Chesapeake Bay Program's (CBP)
Scientific and Technical Advisory Committee (STAC)
March 10-11, 2020 Quarterly Meeting Minutes
Webinar Meeting

Tuesday, March 10 Minutes

Attendance:

Members: Brian Benham, JK Bohlke, Kathy Boomer, Charles Bott, Chris Brosch, Anthony Buda, Bill Dennison, Zach Easton, Alix Fink, Lara Fowler, Deidre Gibson, Kirk Havens, Carl Hershner, Tom Ihde, Thomas Johnson, Elliot Kellner, Chancee Lundy, Andy Miller, Mark Monaco, Leah Palm-Forster, Kenny Rose, Michael Runge, Larry Sanford, Leonard Shabman, Adel Shirmohammadi, Eric Smith, Jay Stauffer, Kurt Stephenson, Jeremy Testa, Tess Thompson, Lisa Wainger, Denice Wardrop, Gene Yagow, Weixing Zhu

Guests: Gary Shenk (USGS), Scott Phillips (USGS), Lee McDonnell (EPA CBPO), Emily Trentacoste (EPA), Amy Handen (EPA), Olivia Wisner (CRC), Tuana Phillips (CRC), Loretta Collins (UMCES), Jeni Keisman (USGS), Lew Linker (EPA), Caitlyn Johnstone (Alliance)

Administration: Denice Wardrop, Melissa Fagan, Annabelle Harvey, Meg Cole

Call to Order, Announcements – *Andy Miller (STAC Chair – UMBC)*
Andy Miller (UMBC) called the meeting to order at 9:00 am. Miller requested a motion to approve the December 2020 Quarterly Meeting Minutes and the February 2020 Executive Board Meeting (EB) Minutes. Tom Ihde (Morgan State) submitted one clarification pertaining to his comments in the December Quarterly Meeting Minutes. With Ihde's edit, both the February EB Minutes and December Quarterly Meeting Minutes were approved without objection. There were no member announcements.

Next, Miller introduced the new Chief of Science, Analysis and Implementation Branch of the Chesapeake Bay Program Office (CBPO), Lee McDonnell. McDonnell attended the first day of the March Quarterly Meeting to discuss his current role and to connect with STAC membership on Bay Program science analysis and implementation. Prior to joining the Chesapeake Bay Program (CBP), McDonnell worked for the Pennsylvania Department of Environmental protection as a Water Quality Manager in the Southcentral Regional Office and as Director for the Bureau of Clean Water. During his career, McDonnell has amassed 25-years' experience in Total Maximum Daily Load (TMDL) deviation, water quality standards, nonpoint source firming, and the Clean Water Fund. In this new position, McDonnell is hopeful to push monitoring data to the forefront and work to integrate science analysis into living resources.

> **DECISION: Andy Miller** requested a motion to approve the February 2020 Executive Board Meeting Minutes and to conditionally approve the December 2020 Quarterly Meeting Minutes with Tom Ihde's edits. Result: Motion carried.

Recap of STAC December 2019 Quarterly Meeting — *Andy Miller (UMBC)*
Miller recapped important takeaways from the December Quarterly Meeting which took place on December 18-19, 2020 at the Chesapeake Bay Environmental Center in Grasonville, MD. At the December meeting, STAC was updated on CBP science needs with presentations on the Fish Habitat GIT, the Healthy Watersheds Assessment (HWA), and the Aquatic life cohort. Bob Hirsh (USGS) gave a presentation on recent analysis of Susquehanna observations. Regarding STAC workshop business, Zach Easton (VT) and Kurt Stephenson (VT) reported on a STAC FY2019 workshop entitled, 'Increasing Effectiveness and Reducing the Cost of Non-Point Source Best Management Practice (BMP) Implementation: Is Targeting the Answer?' Aside from these scheduled talks, the bulk of meeting time was utilized for the ongoing Achieving Water Quality Goals in the Chesapeake Bay: An Assessment of System Response and Science Needs (STAC SGA) effort. After Gary Shenk (EPA) and Easton presented to membership on the Watershed Workgroup document progress, workgroups met individually in breakout groups to continue working on their sections. Finally, Miller thanked Bill Ball for leading STAC as Executive Secretary for the past three years and welcomed Denice Wardrop (PSU/CRC) as the next STAC Executive Secretary.

Recap of January Principals' Staff Committee (PSC) Meeting—*Andy Miller (UMBC)*
Miller recapped important takeaways from the January 2020 PSC meeting. The meeting agenda included report-outs by watershed partners, approved final Phase III Watershed Implementation Plans (WIP), water quality milestones, Exelon-MD Conowingo Hydroelectric Project, Management Board recommendations to Chesapeake Bay Program outcomes, forest buffer action teams, and the federal budget.

STAC Workshop Report-Out: Contaminants of Emerging Concern—*Scott Phillips (USGS)*
Scott Phillips (USGS) discussed the STAC report entitled, *Integrating Science and Developing Approaches to Inform Management for Contaminants of Concern in Agricultural and Urban Settings*, which looked at contaminants from both agricultural and urban settings. Major recommendations from the workshop included: continued research investment to understand the co-benefits or negative impacts of nutrient/sediment BMPs on water quality, ensure habitat quality, and preserve aquatic resources as well as build a close relationship between researchers and the management community to identify sensitive areas/populations that would benefit from improved BMP design, implementation, and/or monitoring.

STAC member comments discussed how contaminant of emerging concern (COE) may affect stormwater discharges from municipal sources (MS4), the Chesapeake Bay Fish Habitat Assessment and fish species in urban streams. Additional questions raised by STAC for possible future inquiry included examining the impact of runoff from newer pesticides and hot spots. More robust coordination of fish monitoring across the CB region may be needed.

FY2020 Workshop RFP Results—*Annabelle Harvey (CRC)*
Annabelle Harvey (CRC) provided an overview of the three proposals received for the FY20 STAC workshop RFP. The total funds requested from all three proposals totals to $30,000. With $50,000 available for FY20, STAC could fund all three workshops. Harvey presented the mean scores from STAC members' initial score sheets and feedback on each proposal. Overall, the three proposals were scored similarly by STAC.

Miller made a motion to approve funding for Proposal #1, *Understanding Genetics for Successful Conservation and Restoration of Resilient Chesapeake Bay Brook Trout Populations*. The motion carried.

Proposal #2, *Advancing Regenerative Agriculture: Exploring Barriers and Incentives to BMP Adoption* had the lowest mean score of the proposals, though only slightly. STAC member comments agreed the Steering Committee (SC) represented a good cross section of people and experience in addition to the conversation was both critical and timely. Constructive feedback described a lack of connection between the workshop and CBP goals, suggested more geographic diversity on the SC, and asked for clarification on the phrase "regenerative agriculture." Kathy Boomer (FFAR), Workshop Chair, underscored the importance of creating a conversation between academics and outreach specialists. The highest graded proposal was Proposal #3, *Overcoming the Hurdle: Addressing BMP Implementation Through a Social Science Lens*. Positive comments spoke to the smart logistical planning of breakout groups and the timelines of the topic. STAC member concerns focused on the small number of speakers and topics identified as well as the need to connect the proposal to CBP goals.

The bulk of STAC member comments regarding Proposal #2 and Proposal #3 were on a possible overlap in scope. Members suggested both workshop committees coordinate to ensure their products are consistent at the same level but not repetitive. Others recommended combining the workshops entirely. After some discussion, Miller moved to conditionally approve Proposal #2 and Proposal #3, with the condition the two workshop leads would coordinate to ensure both effectively accomplish their objectives. The motion was carried.

DECISION: RFP (#1) *Understanding Genetics for Successful Conservation and Restoration of Resilient Chesapeake Bay Brook Trout Populations* is approved for funding.

ACTION: RFP (#2) *Advancing Regenerative Agriculture: Exploring Barriers and Incentives to BMP Adoption* and RFP (#3) *Overcoming the Hurdle: Addressing BMP Implementation Through a Social Science Lens* are conditionally approved. **STAC Staff** will work with members of both Steering Committees to differentiate between RFP (#2) and RFP (#3).

STAC Workshop Report and Recommendations: Communicating strong recommendations
—Gary Shenk (USGS), Denice Wardrop (CRC)
Gary Shenk (USGS) and Denice Wardrop (CRC) presented on proposed process revisions to STAC technical reviews, workshops, and other responses. According to STAC literature, the process for receiving a CBP reply to a STAC workshop should take less than 180 days. Currently, the process can take up to 5 years in order to receive a CBP response letter. Of the 31 workshops STAC has held, 24 have produced reports, and 7 have received responses from the Bay

Program. This current model produces a high volume of sitting reports that do not have another avenue to the CBP besides a MB response. Wardrop and Shenk proposed a new framework (SPURR) to help planning committees easily plug their recommendations and efforts into the larger Bay Program network. The acronym '**SPURR**' stands for **S**pecific and granular, **P**rogrammatic partner, **U**rgency, **R**isk, and **R**esources and timing. For future STAC activities, the following new process is suggested: properly match tools (technical reviews, workshops, STAC mini-reviews), identify a Chesapeake Bay Program partner, utilize the SPURR format, present workshop report to 1-5 GITS or other programmatic partners, and finally, present to Management Board (MB).

STAC member feedback on the new process was largely positive, with many participants excited there would be more stringent guidelines to help push along report findings. Rose suggested ranking recommendations within the workshop report to avoid policy, Shenk agreed and proposed that the programmatic partner could help prioritize workshop recommendations. Boomer was concerned this new process favors information delivery too heavily. Within soil health, there is no direct evidence to suggest research and management communicate on the topic of health, Boomer said. Miller presented the AEIOU Executive Summary as a model of a timely report with strong recommendations and connections. Suggestions from other members were ensure the RFPs link up with the SPURR format and keep participants connected for report clarification questions.

> **ACTION: Denice Wardrop, Gary Shenk, and STAC Staff** will work to incorporate the new workshop/report procedure for FY2020 workshops.

Science Needs of the Chesapeake Bay Program
—Emily Trentacoste (EPA) and Stewardship Cohort Outcome Representatives
As part of the CBP Strategy Review System (SRS) process, cohorts of the workgroups for each outcome report their progress to the Management Board (MB) on a bi-annual basis. As part of the Strategic Science & Research Framework (SSRF), Emily Trentacoste (EPA) updates STAC quarterly on CBP workgroup science needs and ongoing resource assessment. The SSRF process identifies and prioritizes ongoing cohort science needs resulting from knowledge gaps within individual Goal Implementation Teams (GITs), 2017/2018 SRS-identified needs, and STAC workshop recommendations. These needs are shared with STAC for input to facilitate ongoing resource assessment as STAC can use this science needs list to inform research priorities and workshop topics. Amy Handen (EPA), Olivia Wisner (CRC), and Tuana Phillips (CRC) presented on the science needs of the Citizen Stewardship, Public Access, and Diversity workgroups respectively.

First, Handen discussed her changing role within the Program and the targeted needs of the Citizen Stewardship workgroup. Handen is the former coordinator for the Citizen Stewardship GIT though she now holds a new role at the EPA tasked with integrating social science more purposefully into the partnership. The outcome of the Citizen Stewardship GIT is to increase the number and diversity of trained and mobilized citizen volunteers with the knowledge and skills needed to enhance the health of their local watersheds. Also, Handen identified a handful of science needs out of the SRS process: establish methods for advancing and incorporating social science into work, collect data on the stewardship behaviors, use resources from stewardship

index to model relations of human attitudes/behavior towards consumption, restoration, and conservation. Regarding the first science need, Handen cited the following as examples of advancing and incorporating social science: building capacity among staff and partners via training and technical assistance, talking to experts in the field and developing a plan. Lara Fowler (PSU) raised a number of important questions to consider moving forward such as participant inclusion, capacity to engage with the public, program model, etc. Fowler is currently involved with a project at Penn State in water agriculture/engagement and offered to connect off-line if her expertise is needed.

Olivia Wisner, Public Access Workgroup Staffer, reported-out next on Program goals. The workgroup outcome is to add 300 new public access sites, with a strong emphasis on providing opportunities for boating, swimming and fishing, wherever feasible by 2025. Two science needs were edited and one additional science need was added: identify public access sites vulnerable to climate change impacts (including sea level rise/flooding) and potential effects, evaluate the accessibility of public access sites to underserved communities and develop methods for tracking engagement at public access sites. In the near and long-term, Handen said the group is looking to measure public engagement and may need to be creative in order to quantify quality at public access sites.

Lastly, Tuana Phillips (CRC), Diversity Staffer, presented on the Diversity workgroup. To note, the word "minority" was removed from the workgroup outcome at the January 2020 PSC Meeting. The workgroup created a diversity indicator and a goal of 25% people of color (POC) participating in the partnership by 2025. Identified science needs are as follows: to integrate diversity, equity, inclusion, and justice (DEIJ) consideration across all science-based decisions in the CBP, develop DEIJ tracking and/or targeting component for the CBWA goals and incomes (where applicable), and evaluate how we will measure success toward meeting out outcome, beyond evaluating the diversity indicator captures the demographic profile of people participating in CBP groups.

> **ACTION: STAC Staff** will continue to work follow-up with Emily Trentacoste (EPA) and STAR regarding CBP science needs in order to facilitate input from STAC.

Achieving Water Quality Goals in the Chesapeake Bay: An Assessment of System Response and Science Needs (STAC SGA): Introduction, Logistics – *Kurt Stephenson (VT)*
Kurt Stephenson (VT) provided an update the STAC Evaluation of System Response ("SGA" for short) effort. The goal is to generate a broadly supported document discussing knowledge gaps. As of now, a tentative timeline is in place: June 2020 Living Resources review, September 2020-December 2020 discussion/feedback of written products and discussion of report conclusions, March 2021 report review/conclusion, and June 2021 finalize report.

A placeholder fourth objective was added to the project: recommend strategies for integrating scientific and technical analysis with active adaptive management in order to aid decision-making under uncertainty. Miller underscored our need to make decisions under uncertainty, and reiterates the whole point of this project is to improve decision making. Regarding messaging, Kenny Rose (UMCES) cautioned tone and language in the overall document. Kurt responded others have sent him similar thoughts and comments and recommended STAC

members to present at the Chesapeake Community Research Symposium in June 2020 this year. Stephenson pulled out some sessions (ie. session 6, 18) relating to conversations being had within SGA workgroups and encouraged STAC members register for the conference. Noting the front page of the conference website, Rose commented the words "gap" and "uncertainty" never show up on their action page; all forward-looking and positive. Agreeing with Rose in the importance of language in the report, Miller suggested editing the document for uniformity before putting it out for public consumption. Larry Sanford (UMCES) seconded the conference as a great space to speak about watershed issues.

Adel Shirmohammadi (UMD) wondered whether the report would link uncertainty to risk. Within the watershed group, Stephenson said he has had conversations with Leonard Shabman (RFF), Mike Runge (USGS), and others about levels of uncertainty and consequences of uncertainty; important to understand when choosing which technical tools to use to inform adaptive management strategy and addressing knowledge gaps and responses to uncertainty. Economic consequences, for example BMP implementation estimates, are important, as well.

ACTION: **STAC Staff** will post collective comments and subsequent revisions to everyone on SGA Google Drive.

ACTION: **All**, post substantive comments, ideas, and feedback on sections 1 and 2 in the Google Drive.

ACTION: **All**, SGA groups will continue working together between quarterly meetings to make progress on their workgroup document.

Estuarine Workgroup: Materials review and discussion – *Bill Dennison (UMCES)*
Bill Dennison (UMCES) reported out on the Estuarine Workgroup's progress. To focus the Estuarine section, the group has identified three major questions: what are the 'tipping points' for estuarine processes? What are the ramifications of climate change in Chesapeake Bay responses? Can we better understand the processes that occur at the land-sea interface?

Water clarity, dissolved oxygen, and SAV tipping points were discussed in estuarine breakout sessions, as well as their effects on Bay health metrics, and the subsequent scientific response and monitoring research for those tipping points. Dennison discussed recommendations on how to respond scientifically to tipping points for monitoring, modeling, and research. For monitoring, it is recommended frequent water quality measurements be taken, continue bottom water dissolved oxygen levels and annual SAV surveys, and to take careful observations to establish tipping points for both degradation and restoration trajectories. Suggestions for future modeling of tipping points include incorporating ecological feedbacks into models, extrapolating specific site measurement to ay-wide forecasting, and modeling continued nutrient reductions needed to reverse degradation or enhance restoration. Finally, proposed recommendations for future research is to investigate feedback mechanisms, test out tipping points in different salinity regimes, study spatial variability of nitrification/denitrification, and shift research focus to restoration ecology.

Sanford commented on the CBP Model's inability to predict the rate and spread of microphytobenthos and submerged aquatic vegetation (SAV) in addition to modeling dissolved oxygen in shallow waters. In response, Jeremy Testa (UMCES) stated that although the CBP model cannot model sea grass, there are a number of models that do have this feedback capability. Referencing the FY2018 STAC report entitled Assessing the Environment in Outcome Units (AEIOU) report, Kurt Stephenson (VT) questioned whether nutrient speciation impacts a tipping point such as water clarity; neither Gary nor Dennison were unable to recall specifics. Lew Linker (EPA) responded with the need for an unstructured grid model with clarity or substrate in the column to examine community effects especially at the tidal wetlands and shallow water interface. The current Bay Model was calibrated for a pelagic-dominated system and may need to be developed further in order to handle a benthic system, Sanford stated. Following up, Stephenson inquired about tipping point response across habitats and although Dennison responded that is not presently known, further study in targeting for restoration targets would be cost-effective and beneficial. To this point, Denice Wardrop (CRC) asked if using a combination of monitoring and modeling would be helpful in catching tipping points and in which ways might we may increase resilience for SAV; Dennison agreed teaming managers with practioners is ideal and that the group has not discussed resilience in this space but will revisit the thought in the following day's break-out sessions. Finally, Miller asked whether change in phosphorus ratios overtime is due to climate change or sea level rise and if this this kind of sensitivity is indicative of a tipping point or instead, hysteretic behavior. Dennison pointed out the importance of composition, various forms of nitrogen, and organic to inorganic ratio on the Bay system.

Second, Dennison presented on the observed and projected changes to the Bay due to climate change. Noted observed changes in the Bay have been slight changes in sea level rise, temperature increase, and increased salinity. Anticipated changes are ocean acidification, increased precipitation, as well as intensified tropical storm frequency and intensity. Kirk Havens (VIMS) shared personal observations from removing derelict crab pots this past winter and suggested referencing at the Blue Crab Winter Dredge Survey (MD DNR) to determine crab mobility. Increased temperatures have also caused diamondback terrapins to emerge from hibernation early and become tangled in these derelict pots. Noting this discussion of cross-group climate impacts, Mark Monaco (NOAA) highlighted the need to begin communicating across breakout groups to define synergies and interactions across the water.

Dennison reported on the land sea interface last, covering material on triblets, processes, and the scientific response to the following tipping points monitoring, modeling, and research. Triblets, a term derived from a FY2018 STAC report, is defined as a waterway and its adjacent floodplain corridor that flows through the terrestrial-estuarine transition zone and connects uplands to coastal waters (Boomer et al. 2018). Listed scientific responses to the land sea interface for monitoring, modeling, and research respectively: develop a practical way to monitor in difficult land sea interfaces, develop simple estuarine characterizations and triblet models requiring extensive expertise and time, and develop methodology to establish high priority triblets for management interventions in addition to field research to determine responses of triblets to management and stakeholder perceptions. On the land sea interface, Sanford underscored the importance of direct erosion on shoreline as the main source of sediment in the Bay.

Wednesday, March 11 Minutes

Attendance: Tom Johnson, Ellen Gilinksy, Kenny Rose, Mark Monaco, Tess Thompson, Tom Ihde, Zach Easton, Brian Benham, Weixing Zhu, Kirk Havens, Alix Fink, Amy Collick, Chris Brosch, Elliot Kellner, Greg Noe, Jeremy testa, Kurt Stephenson, Lara Fowler, Larry Sanford, Leah Palm-Forster, Mike Runge, Tony Buda, Brian Benham, Deidre Gibson, JK Bohlke

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Guests: Caitlyn Johnstone (Chesapeake Bay Alliance), Gary Shenk (USGS), Jeni Keisman (USGS), Loretta Collins (UMCES), Lew Linker (EPA), Lee McDonnell (EPA CBPO)

Administration: Denice Wardrop, Melissa Fagan, Annabelle Harvey, Meg Cole

Outreach & Communications: The story in a STAC report – *Caitlyn Johnstone (CBP)*
Caitlyn Johnstone (CBP) presented on Bay Program Outreach and Communications. Johnstone presented on 'the story in a STAC report' and the ways she is able to pull out technical information for the general public. Examples of reports that were easily translated into an article were the Microplastics, Water Clarity, and Buffers reports due to the reports' direct science, accessible authors, and clear examples, names and details. To write a successful article from a STAC report, Johnstone said the public needs to understand its significance to themselves and the watershed, the science should be simplified and relatable, and include clear visuals.

On the whole, STAC membership was interested in engaging with the CBP Outreach and Communications on a regular basis. Johnstone stated her willingness to attend future workshops to see if the activity could lend itself to a CBP article.

STAC Letter to the Executive Council (EC) for the 2020 Meeting—*Andy Miller (UMBC)*
As the Executive Council (EC) meeting approaches, STAC is drafting two letters to the EC: one letter will in junction with the other two Chesapeake Bay Program advisory committees, LGAC and CAC, and a second letter will cover STAC-specific business. Miller suggested either letter be brief to catch their attention, bullet points for ease of reading, and one ask to capture the EC's attention. Illustrating the ways STAC presents scientific findings with a goal to use them and work with managers would be beneficial in achieving 2025 goals. Another possible topic for discussion could be a the FY19 STAC AEIOU report.

Wrap Up
The next quarterly meeting will be remote and take place on June 11th. At this meeting, there will be a discussion of a joint letter with the Local Government Advisory Committee (LGAC) and the Citizens Advisory Committee (CAC) to the CBP Executive Council. In addition to STAC SGA

workgroup report-outs, there will be a discussion on the ORD Connection to CBP Science Needs and a group of five talks discussing the impact of COVID on Bay restoration goals. Additionally, STAC will request to approve the latest FY2020 STAC Workshop proposal: *Assessing the Water Quality, Habitat, and Social Benefits of Green Riprap.*