

Chesapeake Bay Watershed Region Freshwater Mussel Partnership

Thursday
5/25/2023



Assorted freshwater mussels from the Verdigris River, Kansas | C. Barnhart



MEETING OVERVIEW

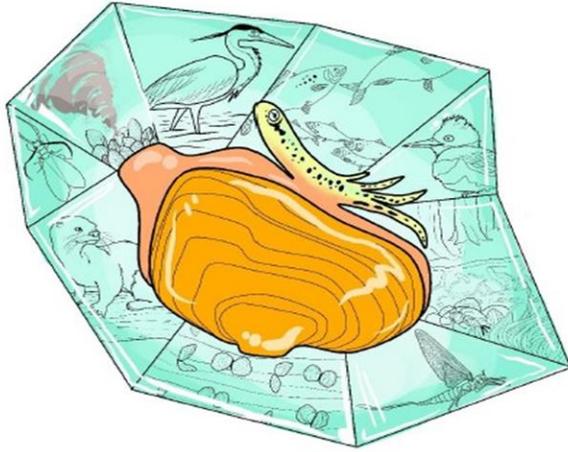
- ❖ Transition of coordinator role from NFWF/MD to SRBC | Introduce SRBC team
- ❖ Briefly touch milestone events regarding the “Chesapeake Mussel Group” | 2020 STAC work shop • 2022 NFWF/MD work shop • February 2023 NFWF/MD Mussel Committee Meetings
- ❖ Verify Ultimate Goals | ♦ ♦ Advance Conservation & Restoration to maintain mussel Biodiversity ♦ ♦ Evaluate mussels as a BMP in the Watershed Model
- ❖ The Chesapeake Bay Program’s framework | Leveraging the Bay Agreement will benefit from CBP integration
- ❖ Suggested organizational structure | Anticipated roles & various ways to participate
- ❖ Summary of April 2023 Survey | Group profile based on ~40 responses
- ❖ Finalize list of near-term Priority Items | To Determine the Actions the group will take
- ❖ What to expect next | • News & Announcements

Mussel Partnership Milestone Events



March 2020 STAC Workshop

Incorporating Freshwater Mussels into the
Chesapeake Bay Restoration Efforts



STAC Workshop Report

March 5-6, 2020

Chesapeake Bay Foundation Philip Merrill Center

Annapolis, MD



STAC Publication 21-004

Workshop Objectives:

Consider freshwater mussels for ecosystem services; document biodiversity; outline intersections with Chesapeake Bay issues; and, explore their potential to engage partners.

Research Findings & Recommendations:

- No aggregated database of mussel populations across the Region exists.

Compile and analyze existing mussel distribution datasets and aggregate into a sharable form.

- Peer reviewed papers have documented the capability of mussels to enhance denitrification.

Address research needs surrounding ecosystem services with specific focus on denitrification in the Chesapeake Bay watershed.



April 2022 NFWF/Maryland Workshop

Workshop to Broaden and Enhance Regional Freshwater Mussel Partnerships in the Chesapeake Bay

Executive summary:

On April 13, 2022, the National Fish and Wildlife Foundation and the state of Maryland hosted a regional workshop to connect mussel biologists, hatchery leads, environmental scientists, policy makers, nonprofit organizations, and funding entities that are working within the Chesapeake Bay Watershed. The goals of the workshop were to: (1) recognize the synergies of biodiversity and ecosystem services inherent to mussel restoration; (2) identify mussel restoration challenges, needs, and gaps in the Chesapeake Bay Watershed; (3) build upon current efforts by leveraging partnerships to maximize potential restoration outcomes and avoid duplication of efforts; (4) develop consensus around key regional mussel restoration priorities and goals; and, (5) recommend strategies moving forward for implementation.

A recurring point throughout the workshop centered on developing landscape level strategy and regional planning. The value of a comprehensive, multi-disciplinary approach for ecosystem restoration was acknowledged and discussed. Utilizing adaptive management will be essential, especially in addressing climate resiliency concerns. Despite the many synergies and commonalities identified for mussel restoration initiatives throughout the region, two primary goals were identified: biodiversity conservation and water quality improvement. While both paths have the potential to utilize and conserve freshwater mussels, the issues, strategies, and partners are decidedly unique.

Identification of watersheds for protection or restoration was identified as the most important area of strategic collaboration. Specifically, developing species and site selection metrics that can be applied throughout the watershed. The development of a strategic plan for freshwater mussels within the Chesapeake Bay Watershed would provide the framework for prioritizing watersheds and restoration projects as well as guide funding decisions.

A number of mussel restoration challenges, needs, and gaps were identified. The consensus was that there is a lack of contemporary surveys of mussel communities. Quantification of the baseline is necessary to identify the most appropriate restoration approach, assess carrying capacity, determine stream suitability, and measure success. A concern for balancing the gathering of information and implementing projects was discussed. It was pointed out that there is already an allocation of resources to all aspects of restoration (propagation, monitoring, surveys, and research); the key is to optimize these resources through coordination and communication.

A majority of the funding resources for freshwater mussel projects apply to only one of the two primary goals for mussel restoration that were identified in the workshop. Below is a cursory list of funding available within the Chesapeake Bay region.

Workshop Objectives:

Recognize biodiversity and ecosystem services of freshwater mussel restoration; identify restoration challenges & needs; harness partnerships to curb redundancy & enhance outcomes; prioritize regional restoration goals; and, develop implementation strategies.

Key Needs:

- Identify watersheds for conservation and restoration.
- Develop restoration criteria.
- Survey contemporary mussel communities.

Next Steps:

- Form groups working to advance Freshwater Mussels for:
 - Biodiversity Conservation & Restoration; and,
 - Consideration of Water Quality enhancement.

February 2023 NFWF/Maryland Virtual Meetings

Freshwater Mussel Biodiversity Conservation

Purpose:

Advance Conservation & Restoration to maintain mussel Biodiversity.

Priorities:

- Identify watersheds for conservation and restoration.
- Generate watershed-level conservation plans.
- Develop conservation & restoration criteria.
- Survey contemporary mussel communities.

Freshwater Mussels as Natural Filters

Purpose:

Assess mussels as a Water Quality Best Management Practice to control Nutrient and Sediment.

Priorities:

- Review science literature to determine mechanisms for Water Quality improvement.
- Quantify Water Quality effects
 - especially denitrification
 - especially within the Bay watershed region
- Survey contemporary mussel communities

Your Opinions Matter

Have we captured the fundamental purpose of each group?

Advance Conservation &
Restoration to maintain
mussel Biodiversity.

Assess mussels as a Water
Quality Best Management
Practice to control Nutrient and
Sediment.



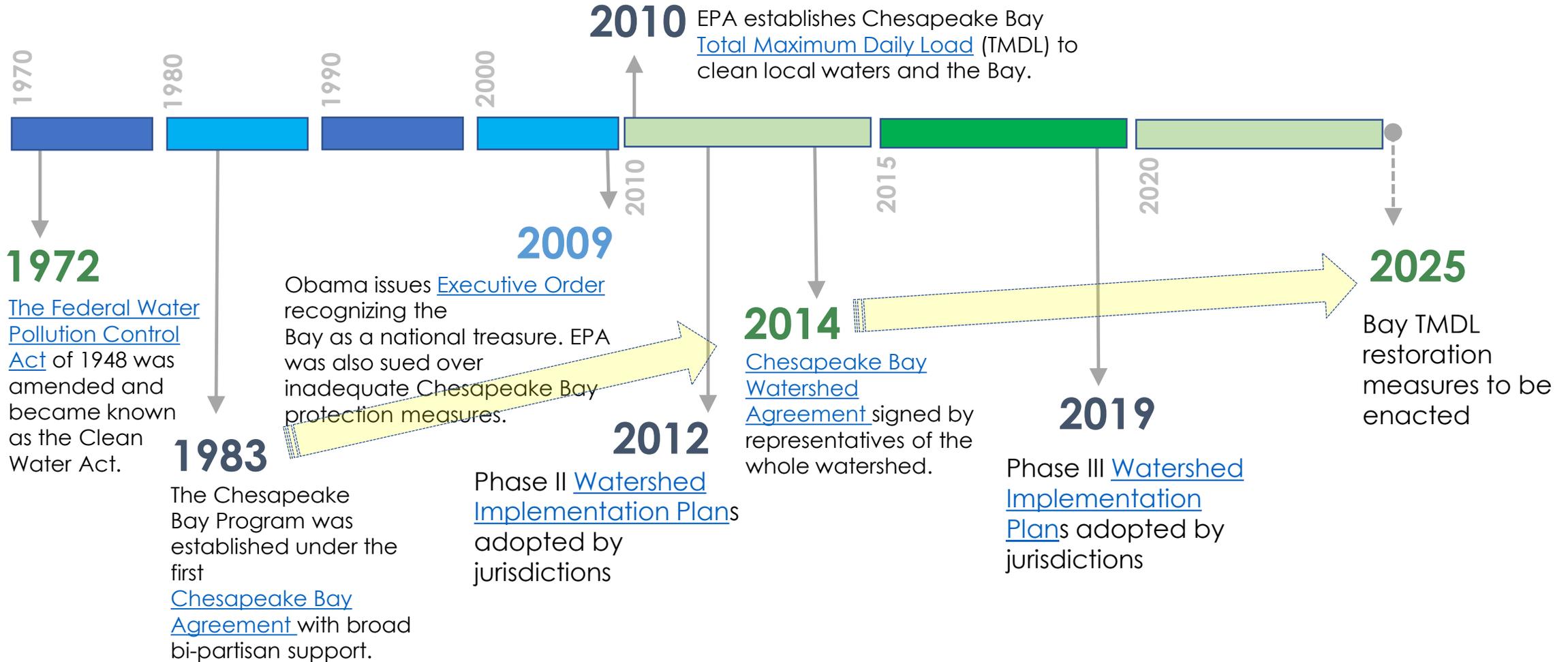
Chesapeake Bay Restoration & Framework





“The Chesapeake Bay Program partners envision an environmentally and economically sustainable Chesapeake Bay watershed with clean water, abundant life, conserved lands, and access to the water, a vibrant cultural heritage and a diversity of engaged stakeholders.”

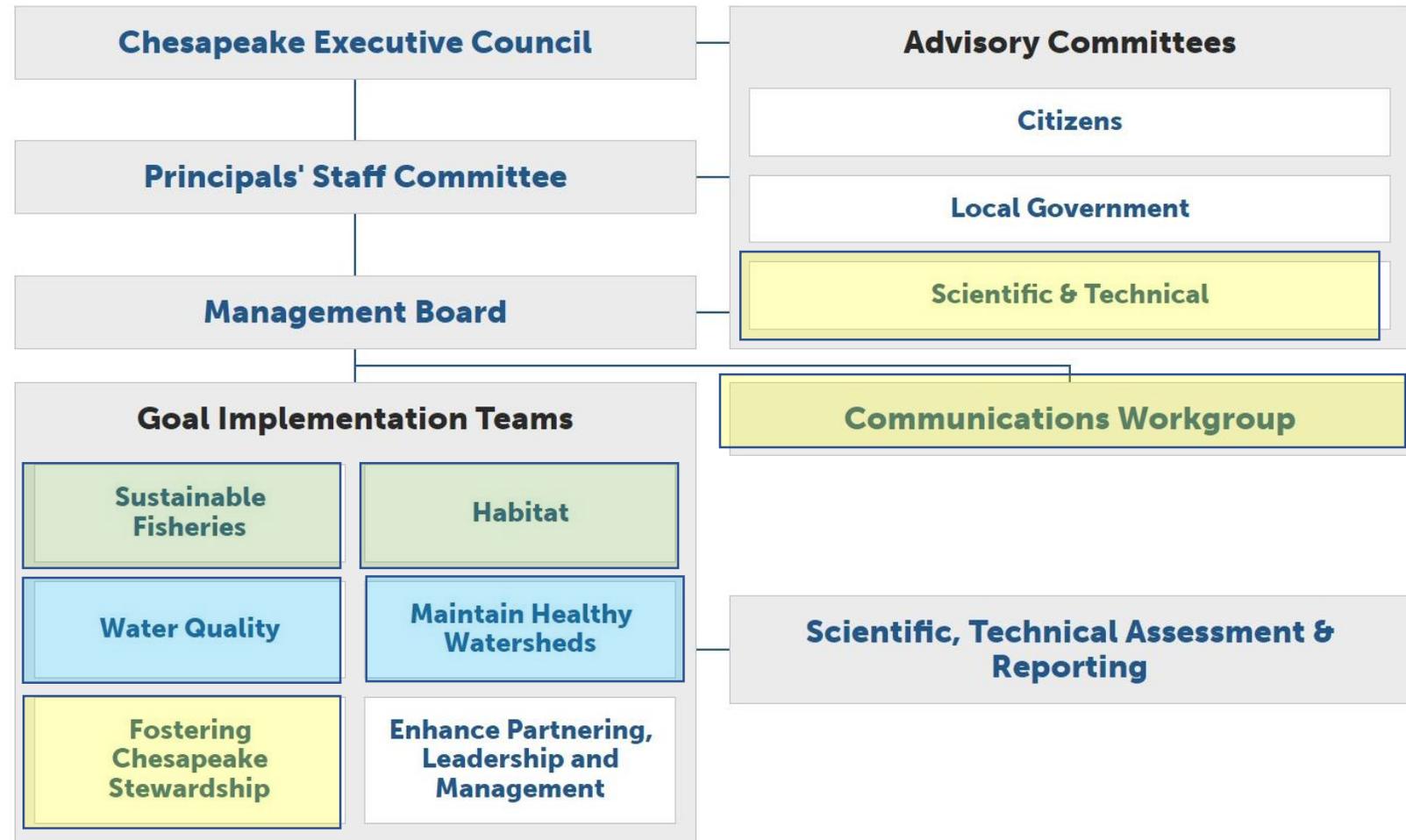
Timeline of Chesapeake Bay Actions



Chesapeake Bay Program Organization

The Freshwater Mussel Partnership's Ultimate Goals line up with the existing CBP framework:

- ◆ Advance Conservation & Restoration to maintain Biodiversity
- ◆ Water Quality Best Management Practice



Freshwater Mussels as an Awe-Inspiring Gateway to Resource Awareness & Regard

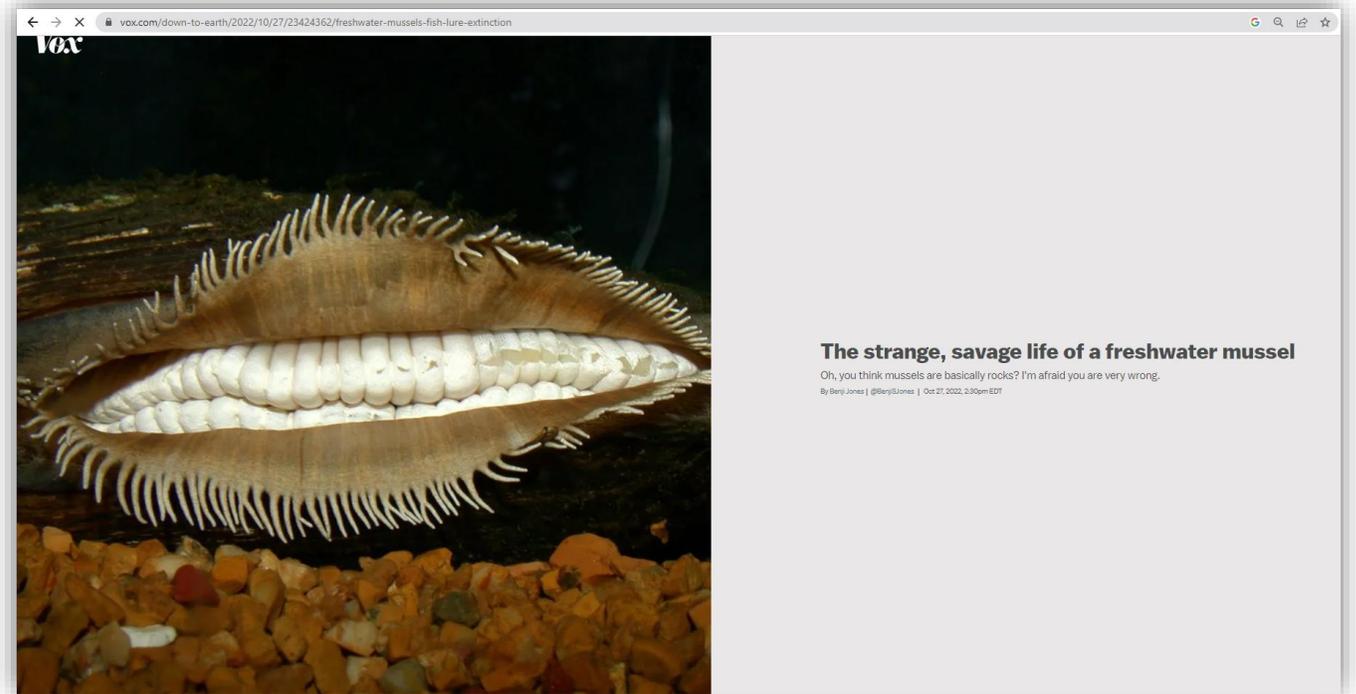


A female broken-rays mussel in Beaver Creek, Missouri

Story and Images appear in VOX | credit Chris Barnhart



A Neosho mucket mussel and its lure



Freshwater Mussels as a Water Quality “Living Filter”

Approved by WQGIT July 14, 2014

Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model

Introduction

The Chesapeake Bay Program (CBP) uses loading estimates to quantify expected amounts of nutrients (nitrogen and phosphorus) or sediment loads to water from specific land uses or point sources. Changes in estimated loads from a particular piece of land can occur in a number of ways, including: 1) A change in the land use (e.g. forest instead of grassland), 2) an adjustment based on an estimate of effectiveness of a best management practice (BMP), 3) a measured reduction in direct load to the land use, and 4) a measured reduction from a treatment process. The CBP uses these effectiveness estimates and direct load reductions to land to modify the existing baseline loading for particular land uses and practices. Loads from point sources can be adjusted based on a new treatment process or practice.

The Water Quality Goal Implementation Team (WQGIT) is responsible for approving the loading rate reductions, and percentage adjustments to these rates, used in the Chesapeake Bay Watershed Model (CBWM). The CBP Executive Council’s 2009 commitment to meet two-year milestones that accelerate the pace of Chesapeake Bay restoration, and the need to quantify practices to be used in Watershed Implementation Plans (WIPs) that will achieve Total Maximum Daily Load (TMDL) allocations, will likely spur innovation and identification of new BMPs.

Oyster BMP Expert Panel Second Report—January 2023

Nitrogen and Phosphorus Reduction Associated with Harvest of Hatchery-Produced Oysters and Reef Restoration: Assimilation and Enhanced Denitrification PANEL RECOMMENDATIONS

Panel Members: Jeff Cornwell (Chair), Suzanne Bricker, Andy Lacatell, Mark Luckenbach, Frank Marengi, Chris Moore, Matt Parker, Ken Paynter, Julie Rose, Larry Sanford, Bill Wolinski

Oyster BMP Expert Panel Second Incremental Report

January 2023

Prepared by:

Olivia Caretti, Julie Reichert-Nguyen, and Ward Slacum
Oyster Recovery Partnership

Chesapeake Bay Program (CBP) Partnership 43-Day Review: January 27-March 10, 2023

Suggested Structure for the Freshwater Mussel Partnership

Organizational Structure & Roles

Chair & Co-Chair,
~2 members from each Work Group,
~2 at-large participants, SRBC:
Drive Overall Progress



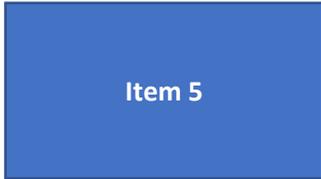
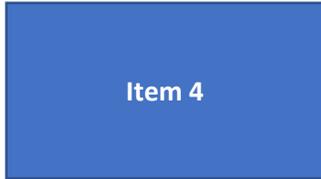
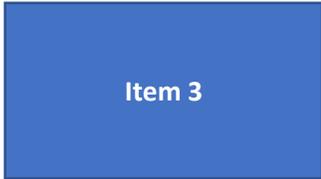
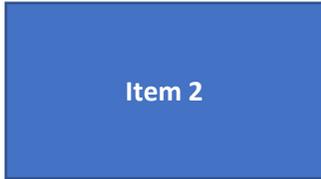
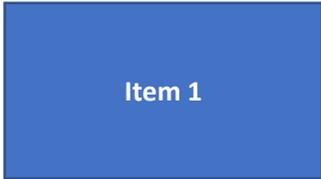
SRBC Staff
Jamie, Ellyn, Tyler, Hilary, IT Dept:
Coordinate w/in Partnership & CBP



Lead/Co-Lead;
~4-5 subject experts & agency
staff: **Focus on Goals**



Willing Participants:
Work on Near-term Priorities



Your Opinions Matter

What Priority Items do you believe we should focus on this year/near-term with respect to each group?

Advance Conservation & Restoration to maintain mussel Biodiversity.

Assess mussels as a Water Quality Best Management Practice to control Nutrient and Sediment.

Identify watersheds for Conservation & Restoration

Inventory freshwater mussel data and Plan to fill gaps where contemporary assessment is lacking

Aggregate freshwater mussel data in sharable form

Develop restoration criteria

Close Scientific Gaps:

Synthesize ecosystem services research

Initiate denitrification studies in the Bay Region

Promote greater awareness about FW Mussels – Advocate for (more) Resources

Work Within Existing Frameworks for Conservation



- ❖ The Freshwater Mollusk Conservation Society is leading advocate for Mussel Conservation in North America
- ❖ State Wildlife Action Plans are the blueprints for conserving fish and wildlife and **PREVENTING ENDANGERED SPECIES.**



About

State Wildlife Action Plans serve as the blueprints for conserving our nation's fish and wildlife and preventing endangered species. In 2005, each state, territory and District Columbia submitted their plan for approval to the US Fish and Wildlife Service as a condition for receiving funding through the **State and Tribal Wildlife Grants program**. The plans were reviewed and revised in 2015 with the latest science and information to guide the conservation of over **12,000 species in greatest conservation need**. The next major revision will be completed by 2025. Each plan addresses 8 required elements laid out by the US Congress. The plans were developed in collaboration with leading scientists, conservationists, private landowners, and other members of the public. Although progress is being made, many species of fish and wildlife continue to decline because funding is inadequate. Currently, ~\$70 million is appropriated annually by Congress to the 56 states, territories, and the District of Columbia to implement the plans. A survey by Southwick and Associates estimated that \$1.3 billion in federal funding is needed annually to implement the plans. The **Blue Ribbon Panel on Sustaining America's Diverse Fish and Wildlife Resources** reviewed funding options and recommended that existing royalties and fees from the development of energy and mineral resources on federal lands and water be invested in the implementation of State Wildlife Action Plans. The **Alliance for America's Fish and Wildlife** is leading the campaign to secure increased and dedicated funding by supporting the passage of the **Recovering America's Wildlife Act**.

[Links to State Wildlife Action Plans:](#) | Alabama | Alaska | American Samoa | Arizona | Arkansas | California | Colorado | Connecticut | District of Columbia | Delaware | Florida | Georgia | Guam | Hawaii | Idaho | Illinois | Indiana | Iowa | Kansas | Kentucky | Louisiana | Maine | Maryland | Massachusetts | Michigan | Minnesota | Mississippi | Missouri | Montana | Nebraska | Nevada | New Hampshire | New Jersey | New Mexico | New York | North Carolina | Northern Mariana Islands | North Dakota | Ohio | Oklahoma | Oregon | Pennsylvania | Puerto Rico | Rhode Island | South Carolina | South Dakota | Tennessee | Texas | Utah | Vermont | Virginia | Virgin Islands | Washington | West Virginia | Wisconsin | Wyoming |

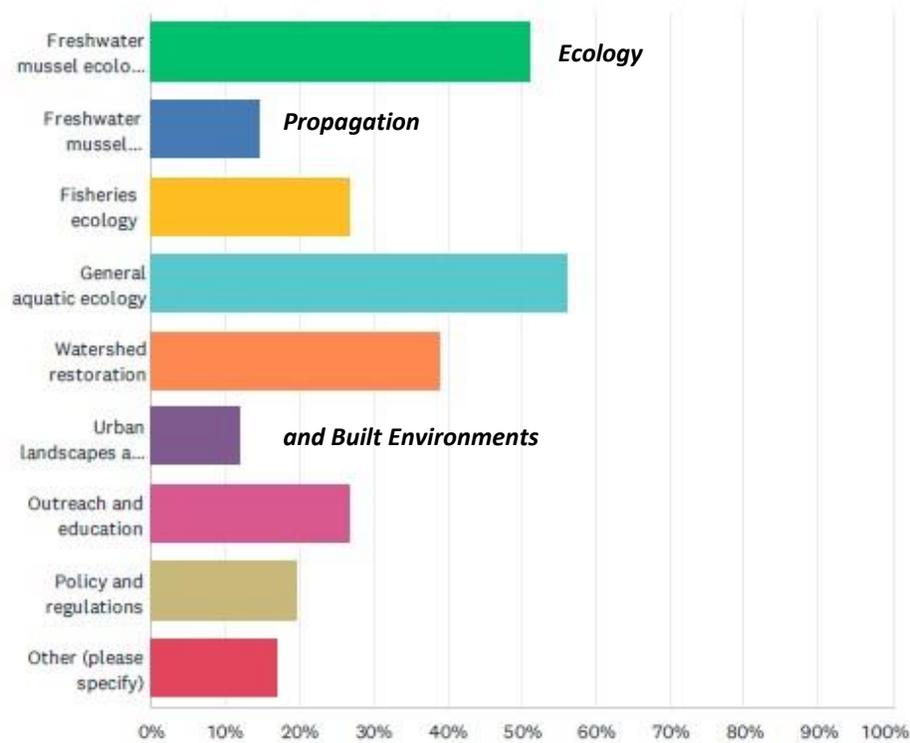
Summary of April 2023 Survey



Chesapeake Bay Mussel Committees Survey

Q8 Please indicate your area(s) of expertise (click all that apply):

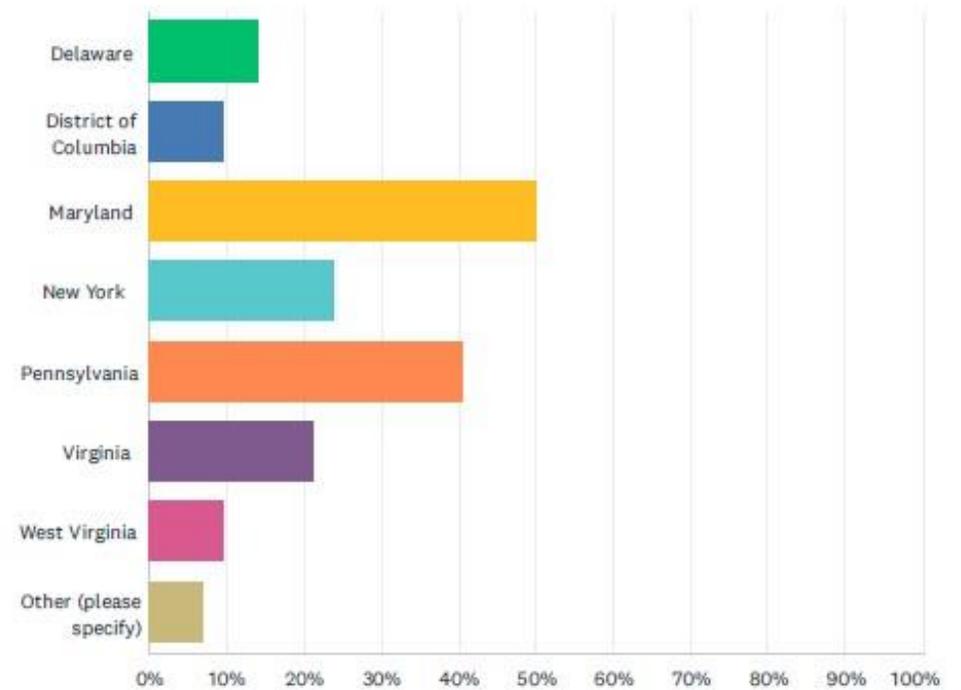
Answered: 41 Skipped: 1



Chesapeake Bay Mussel Committees Survey

Q9 Please indicate in which state(s) you work (click all that apply):

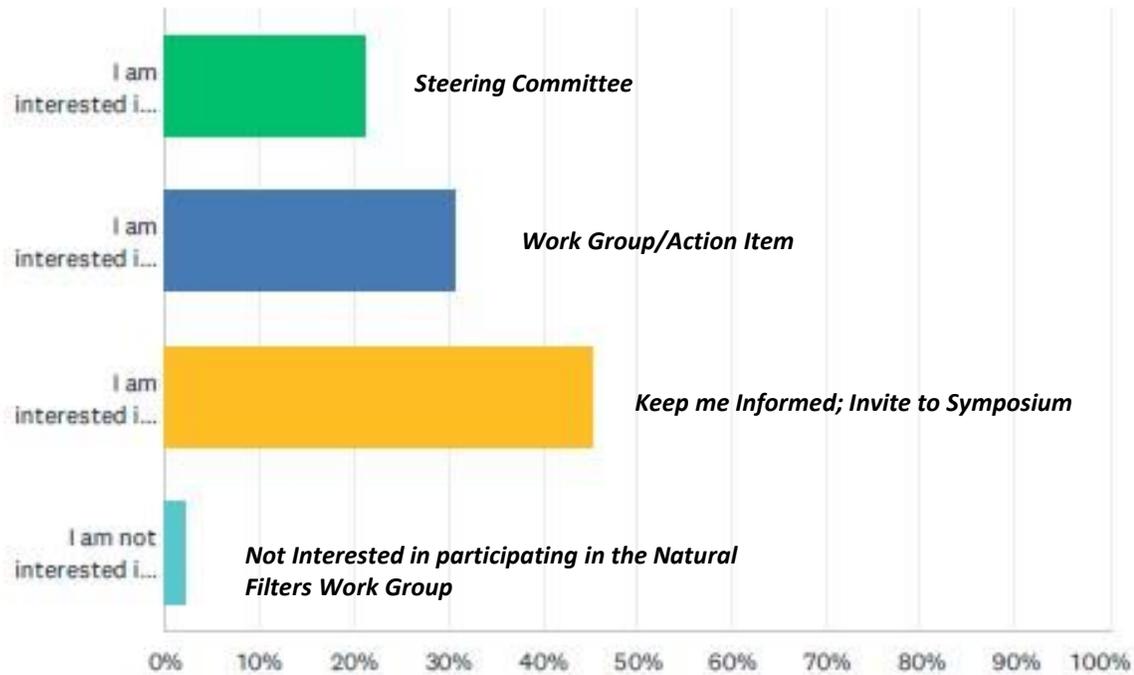
Answered: 42 Skipped: 0



Chesapeake Bay Mussel Committees Survey

Q3 Mussels as Natural Filters Committee

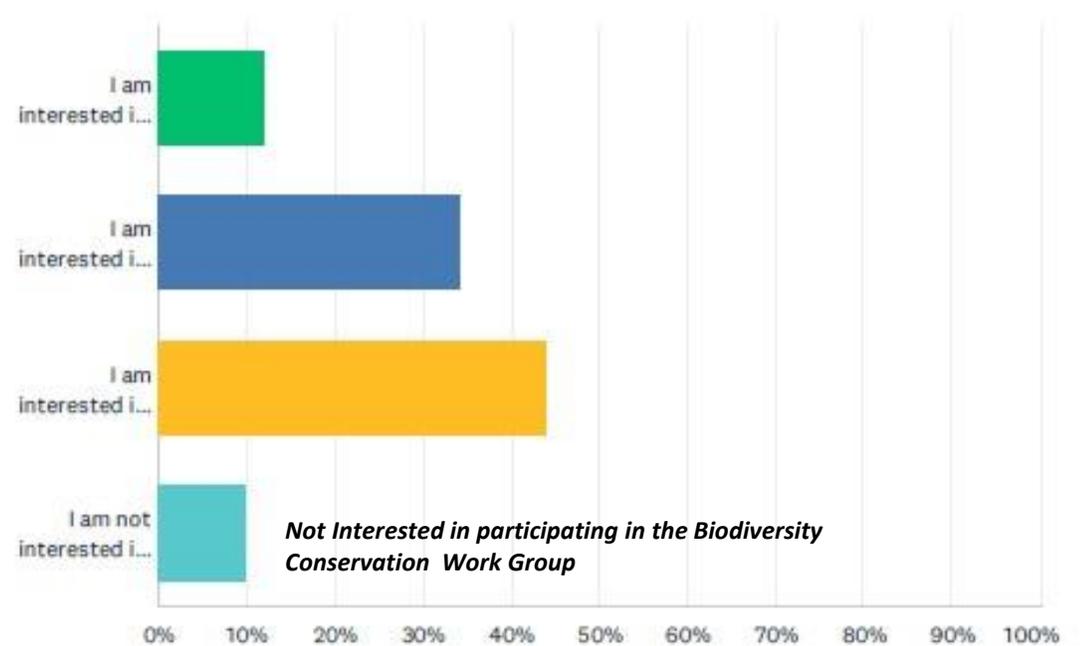
Answered: 42 Skipped: 0



Chesapeake Bay Mussel Committees Survey

Q2 Mussel Biodiversity Conservation Committee

Answered: 41 Skipped: 1



News & Announcements



P. Badra | Michigan State University



Next Steps



J. Shallenberger | SusQ River Basin Commission

Chesapeake Bay Watershed Region Freshwater Mussel Partnership web page coming soon

[Home](#) > [Our Work](#) > [What We Do](#) > Lower Susquehanna SWP Partnership

Lower Susquehanna Source Water Protection Partnership

The Lower Susquehanna Source Water Protection Partnership (Partnership) was formed in 2012 to examine ways in which agencies and organizations can collaborate to address common issues and challenges related to protecting sources of drinking water on a regional scale.

The Partnership now has more than 40 organizations that meet twice a year to utilize their shared knowledge and technical expertise.

For more information, please see the following:

- [Lower Susquehanna Source Water Protection Partnership Fact Sheet](#)
- [Susquehanna River Basin's Early Warning System](#)



Thank you!

Hilary Hollier
Monitoring & Protection,
Administrative Specialist

hhollier@srbc.net

Jamie Shallenberger
Monitoring & Protection,
Program Manager

jshallenberger@srbc.net

Tyler Shenk
Restoration & Protection,
Section Supervisor

tshenk@srbc.net

Ellyn Campbell
Monitoring & Assessment,
Section Supervisor

ecampbell@srbc.net

