP, FEP, VA Blue Ribbon oyster Panel report
Coordination
Fisheries GIT, MD OAC, state programs

The Connection of Watershed Land Use and Chesapeake Bay Fisheries

Land Use and Fisheries Survey

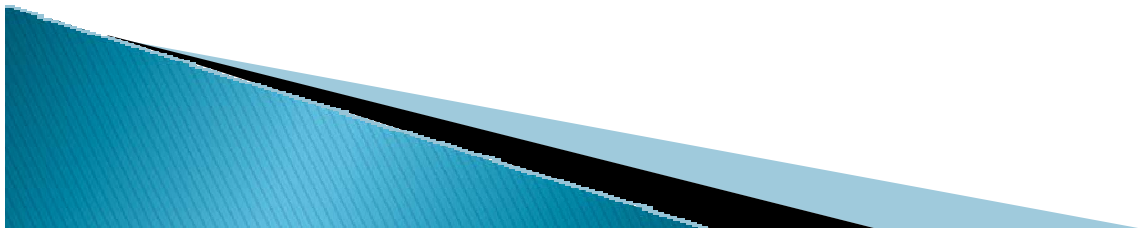
Main Focus

- A short survey will be conducted

- The main focus of this survey will be the knowledge and awareness of Chesapeake Bay health and its fisheries

- It will also focus on the interest people have to create linkages between different areas of management

    - i.e. Land use management and fisheries management



Implications, Purpose, and Goals

•The purpose of conducting this survey will be to determine how knowledgeable people that are from different backgrounds and expertise are about the current status of the Chesapeake Bay

It is will also determine whether different groups of people outside of the fisheries arena are interested and engaged in the issues at hand

Also, whether they have the interest and/or ability to link different areas of management concerning the Chesapeake Bay and its fisheries

Another goal of the survey is to collect recommendations from different groups for bringing groups together, improving coordination, opening up communication pathways, and improving the management of resources in and around the Chesapeake Bay. Ultimately, the survey may also point to new possible members of the Fisheries GIT.

SURVEY QUESTIONS

1.What is your affiliation?

[Type Response]

2. How familiar are you with the current status and health of the Chesapeake Bay fisheries?

1-Completely Unfamiliar
2- Somewhat Unfamiliar
3-Neutral
4- Somewhat Familiar
5-Completely Familiar

3. How relevant is the health of the Chesapeake Bay to your work?

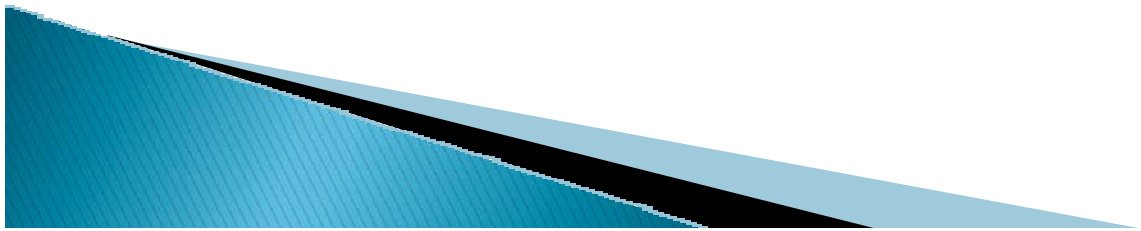
1-Very Irrelevant
2-Somewhat Irrelevant
3-Neutral
4-Somewhat Relevant
5-Very Relevant

4. Is there a link between land use issues and the health of fish resources?

1-No, no link at all
2-No, maybe a small link
3-Neutral
4-Yes, a decent link
5-Yes, a direct link

5. How important is the unification of the different areas of Chesapeake Bay management (i.e. land use and fisheries)?

1-Very Unimportant
2-Unimportant
3-Neutral
4-Important
5-Very Important



6. Would you apply your expertise and influence to link fisheries resource management in the Chesapeake Bay to other areas of management?

1-Definitely No
2-Most Likely Not
3-Neutral
4-Most Likely Yes
5-Definitely Yes
6-N/A

7. (Optional) Do you have any comments or recommendations as to how to link fisheries management to other areas of management?

[Type Response]