



Chesapeake Bay Program's (CBP)
Scientific and Technical Advisory Committee (STAC)
Quarterly Meeting Minutes
March 5-6, 2024; Virtual
[Meeting Webpage](#)

Attendance:

Members: Matt Baker (UMBC), Kathy Boomer (FFAR), Charles Bott (HRSD), Shirley Clark (PSU), Bill Dennison (UMCES), KC Filippino (HRPDC), Kathy Gee (Longwood University), Kirk Havens (VIMS), Ben Hayes (Bucknell University), Jason Hubbart (WVU), Jeni Keisman (USGS), Christine Kirchhoff (PSU), Scott Knoche (Morgan State, PEARL), Ellen Kohl (UMBC), Yusuke Kuwayama (UMBC), Erin Letavic (Herbert, Rowland, & Grubic, Inc. [HRG]), Dave Martin (TNC), Mark Monaco (NOAA-NCCOS), Greg Noe (USGS), Efeturi Oghenekaro (DOEE), Leah Palm-Forster (UD), Joe Reustle (Hampton University), Kenny Rose (UMCES), Mike Runge (USGS), Larry Sanford (UMCES), Amir Sharifi (DOEE), Valerie Were (CIRA), Joe Wood (CBF), Weixing Zhu (Binghamton)

Guests: Doug Austin (EPA), Emily Beach (Chesapeake Conservancy), Doug Bell (EPA), Gopal Bhatt (PSU), Jess Blackburn (CAC), Karl Blankenship (Bay Journal), Caitlin Bolton (Washington Council of Governments), Elliott Campbell (MD DNR), Lee Currey (MDE), Joel Dunn (Chesapeake Conservancy), Melissa Fagan (CRC), Rachel Felver (Alliance for the Chesapeake Bay), August Goldfischer (CRC), Normand Goulet (NVRC), John Griffin (Chesapeake Conservancy), Alex Gunnerson (CRC), Melissa Harrison (PA DEP), Charles Hegberg (Resource Environmental Solutions LLC), Scott Heidel (PA DEP), Chuck Herrick (CAC), Lauren Hines-Acosta (Bay Journal), Amy Hruska (Underwood & Associates), Ashley Hullinger (PA DEP), Gina Hunt (MD DNR), Arianna Johns (VA DEQ), Anna Killius (CBC), Adrienne Kotula (CBC), Josh Kurtz (MD DNR), Brooke Landry (MD DNR), Julie Lawson (CAC), Jeff Lerner (EPA), Logan Lewis (Water Science Institute), Lew Linker (EPA), Kumar Mainali (Chesapeake Conservancy), Lee McDonnell (EPA), Kevin McLean (CBP), Tina Metzger (National Center for Resource Development), Laura Cattell Noll (Alliance for the Bay), Kayli Ottomanelli (LGAC), Sheronda Rose (CBF), Kristin Saunders (UMCES), Jillian Seagraves (National Park Service), Gary Shenk (USGS), Jackie Specht (MD DNR), Kathy Stecker (MDE), Kurt Stephenson (VT), Breck Sullivan (USGS), Joe Sweeney (Water Science Institute), Peter Tango (USGS), Uchi Dominic Terhile (OBA Global Citizens), Patrick Thompson (Energy Works), Bo Williams (EPA), Tim Wheeler (Bay Journal), Tiffany Wright (City of Bowie), John Wolf (USGS), Marjorie Zeff (AECOM), Qian Zhang (UMCES/EPA)

Administration: Meg Cole (CRC), Tou Matthews (CRC), Denice Wardrop (CRC)

Tuesday, March 5th

Call to Order, STAC Business, Announcements – Larry Sanford (STAC Chair – UMCES)

STAC Chair Larry Sanford (UMCES) called the meeting to start at 9:00AM with an outline of the current meeting agenda and a review of the December 2023 Quarterly Meeting. Sanford submitted minor corrections to STAC Staff for the December 2023 STAC Quarterly Meeting Minutes. The December and January Executive Board Meeting Minutes were approved without comment. Sanford invited members to share any announcements on upcoming partnership activities and events of potential interest to the committee.

- Announcements:
 - STAC Membership: Official DC Mayoral Appointment of Efeturi Oghenekaro (DOEE) and new member Amirreza (Amir) Sharifi (DOEE).
 - [CESR in MD Senate Hearing](#): Denice Wardrop (CRC) will be testifying to the Maryland Senate regarding Senator Sarah Elfreth's [Whole Watershed Act](#) (WWA); Wardrop will speak to the importance of STAC and implications from the [Comprehensive Evaluation of System Response](#) (CESR) report.
 - [AC Letter to the PSC](#): The Chairs of the Advisory Committees (Scientific and Technical, Local Government, and Stakeholders') composed a letter to the Principals' Staff Committee (PSC) requesting a discussion during their [March Meeting](#) on ways to improve interaction between the Advisory Committees and the Bay Program.
 - Science Synthesis Subcommittee: Following the December 2023 Quarterly Meeting, the Science Synthesis (SS) Subcommittee was formed. Led by Jeni Keisman (USGS), this subcommittee will draft and design the FY24 STAC Science Synthesis Request for Proposal (RFP), to be reviewed and approved by STAC at an upcoming quarterly meeting.
 - Upcoming FY23 STAC Workshop: The STAC Workshop "[CBP Climate Change Modeling III: Post-2025 decisions](#)" will convene in-person on Tuesday, May 7 – Thursday, May 9, 2024 in Arlington, Virginia.
 - CESR Outreach Committee: CESR Outreach resources will fund the creation of several policy briefs that plan to explain, identify and prioritize specific report findings or implications using accessible language. Additional funds will be utilized to advance specifically, living resource recommendations from the report, an effort that is being led by Kenny Rose (UMCES) and Mark Monaco (NOAA-NCCOS).
 - [Seeding Solutions RFA](#): The Foundation for Food & Agriculture Research (FFAR) has opened a request for applications (RFA) for its [Seeding Solutions](#) program which supports projects that address challenges in food supply and agroecosystem management through novel partnerships.

DECISION: December 2023 Quarterly Meeting Minutes conditionally approved, STAC Staff will address comments submitted by STAC Members. December 2023 Executive Board Meeting Minutes and January 2024 Executive Board Meeting Minutes approved.

SRS 4th Cycle Check-In / STAC Input on Climate Science Needs – STAC Staff, STAR Staff

The Strategy Review System (SRS) helps the Bay Program consistently apply adaptive management while working towards the outcomes of the Bay Agreement. With the start of the 4th SRS cycle, the Scientific, Technical Assessment and Reporting (STAR) team's and STAC's engagement has shifted to integrate scientific input before the Quarterly Progress Meetings (QPM); STAC's role is to provide adaptive management analysis, highlight learnings, and help define and shape science needs for the Goal Implementation Teams (GITs). All STAC members were assigned to Cohorts and Outcomes based on interest, background, and expertise.

STAC Staff requested feedback from STAC members that have begun to engage with their Cohort. STAC members requested Cohort coordinators send email invites to their respective Dry Run meetings along with a calendar invite.

STAR Coordinator Breck Sullivan (USGS) spoke to STAC about the [priority climate science needs](#) that were identified by the 31 Outcomes and grouped into four buckets: benefit to people, water quality improvements, habitat for fish and wildlife, and land conservation. Each theme is further broken down into functional categories. Sullivan asked STAC for feedback in the classification of the climate science needs and to share any additional context or research that would support these needs.

Discussion:

- Weixing Zhu (Binghamton University): There is a lot of work to be done for outreach/education to prompt people to consider how their behaviors affect climate and thus their daily wellbeing and the future, and what adjustments they could and should be making.
 - Sullivan: The topic of centering work around people and understanding the wellbeing that the environment can provide was discussed in the Beyond 2025 Symposium.
- Wardrop: Is the Management Board (MB) supposed to prioritize the climate science needs?
 - Sullivan: The original plan was to present all climate-related science needs to the MB and have them prioritize; we recognized this method is not the best fit for the MB. Each Outcome was asked for their priority climate science needs, which is what will be presented to the MB. The next step will be to align these needs with the MB's priorities and find resources to support these needs.

- Wardrop: There may need to be additional prioritization among the science needs received from the Outcomes before presenting to the MB. What can STAC do to help?
 - Kristin Saunders (UMCES) [chat]: Would it be helpful when you present this to the MB to be able to say "STAC concurs with this approach" so it is clear our science advisors concur with this approach, especially where the lens is broader than simply water quality focused needs? Especially to the extent that any of these needs align with CESR.
 - Sullivan: I like the idea of grouping them and Saunders' suggestion to have STAC's backing.
- Rose: Would it be possible to include what the science needs information will be used for? To understand the importance or potential impact of having the information?
 - Sullivan: We collect the rationale and urgency of each need. It was not provided in the presentation but making a better "why" connection could be helpful.
- Christine Kirchoff (PSU): I wonder about the influence of climate in affecting the ultimate goals of the Bay Program and how that relates to the push towards more adaptive management.
 - Sullivan: We don't want to identify one science need as the main priority since there are multiple outcomes we are trying to achieve. I'm hoping that with these buckets and the description of why each need is important, it will help various individuals understand how it relates to their priorities. Stressing how these needs are helping our ultimate goal would be useful.

[Leveraging Deep Learning and Data Science for the Conservation and Restoration Movement](#)

– Joel Dunn (*Chesapeake Conservancy*)

Joel Dunn (Chesapeake Conservancy) is President and CEO of Chesapeake Conservancy, which is dedicated to protecting the Chesapeake Bay and its watershed and uses data and technology to conserve landscapes vital to the Bay's health. Kumar Mainali (Chesapeake Conservancy) joined Dunn to help answer technical questions and provide specific details of the organization's work.

Dunn built on previous presentations to STAC centered around artificial intelligence (AI), machine learning (ML), and deep learning (DL). In his presentation, Dunn delved into high-resolution land cover use data, hyper-resolution hydrography data, deep learning model for wetlands mapping, biodiversity mapping of current and future habitat, and solar array mapping and site prediction. Showing work in delineating wetlands, Dunn advocated for the use of AI to produce more precise and accurate data. A new tool that leverages AI would use 10-meter resolution remotely sensed data produced every five days to detect environmental changes in near real-time.

Discussion:

- Saunders [chat]: One example of how this is already being used in our work – Chesapeake Conservancy unveiled its Best Management Practice (BMP) opportunity analysis tool for the lower Susquehanna that is meant to help PA/MD/NY target their work for the Conowingo Watershed Implementation Plan (WIP) so that siting can be done with regard to ecosystem services for living resources and people and address water quality.
- Sanford: Can you tell us more about the Chesapeake Conservancy as an organization?
 - Dunn: Chesapeake Conservancy was started by one person 14 years ago. Now, there are 42 people on staff, almost half of whom work with GIS or AI to produce new data and information for the conservation movement. The Chesapeake Conservancy is often in the press for creating new parks and refuges and advancing certain new bills and appropriations.
- Bill Dennison (UMCES): A GIS stream mapping exercise that compared digital elevation model streams to infer parent streams was completed a few years ago; this could probably be produced much faster with an AI approach. One of the CESR recommendations is to move into the shallow water, nearshore edges, and riparian areas of the Bay; it seems the one-meter resolution precision offers the opportunity to track the progress of sea level rise.
 - Matt Baker (UMBC): I am familiar with a similar stream mapping opportunity. As a precursor to mapping the streams, we train computers to identify things that look like streams that occur within broader valleys; actively mapping broader valleys has allowed us to connect and see the likely paths of daylight streams and old wetlands that have been buried by urbanization in Baltimore and D.C.
 - Dunn: Marshes are also threatened by sea level rise and as a consequence, species migration. The Chesapeake Conservancy has focused a lot on the Nanticoke River and Blackwater Refuge with the concentration of wetlands within the Chesapeake watershed and have helped protect 26 parcels along the Nanticoke River.
- Wardrop: A difficult concepts to consider is that the ‘Bay of the Future’ is not the ‘Bay of the Past.’ Where is the capability of your species distribution model in connecting to climate change scenarios? In the scope of mapping community interactions on top of potential species distributions and habitat.
 - Mainali: We have multiple short- and long-term objectives in the biodiversity mapping project, one of which is to get a high-resolution baseline of distribution data. Another is to understand where the current and future distribution is going to be for each species and analyze the corridor and conservation prioritizes. Another goal adds in a socioeconomic dynamic to analyze areas that are more likely to fragment or to be populated, and the impact on the corridors.
 - Shirley Clark (PSU) [chat]: To add to Wardrop, we should also think about the impact of infrastructure on species distribution. This is vital given the billions

being spent now to add to and repair/replace infrastructure, especially our linear infrastructure. A linkage between infrastructure funding implementation and species distribution would impact what we do and where, as well as shorten the time to do an Environmental Impact Assessment.

- Joe Wood (CBF): As we think about the future, what do you think is one of the most important things for the Bay framework to do to support and use this work?
 - Dunn: The Bay Program has been receptive to our ideas. The Chesapeake Conservancy approached them in 2012 to produce higher resolution land cover data, which they are now applying to the whole coast around the country. Moving forward, the Conservancy would like to see some of the AI principles and techniques that was talked about earlier adopted into the fabric of the Bay Program. Integrating these tools and data into the Bay Total Maximum Daily Limit (TMDL) and framework accelerate the partnership forward; it would require higher level support and resources.
- Ben Hayes (Bucknell University): The Delaware and Ohio, Pennsylvania approach to stream restoration has been predominantly influenced by the Bay Program approaches which, as CESR pointed out, is driven by TMDL rather than floodplain reconnectedness or other markers. The report found that there is a lag in both the implementation and the response of ecosystems. The Chesapeake Conservancy maps have the potential to be coupled with models for flow, height, depth, inundation, temperature and more. STAC should continue these conversations because we need more nuanced approaches. What can STAC provide to support this work?
 - Mainali: For us to develop better, more robust models, the community can provide us with data such as species occurrence records. It is difficult to find quality records to base the next generation of maps on. Also, to identify the species that are of concern or significance will help us find more useful set of species. We need to engage in conversation with those who have a need for these models.
 - Dunn: The more comprehensive our data and knowledge, the greater our potential to achieve our shared objectives. The data has profound ramifications – the Chesapeake Conservancy has leveraged the hyper-resolution hydrography data in Pennsylvania to pinpoint best management practices in Central and Southern Pennsylvania to the point where it has been proposed to delist some of the streams from the impaired waters list.
 - Saunders [chat]: We are hearing similar comments from the various GITs who have an interest in broadening the focus and conversation about living resources impacts and not just how to get to the water quality numbers. These tools have the potential to help layer on those other considerations. There needs to be complementary conversations on how to incentivize or reward investments that go beyond because the systems we use for accountability are focused on the

nutrient, sediment, phosphorus and don't reward going beyond to capture other benefits.

- Erin Letavic (HRG, Inc.) [chat]: This [USGS dataset](#) is used for stormwater planning. But it's only reliable for undeveloped areas that have limited storm/combined sewer infrastructure. Many confounding factors for models that our federal partners create for us need to become more flexible as we get better at predicting future conditions and managing new infrastructure data.
- Kathy Boomer (FFAR): I want to recognize the value of this information for engaging stakeholders in conversations about better land management to address multiple outcomes and acknowledge that the work here is inline with national and global efforts to develop high-resolution data.
- Keisman: One ongoing challenge in developing predictive models is that future conditions are not present in the training data. How are you tackling that challenge and what insights do you have for combining ML with Bayesian stats?
 - Mainali: The Chesapeake Conservancy uses many predictors and not all exist for future conditions if they do exist for future conditions, the confidence under that data is not high. The goal of this practice is to develop two types of distribution models based on a limited set of predictors versus a complete set of predictors.

[Briefing on Findings from the STAC FY22 Workshop “Using Carbon to Achieve Chesapeake Bay \(and Watershed\) Water Quality Goals and Climate Resiliency: The Science, Gaps, Implementation Activities and Opportunities](#) – Jennifer Egan (UMCES), Chuck Hegberg (Resource Environmental Solutions LLC)

Jennifer Egan (UMCES) and Chuck Hegberg (Resource Environmental Solutions LLC) summarized the FY22 STAC Workshop “[Using Carbon to Achieve Chesapeake Bay \(and Watershed\) Water Quality Goals and Climate Resiliency: The Science, Gaps, Implementation Activities and Opportunities](#)” that was held May 25th-26th, 2023 at Hotel Hershey in Hershey, Pennsylvania. The workshop aimed to expedite water quality initiatives by leveraging the advantages of biochar to align more closely with the 2025 requirements. Additionally, it sought to advance water quality policies and explore carbon-negative opportunities in anticipation of the forthcoming 2025-2035 Climate TMDL. Demonstration projects in the Chesapeake Bay region show significant environmental benefits including water quality improvement, improved agricultural and urban soil health, and significant increases in soil infiltration capacity and hydrology. These smaller pilots have greatly advanced the empirical evidence supporting biochar protocols, standards, specifications, and crediting which as of now, are lacking in the Bay region.

Discussion:

- Boomer: What are the risks, unknowns, and concerns of biochar?

- Hegberg: There are several current unknowns to consider, such as vendors not understanding or knowing what the product is. Recognizing important specs is critical. Users need to make sure the biochar is certified and comes from sustainable forestry as well. Overall, the three important considerations of biochar are the following: the right source, the right place, and the right use.

Discussion of FY24 Workshop Proposals Received – STAC Staff

In December 2023, STAC released the STAC Workshop Request for Proposals (RFP) for the first round of STAC-funded workshops for the fiscal year 2024, which runs from June 1, 2024 – May 31, 2025. Four proposals were received. The STAC representative on each proposing team joined STAC Staff in discussing their proposed workshops with the committee. Short overviews of the received proposals are listed below.

As prospective Chair, Scott Knoche (Morgan State, PEARL) explained and answered questions for the proposed workshop titled “Identifying Natural and Social Sciences Gaps to Support Market-Based Approaches to Chesapeake Bay Watershed Restoration.” This workshop is designed to identify the future needs for filling gaps and overcoming roadblocks from both the natural sciences and the social sciences perspectives, focusing on ecosystem crediting and credit markets. From the findings of the workshop, the Chesapeake Bay Program Partnership can make informed decisions about what initiatives could resolve identified roadblocks.

As prospective Chair, Brooke Landry (MD DNR) explained and answered questions for the proposed workshop titled “Chesapeake Bay Shallow Water Habitat Sentinel Site Program Development.” The Submerged Aquatic Vegetation (SAV) Workgroup and the Habitat Goal Implementation Team (HGIT) seeks to develop a program that would monitor climate impacts on the functional value of shallow water habitats in Chesapeake Bay as well as the effectiveness of management measures taken by the Chesapeake Bay Program (CBP) partnership beyond 2025 as a focus on shallow water habitat restoration is emphasized. The objectives of this programmatic STAC workshop are to determine how many sentinel sites to define as well as the biotic and abiotic parameters to measure at each site, and with what frequency.

As prospective Chair, Qian Zhang (UMCES/EPA) explained and answered questions for the proposed workshop titled “Leveraging Artificial Intelligence and Machine Learning to Achieve Chesapeake Bay Research and Management: A Review of Status, Challenges, and Opportunities.” This workshop will synthesize the state of the science on artificial intelligence (AI) and machine learning (ML) approaches, identify research needs, and improve science coordination. The workshop’s main objectives are to: 1) summarize recent AI/ML applications to the Chesapeake Bay ecosystem and lessons learned, 2) identify the challenges and gaps in applying AI/ML approaches to Chesapeake Bay data, and 3) develop recommendations and identify opportunities for harnessing the power of AI/ML approaches to address Chesapeake Bay issues.

As prospective Chair, Christine Kirchhoff (PSU) explained and answered questions for the proposed STAC workshop titled “How Thinking Small Nets Big Benefits for the Chesapeake Bay.” This workshop will focus on “sandboxing” case studies among jurisdictions in the Chesapeake Bay watershed in response to the CESR report, and to inform Beyond 2025 recommendations to the Chesapeake Executive Council. The objectives of the workshop are to: 1) generate shared and clearer understanding of sandboxing approaches and institutional innovations required to implement successful watershed restoration, 2) promote co-production of actionable recommendations for the Chesapeake Bay partnership that launch from the success of sandboxing examples, 3) demonstrate the potential for the cumulative benefits of small-scale watershed approaches through the lens of jurisdictional case studies, and 4) improve understanding of the contributions of these localized efforts that support significant water quality and ecosystem improvements for both freshwater and tidal areas of the Chesapeake Bay watershed.

ACTION: Based on the additional information provided during the meeting, **STAC members** have the option to resubmit their original FY24 Workshop Proposal Scoresheet to STAC Staff. Using the updated scores and considering overall budget constraints, the **STAC Executive Board** will make final decisions for proposal approval on March 26, 2024.

[Briefing on Findings from the STAC FY22 Workshop “State of the Science and Practice of Stream Restoration in the Chesapeake: Lessons Learned to Better Inform Implementation, Assessment and Outcomes” – Greg Noe \(USGS\)](#)

Greg Noe (USGS) summarized the FY22 STAC Workshop “[State of the Science and Practice of Stream Restoration in the Chesapeake: Lessons Learned to Better Inform Implementation, Assessment and Outcomes](#)” that was held March 21st-23rd, 2023 at the Potomac Science Center in Woodbridge, Pennsylvania. The objective of the workshop was to review and distill lessons learned from past stream corridor restoration projects to improve restoration outcomes. The workshop focused on three topics: 1) identify the evolution of stream restoration goals, regulations, practices and practice implementation; 2) present and discuss science and assessment to document holistic impacts and outcomes; and, 3) create a synthesis of the best available science, practices and monitoring to enable adaptive management.

Discussion:

- STAC Staff: This workshop was discussed during the [February CRC Roundtable](#).
- Sanford: Are aspects of stream restoration similar to living shorelines in tidal waters?
 - Noe: There are definite similarities in balancing the soft and hard engineering to increase habitat value while maintaining stabilization. We need to understand how much risk we are willing to take as a community and a society because the hard engineering is limiting ecological functions that we may want.

- Baker: In the point of making ecological uplift a goal, do you also mean to tie the measurements to the goal in some way?
 - Noe: Yes, this will be discussed further in the final workshop report.
 - Baker: To what degree did the water quality of streams involved in stream restoration come into play? Water quality as in factors other than nitrogen and phosphorus. The literature has been lacking attention to the effect of changing dissolved content on macroinvertebrate populations.
 - Noe: Not often. When understanding outcomes of restoration, the water quality metrics are nitrogen, phosphorus, and sediment. One discussion during the workshop was whether the biology would be expected to improve if the stressor is not removed.
- John Griffin (Chesapeake Conservancy) [chat]: is it feasible to have water quality and ecological uplift in the same project?
 - Noe [chat]: Yes, but it's not always easy. It depends on what water quality metrics and what ecological uplift. Unless there is a strong stressor degrading health, and management can remove that stressor, then ecological uplift is often marginal and small.
- Letavic [chat]: We've been focused on stream restoration for MS4 sediment reductions in PA for the past 5 years and I've become frustrated with the lack of distinct definition (vindication that the group included it as a finding). Also, a practical needed next step is discussion with FEMA. The 'no floodplain elevation rise' issue is a regulation that all jurisdictions need assistance with.
 - Noe [chat]: Yes, I agree, I think the whole community would benefit from working with FEMA to have reasonable relaxation of the rules. There are also state differences in their willingness to rewet the riparian/floodplain zone due to regulation and concern about losing mature canopy trees to inundation stress (although I point out that those tree species are artificial occupants of a human dewatered riparian zone).
- Saunders [chat]: How can we get more people to embrace ecological uplift as the goal for practitioners and jurisdictions? Our system is pretty wired to incentivize the water quality focus and the Beyond 2025 steering committee is trying to tackle this. And how do we give more exposure to this report to guide decision makers? With the giant investments in infrastructure happening, the pivot is well-timed but not sure it will happen.
 - Noe [chat]: The Steering Committee is very interested and committed to communicating the Workshop findings to all we can. The Chesapeake Research Consortium (CRC) has broached the possibility of working with us to develop a 1-2 page 'glossy' summary for decision makers and stakeholders. We'll also brief as many CBP groups as possible.

[Briefing on Findings from the STAC FY21 Workshop “Advancing Monitoring Approaches to Enhance Tidal Chesapeake Bay Habitat Assessment”](#) – Peter Tango (USGS)

Peter Tango (USGS) summarized the FY21 STAC Workshop “Advancing Monitoring Approaches to Enhance Tidal Chesapeake Bay Habitat Assessment” that was held virtually across three sessions, on [December 9, 2021](#), [April 22, 2022](#), and [May 11, 2022](#). The three sessions focused on water quality and submerged aquatic vegetation (SAV), water quality and chlorophyll *a*, and water quality and dissolved oxygen (DO), respectively. The objective of the workshop was to develop actionable recommendations on adaptive monitoring and assessment for the next generation Chesapeake Bay Program tidal monitoring program.

Discussion:

- Rose: How much was water quality modeling part of these discussions? How involved were people who look beyond the familiar water quality aspects?
 - Tango: The workshop was focused on the TMDL and water quality standards perspective. In preparing for the SAV and DO conversations, there was a discussion on improvements to the modeling. One suggestion was to invest in fixed sites that can provide long-term continuous calibration verification. There was also support for having two vertical arrays in the main stem Bay as a way to create a high-fidelity assessment of hypoxia based on monitoring data.
 - Rose: A big challenge for the modeling and fisheries communities is to co-locate the fish observations with the environmental conditions nearby.
 - Tango: It was discussed in a recent meeting about Choptank being a target in the early part of this deployment strategy.
- Dennison: Richard Zimmerman (ODU) and Victoria Hill (ODU) presented on using satellites for SAV at the [Ocean Sciences Meeting](#). Based on their findings and advancements, it is time to for the CBP consider a transition from aerial fixed wing to satellite.

Wednesday, March 6th

Beyond 2025 Committee Overview – Josh Kurtz (MD DNR), Anna Killius (Chesapeake Bay Commission)

Principals’ Staff Committee (PSC) Chair, Josh Kurtz (MD DNR), spoke about Executive Council (EC) Chair Governor Moore’s (MD) value of data-driven and heart-led approaches for the partnership, with the desire to work closely with academia and improve community engagement. The Bay Program is interested in STAC’s input on the interconnections between research and decision-making. Kurtz requested STAC continue to share its knowledge in monitoring and modeling, scientific communication, research funding opportunities, and implementing adaptive management in the Bay Program. Kurtz was especially appreciative of STAC’s role in CESR and the transitioning of the report into policy and action.

Anna Killius (Chesapeake Bay Commission) is Co-Chair of the Beyond 2025 Steering Committee, which advises the development of recommendations to meet the EC [charge](#) to the PSC on [charting a course beyond 2025](#). Killius briefed STAC on the [Beyond 2025 Committee Small Group Symposium](#) that was held on February 28th, 2024, and discussed [draft recommendations](#) from the Small Groups. The Beyond 2025 process has moved into drafting a report, which will be open to a comment period and be revised based on feedback; the final report will be presented to the MB, then seek PSC approval, and finally, be presented to the EC in December 2024. The Steering Committee's report will consider the gap between the partnership's current progress and goals and make recommendations that seek to close that gap.

Discussion:

- Sanford: Should the Bay Program stay on course and figure out how to optimize the TMDL or should it revise the agreement and rebalance our resources to address other outcomes aside from water quality?
 - Killius: While not a formal vote, the consensus from the Symposium was in support of CESR observation that moving away from the status quo will achieve goals faster. This could potentially change the Bay Program agreement, partnership structure, and/or management strategies.

Panel: Small Group Member Insights from Beyond 2025 Symposium

The Beyond 2025 Symposium resulted in five focused [draft recommendations](#) from each of the Small Groups: People, Clean Water, Climate Change, Healthy Watersheds, and Shallow Water. These recommendations will be synthesized into major topic areas for the final report. STAC members and others involved in each topical group were invited to speak on a Panel on their Small Group recommendations and some of the bigger picture questions that remain open from their perspective as a Beyond2025 Steering Committee member.

KC Filippino (HRPDC) and Wood are part of the Clean Water Small Group and briefed STAC on the group's recommendations. Wood noted that the focus on the accountability framework and a tiered approach to the Bay TMDL was guided by the CESR report. Filippino predicted that STAC might receive questions on whether it is possible to achieve a tiered approach to the TMDL with the current modeling structure as the intention is to align the approach with state and local water quality responses, habitat, living resources, watershed responses, climate resilience, and more. Filippino and Wood agree that the recommendations are likely not understood by everyone that were not part of the group's many discussions and that they will need help communicating the recommendations in plain language.

Rose is part of the Shallow Water Small Group and commented on the reasonings behind the group's recommendations. The recommendations are both enhancements to ongoing efforts and new approaches to consider – they are a mix of evolution and revolution. CESR permeated many of the discussions at the Symposium; the group was very receptive of and wanted to hear

suggestions from the CESR report. Rose believes that one major task that STAC can take on is filling the gap between CESR and implementation and/or between CESR and policy. Sanford added that the group decided shallow water is taken to mean the edges where the land meets the water, all the way from the streams in the upper watershed to the mouth of the Chesapeake Bay.

Boomer is part of the Climate Change Small Group. She first reiterated the central question of the Beyond 2025 efforts, which is: “should the partnership continue with and improve the framework that is currently in place, or should it revisit the Bay Program more holistically?” According to Boomer, this is where adaptive management is used to advance the collective goals. Boomer then briefed STAC on the group’s recommendations and reflected on the themes of the recommendations: the need to engaging diverse communities and diverse perspectives, and the need to integrate an understanding of how climate change is affecting system behavior and response to management actions. She suggested STAC help in familiarizing itself with the decision at hand and providing reassurance that revisiting the agreement is not a call to start anew or reinvent the program but rather, a chance to evolve the program to be more effective in reaching our overarching goals.

Julie Lawson (DOEE), member of the Stakeholders’ Advisory Committee (CAC) and part of the People Small Group, briefed STAC on the [group’s recommendations](#). She pointed out that STAC may have particular interest in conversations of the use of networks and capacity building and communicating technical information to the public. Lawson emphasized that social science is not just about behavior changes but also about opportunities in economics, anthropology, and other community-focused and people-focused sciences. An exercise on the second day of the Beyond 2025 Symposium entailed the Small Groups collaborating to share recommendations and find themes and overlaps, and people were included in each of the themes that emerged. Sanford added that the Bay Program would not exist and continue to exist unless it is relevant and supported by the public. Lawson mentioned that some jurisdictions have already disagreed with some of the recommendations. The Beyond 2025 Steering Committee is in the process of reconvening and determining final recommendations to the EC, which will decide the items to accept, it is important to consider the feasibility of recommendations to be supported and achieved.

Jeff Lerner (EPA) is part of the Healthy Watersheds Small Group and briefed STAC on the group’s recommendations. Their “vanguard idea” is to integrate a more holistic and people-centric approach to improving and maintaining watershed health as a foundational goal of the partnership. The recommendations account for protection, restoration, and stewardship together to be more balanced in integrating activities, which is consistent with the current version of the Bay Program.

Discussion:

- Kirchoff [chat]: How much integration occurred across these Beyond 2025 Small Groups to align / synergize the various recommendations?
 - Saunders [chat]: The integration and synthesis is happening now. The symposium last week was the first time all the recommendations and justifications were heard together and the sorting begins in earnest.
- Weixing Zhu (Binghamton University) [chat]: Should the Beyond 2025 groups and SRS cohorts be integrated somewhat?
 - Saunders [chat]: Subject matter experts from the SRS cohorts either served on or were advising the Small Groups and my understanding is that there will also be an effort to loop back the recommendations to the GITs.
- Saunders [chat]: The suggestion of exploring the Chesapeake Healthy Watersheds Assessment or similar tools comes out of an effort to follow CESR's thoughts on focusing on outcomes rather than counting BMPs and perhaps having a set of indicators of watershed health and showing communities where their local waters fall on that spectrum of watershed health could move s towards outcomes.

Breakout Group Discussions

Participants were split into the five breakout groups according to the topics of the Beyond 2025 Small Groups, led by a STAC member who was part of that group. There were not enough members from the Climate Small Group to form a separate breakout, so those involved in those discussions were split across the other four Small Groups. Discussions focused on the conversations, decisions, and recommendations from the Beyond 2025 Symposium relating to the specific topic, as well as initial thoughts on STAC's role following these decisions and recommendations. The specific questions considered were:

- 1) What are the biggest science needs to address in order to facilitate the current draft recommendations?
- 2) How might STAC help fill these needs?

Report-outs from the breakout discussions are summarized below.

Shallow Water – Kenny Rose (UMCES)

Rose reported out from the Shallow Water group, which agreed that understanding a framework for accountable restoration is needed and a variety of considerations must be addressed to maintain significant enough trust in the TMDL and other program goals. Though the Watershed Agreement is broad, there is a strong bias towards water quality; STAC and Beyond 2025 discussions advocate for more flexibility in the TMDL to encompass living resources and include more spatial and temporal differences. STAC could investigate the science behind 'tiered TMDLs.' A reconciliation of recommendations across the 5 Small Groups is needed as Beyond 2025 moves from Phase 1 into Phase 2; STAC could investigate underlying science and weigh in on both knowns and unknowns for the consolidated recommendations.

Accountability within the framework should be defined and trade-offs examined. Within the Bay Program, STAC plays a role in decision-analysis for uncertainty, increasing adaptive management, and assessing whether a concept has been sufficiently explored. In remaining neutral on the political, legal, and economic context of changing TMDLs, STAC is trusted to provide accurate information to be used in the socioeconomic, environmental justice, and equity process.

- Tango [chat]: Maybe STAC would like to conduct some Natural Language Processing of the recommendations as a means of clustering/consolidating the 5 groups and 5 recommendations per group for removing redundancy while condensing messaging guidance.

People – Mike Runge (USGS)

Mike Runge (USGS) reported out from the People group, which recommended leaning into understanding of social science in the watershed. STAC should consider its role as a science body in recognizing social science as a critical part of Beyond 2025 efforts and what to put forth in terms of policy recommendations and the CESR report. For the second recommendation on representative goals and outcomes, “understanding where the objectives of the CBP are tied to community or a ‘community expression of those values,’” one of the biggest needs is comprehensive design of community engagement methods to discover what those representative goals are. Social science can help better understand and articulate what the goals of Diversity, Equity, Inclusion, and Justice (DEIJ) are and how to measure progress towards DEIJ achievements. The science of incentives must also be utilized to understand how to persuade behavior changes and engage people in working towards achieving goals quicker. Knoche added that asking people what they want is not enough as the answer can depend on whims or be fully unattainable; it is most important that social scientists advocate for more extensive understanding of public wants, needs, and willingness to make trade-offs. Ellen Kohl (UMBC) reflected on the challenge of rethinking traditionally physical science measurements and ideas to meaningfully integrate with social science and how these concepts will fit into Beyond 2025 and into STAC. Sanford noted that with people being a higher priority within Beyond 2025, STAC needs to study the science of people.

- Letavic [chat]: Should STAC define what social science data can/should be collected in support of the tradeoff discussions related to the accountability framework and success storytelling?
 - Wardrop [chat]: A big issue that emerged in CESR was the lack of methods to articulate tradeoffs (economic, social, or otherwise).

Healthy Watersheds – Jeff Lerner (EPA)

Lerner reported out from the Healthy Watersheds group, which discussed the major categories related to watershed health: landscape integrity, stressors, climate mitigation, social science,

and DEIJ. Significant resources are available to characterize land use and land cover but often the details of the condition of the different areas and the change of conditions through time is missing. One suggestion was to support strategic blue-green infrastructure planning for watershed health at multiple scales. There are many potential new opportunities for carbon sequestration and climate mitigation and further exploration could pair these opportunities with watershed health. The group discussed identifying the specific scientific issues of social science and using STAC's capabilities as a voice to the Bay Program to advocate new tools and sciences and connect the issue of watershed health to the needs of local communities.

- Tango [chat]: In considering the social science integration, it seems important to evolving our adaptive management principles to include some realtime feedback by individuals and communities; not just the occasional project or workshop but survey-response-insight-adapt effort as part of the weekly flow of CBP activity. Engagement is growing but it feels more diffuse and compartmental rather than integral to daily work flows. We have room to grow effective relationship building and networking.

Clean Water – Joe Wood (CBF)

Wood reported out from the Clean Water group, which discussed the accountability framework and focusing on possible outcomes over desired ideals. The group considered STAC's role in vetting for trusted sources of science for the partnership. On the tiered approach to the TMDL, one question from the group was how to identify the waters with a high tier based on varying characteristics and how tidal waters can influence this process. Filippino added that STAC will primarily be involved in the first two Clean Water recommendations, as well as act as a review and advice body for new approaches. A specific science ask from the symposium group was for more nutrient mass and balance data for nonpoint source nutrient management. Letavic commented on the common theme among groups on doing a better job as a collective on translating the science in a timely fashion. Letavic also noted that tools are often insufficient for the purposes of making good decisions or implementing outcomes.

Wrap-Up

Sanford wrapped up the March 2024 Quarterly Meeting with final thoughts to STAC. Sanford listed the overall themes and suggestions for how STAC can contribute to these themes: 1) STAC can address particular issues that those in the partnership are unfamiliar and uncomfortable with, such as a tiered approach to TMDLs; 2) STAC can offer a balanced approach to dealing with uncertainty; 3) STAC can contribute with social science expertise as the importance of people and community connection needs to be elevated in the final Beyond 2025 product; and 4) STAC can provide a vision of a revised accountability framework. Sanford suggested a short summary of the themes that emerged from the conversations of the meeting; the Beyond 2025 Steering Committee may already be aware of these themes but STAC's confirmation is a valuable contribution to the effort.

- Dennison: STAC does not only have expertise within social science, STAC acts as a bridge between natural and social sciences.
- Wood: Some of the recommendations by the Small Groups were drafted because of conversations with STAC. The Beyond 2025 efforts will need STAC's help, especially once Phase 2 starts, to stay on track and understand the reasonings behind the recommendations.
 - Saunders [chat]: I would suggest that STAC be more vocal *before* Phase 2 or some of the recommendations may not make it forward beyond jurisdiction thinking.

ACTION: STAC Leadership and **STAC Staff** will provide the Beyond 2025 Steering Committee a short summary of today's discussions to represent STAC's input on the Beyond 2025 efforts.

The [STAC June 2024 Quarterly Meeting](#) will take place in-person on Tuesday and Wednesday, June 4th and 5th, 2024 at [Point of View Retreat](#) in Mason Neck, Virginia. Day 2 will be a Science Communication Workshop led by [Green Fin Studio](#).

Minutes Approved by STAC at the [June 2024 Quarterly Meeting](#).