Chesapeake Bay Watershed Region Freshwater Mussel Partnership

Association of Mid-Atlantic Aquatic Biologists Annual Conference

Meeting Summary from Round-Table Discussion (Cacapon State Park, Cacapon, WV)

Thursday 03/27/2025 | 08:00 to 11:00

Meeting Agenda

No.	Description
1.	Welcome (SRBC)
2.	Introductions (All)
3.	Brief Overview of Chesapeake Bay Watershed Region FWM Partnership (SRBC)
4.	Individual Participant/Organization capabilities, priorities, current projects (All)
5.	National Fish & Wildlife Foundation funding: past & current year (Katie Ombalski/NFWF)
6.	Open Discussion
7.	Wrap-up and Adjourn

In-Person Participants

PADEP: Zach Fritz, Central Office; Josh Grassi, Northwest; Rick Spear, Southwest
DNREC: Gabbie Vailati
MDNR: Megan Kubala
Montgomery County DEP: Jody Buchino
VADEQ: Drew Garey
ICPRB: Mike Selckmann
SRBC: Ellyn Campbell, Tyler Shenk, Jamie Shallenberger

Remote Participants

NYSDEC: Annie Stupik
VADWR: Kayla Howard; Kim Morgan; Zach Taylor
NFWF (Woods & Waters Consulting): Katie Ombalski
MDNR: Matt Ashton
PADEP: Tyler Trostle, Chesapeake Bay Program Office
USGS: Kelly Maloney; John Young/Eastern Ecological Science Center

Agenda no. 3 | Bay Watershed FWM Partnership Overview

Refer to attached file with slide deck presented at AMAAB.

For more thorough overview of Chesapeake Bay Watershed Region Freshwater Mussel Partnership, visit the Partnership's web page (hosted on SRBC website)

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Agenda no. 4 | Highlights of Each Organization

PADEP: Rick Spear is the state malacologist and president of PA Biological Survey; Zach and Josh mainly work to support NPDES permitting process; Tyler is part of Chesapeake Bay TMDL and WIP support. FWM surveys tend to focus in western part of state, but SusQ and Delaware Basin surveys also occurred (ca 2010). Ohio Basin surveys typically require SCUBA teams. Highlights discussed include: (i) golden algae bloom that devastated aquatic life in Dunkard Creek in 2009 and subsequent activities to reintroduce/replenish FWM. Beginning in 2015, propagation efforts specific to Dunkard Creek have resulted in stocking ~60,000 FWM from 9 species. Follow-up monitoring is planned. (ii) river sand & gravel dredging operations historically operated throughout the Ohio Basin but majority of operators were eliminated by circa 2010 – recent surveys in formerly dredged areas indicate FWM populations "doing OK". (iii) NPDES permit support includes FWM and other benthic community surveys up & downstream of outfalls as means to assess permit compliance. (iv) PADEP coordinates FWM survey activities through MOU with PFBC, Western PA Conservancy (WPC), USFWS, and others. (v) the Union City Aquatic Conservation Center is site for FWM propagation.

ICPRB: Mike Selckmann and others are interested and able to support FWM survey and other activities; however, ICPRB currently does not have staff expertise/capacity to lead FWM projects. In past, Jim Cummins provided expertise and FWM projects mainly were drought-driven. Mike asked for input from other agencies/jurisdictions as to how FWM conservation management is pursued? Also, mentioned high-resolution habitat mapping and ties between FWM and host fish through eel/fish passage projects.

DNREC: Gabbie reported that current capacity is limited to mainly presence/absence survey activities, some tied to SAV surveys. Given geography of DE, FWM surveys in C/B portions of the state account for ~25% of overall activities.

VADEQ: Drew stated that DEQ lacks appreciable FWM capacity currently, although there is interest in, and studies involving FWM and toxic substances, mainly metals.

VADWR: DWR is primary Virginia agency working with FWM. Zach discussed his recent transition from MDNR to VADWR and his current role as State Assistant Malacologist. Zach discussed FWM propagation and replenishment activities mentioning funding made available thru a DuPont settlement. Virginia is propagating at Harrison Lake National Fish Hatchery, Virginia Aquatic Fisheries Conservation Center at Buller Lake, and the VA Tech Freshwater Mollusk Conservation Center and reintroductions in South and James Rivers. Zach mentioned FWM surveys and brood-stock collections from various locations, including surveys in parts of James River watershed that uncovered several listed species. Zach also mentioned collaboration with PA, MD, SC, and MA to advance regional conservation and restoration of Yellow Lampmussel and associated species. Kayla and Kim reported that they've been working to draft statewide FWM conservation plan with focus on species (in contrast to PA's focus on watersheds). DWR

developed database for FWM to support data analytics, mapping, and reporting – the database includes survey, propagation, and stocking information.

MDNR: Megan mentioned there is large project in Upper Potomac River to evaluate potential to replenish FWM in area(s) that were affected by water quality impacts due to legacy mining and dams. WQ and habitat have improved substantially and MDNR will conduct silo studies to assess survivability and growth by Elliptio and pending outcome, plan is to introduce FWM from hatchery-reared stock. MDNR is fabricating its own silos and will deploy in ~10 different sites this year. Megan also mentioned the mobile mussel hatchery "wet lab" that is stationed at Susquehanna S.P. and was funded largely as part of agreement with Conowingo Dam operators.

NYSDEC: Annie mentioned collaboration with Cornell Univ to use eDNA to search for rare FWM, as well as baseline surveys in Central and Northern NY that will be carried out by contractors. NY is at preliminary exploration phase to partner with academia on FWM restoration pilot project(s) as part of EPA Superfund site management and she requested guidance and other technical resources from others that pertain to FWM restoration planning and practice. **Please reach out to Annie directly at Annie.Stupik@dec.ny.gov or contact any of the SRBC Coordinator team if you have suggestions or resources to share.**

USGS: Kelly mentioned that he is part of CBP's Fish Habitat Team, Healthy Watersheds Goal Implementation Team, and Climate Resiliency Work Group and these groups do or could have tie-ins with FWM in context of the Bay TMDL framework. John discussed his background is mostly in remote sensing of riverine systems, including bathymetric LiDAR, with applications to aquatic habitat mapping/modeling. John and others at USGS EESC have experience surveying FWM on long river reaches to determine occurrence and estimate density – USGS and collaborators are trying to integrate FWM survey and bathymetric LiDAR to develop HEC-RAS models of habitat metrics (e.g., shear stress, flow velocity) to support management of reservoir outflows.

SRBC: We're doing our part to coordinate the Partnership. The Steering Committee members recently requested: (i) to meet every other month (vs. monthly); (ii) to narrow the Partnership focus toward more conservation/restoration and technical coordination and less education & outreach; (iii) to integrate the Partnership with existing meetings & activities including AMAAB, FMCS, and Chesapeake Bay Program work groups. If you have news/announcements, please contact us and we'll post to the web site or distribute to email list (as warranted).

SRBC fisheries biologists/technicians are involved with a NFWF-funded project (Western PA Conservancy is lead, PFBC and MDNR also are partners) to pilot FWM stocking efforts in the West Branch Susq River upstream of Jersey Shore, PA. The West Branch Susq had extensive historic impacts due to abandoned mine discharge (AMD); however, decades of remediation and geochemical weathering have combined to improve water quality and the partners will introduce FWM from stocks propagated by MDNR. The project includes a component whereby American eels will be infected by glochidia prior to release. Tyler described an SRBC-funded project in which WPC will lead FWM surveys in 2025 of one or more Lower SusQ River tributaries (short list has Conodoguinet Creek in Cumberland County, PA; Swatara Creek in Dauphin/Lebanon Counties; Octoraro Creek in Lancaster County) to evaluate baseline FWM community status in watersheds where SRBC has water quality monitoring resources and watershed conservation practice implementation is underway. SRBC staff remain eager and available to support FWM surveys in wadeable/snorkel settings – reach out if you have FWM surveys planned this season anywhere in/near

the SusQ Basin. Reach out also if you are interested in SRBC's water quality and aquatic life data that may be available for locations you're working in – we have a large database.

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Agenda no. 5 | National Fish & Wildlife Foundation Funding

Katie Ombalski is a contracted field liaison for NFWF who works in support of Chesapeake Bay Stewardship and Central Appalachia Habitat Stewardship programs.

Two of NFWF 2025 Grants were recently Announced and **Proposals are due 05/13/2025** and **Prior consultation with NFWF is encouraged.**

Chesapeake Watershed Investments for Landscape Defense (WILD)

- Planning and Technical Assistance: up to $75,000 available per award
- Implementation: $75,000 to $500,000 per award
- Collaborative Conservation: up to $200,000 per award

  WILD Grants require 1:1 matching resources. Up to 50% of match can come from federal sources.

Small Watershed Grants Program priorities are:

- Managing Agricultural and Urban Runoff
- Improving Water Quality and Stream Health Through Riparian Restoration and Conservation
- Enhancing and Protecting Freshwater Habitat for Eastern Brook Trout
- Enhancing and Protecting Tidal and Estuarine Habitat
- Enhancing Nature-Based Resilience for Human Communities
- Building Capacity for Landscape-Scale Watershed and Habitat Planning, Design, and Implementation

More information about NFWF 2025 Grants Announcements:
https://paenvironmentdaily.blogspot.com/2025/03/national-fish-wildlife-foundation-now_27.html

Katie stressed that for those who seek funding for FWM-related projects with locations in the Central Appalachian region, yet *outside* the Chesapeake Bay watershed, apply to Central Appalachia Habitat Stewardship program rather than the Chesapeake Bay Stewardship fund. For those in the Bay watershed, apply to WILD and Small Watershed Grant (and if announced, Innovative Nutrient and Sediment Reduction) programs.

Katie emphasized that projects have been awarded when focused on listed species especially, but FWM are taxa of interest to the NFWF program in general. NFWF has funded various FWM-related activities such as: planning, hatcheries, surveys, restoration, and BMP & conservation practices such as riparian buffers, livestock exclusion fencing, and water quality improvements.

Reach out to Katie if you have any questions: katie@woodswaters.com

Outside of agency budgets and permit/settlement funding for specific projects, NFWF has been the largest financial supporter of FWM-related projects across the Bay watershed in the past 10 years. The presentation slide deck includes summary of NFWF grant awards. And note that NFWF funding is a catalyst that stimulates and encourages additional resource investments leveraged through match and other collaborative actions.

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Agenda no. 6 | Open Discussion (in no particular order)

Introducing a New Mapping Tool to Conserve and Restore Freshwater Mussel Habitat in Virginia.

Chesapeake Bay Foundation (CBF) and VADWR collaborated to develop a FWM habitat suitability mapping tool. For more info and link to the tool: https://www.dcr.virginia.gov/insights/mussel-hotspots-mapped.

CBF offered a webinar presentation 03/28/2025 to provide a description and overview. CBF offered for those who couldn't attend or would like to revisit the presentation, the recording is available (below) and slide deck file is attached. **https://www.youtube.com/watch?v=0_nHGZ6w93A**

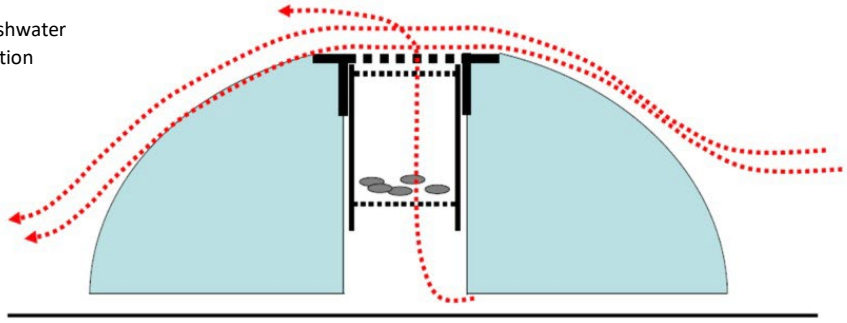
Check the FWM Partnership website and Nov 2024 Newsletter for additional information about this project.

Freshwater Mussel Silo

Several participants (PADEP and VADWR) mentioned their use of silos in on-going/upcoming projects and a silo is a concrete dome with a PVC chamber used to house and monitor juvenile mussels in streams, allowing researchers to study their growth, survival, and habitat suitability.

Mussel silos are portable, passive flow devices used to cage juvenile mussels in streams. They allow researchers to: (i) monitor mussel survival and growth; (ii) test the effects of pollution on mussels; (iii) assess the suitability of a site for mussel population restoration; and, (iv) conduct ecological studies.

Image Credit: Freshwater Biological Association



Silo Design: A concrete dome forms the outer structure, providing protection and stability. A PVC chamber is placed inside the dome, creating a smaller, controlled environment for the mussels. The PVC chamber is often covered with a mesh screen to allow water flow and prevent mussels from escaping.

To read more about the use of silos in FWM conservation, check out this article:

https://www.fba.org.uk/fba-voice/water-quality-investigations-for-endangered-freshwater-pearl-mussels-in-kent-catchment

The group discussed whether permits are required and if so, what type(s). Rick (PADEP) stated his experience has been that silos are permitted comparable to deployment of Hester-Dendy Samplers; i.e., state-issued Collector Permit is typical. Rick's experience is consistent with Pennsylvania guidance: https://www.pa.gov/agencies/fishandboat/education/teachers/aquatic-field-study.html#:~:text=Type%20I%20(Nonprofit%20and%20Education,described%20on%20the%20permit%20conditions.

The Freshwater Mollusk Conservation Society compiled FWM survey guidelines and protocols for various states and other North American jurisdictions, check link here:

https://molluskconservation.org/Mussel_Protocols.html

Biosecurity concerns were raised about possible pathogen introduction (and genetic contamination?) – quarantine was mentioned as the mitigation step; however, there appears to be very little guidance/consistency available.

Water Quality/Ecosystem Services Measures

Substantial interest exists among certain Chesapeake Bay TMDL stakeholders in general, regarding the possibility for FWM to improve water quality, especially with respect to nitrogen, owing to suspension/filter-feeding behavior and related role to enhance biogeochemical transformation *a la* denitrification. If you are or have worked on lab-scale or in-situ studies involving FWM-mediated

nutrient enhancement, dynamics, or anything pertaining to water quality benefits, please reach out to SRBC to follow-up.

Coincidentally, Megan mentioned her graduate research focus was to study role of FWM and N dynamics and here is a link to one of Megan's publications (sorry folks, for now this one is behind a paywall).

https://www.journals.uchicago.edu/doi/abs/10.1086/733241

Zotero | free, easy-to-use tool to help collect, organize, annotate, cite, and share research

SRBC created a Group Library called "FWM Partnership" using the free online document collaboration tool called Zotero. There are > 250 document titles currently in the group library and hopefully, we'll add Megan's soon. If you'd like access to the Zotero FWM Partnership group library, please send an email to: jshallenberger@srbc.gov and I'll send you an invitation. For more information about Zotero and the FWM Partnership group library:

https://www.zotero.org/groups/5496780/fwm_partnership

AMAAB 2025 Annual Conference Posters Pertaining to FWM

(i) eDNA for Freshwater Mussel Introduction in Restored Streams; by Elliot Foster, Tom Dombrowski, Nikki Curtis / Prince William County. Point-of-Contact: ncurtis@pwcgov.org

(ii) Restoration planning for freshwater mussel populations in the Upper Potomac River, Maryland; by Megan Kubala / Maryland DNR. Point-of-Contact: Megan.kubala@gmail.com

(iii) Chesapeake Bay Watershed Region Freshwater Mussel Partnership; by Tyler Shenk, Ellyn Campbell, James Shallenberger / SRBC. Point-of-Contact: jshallenberger@srbc.gov

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Thank you all for your time, input, feed-back, and insight. If you have questions, comments, or suggestions, don't hesitate to contact me/SRBC.

Thank you.

Jamie Shallenberger

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