Scientific and Technical Advisory Committee
March 15-16, 2016 Quarterly Meeting Minutes
Crowne Plaza Hotel - Annapolis, MD

Tuesday, March 15th Minutes

Attendance: (T: Telecommute)

Members: Joshua Behr, Brian Benham, Donna Bilkovic, Kathleen Boomer, Charles Bott (T), Amy Collick, Bill Dennison, Zachary Easton (T), Lara Fowler (T), Carl Friedrichs, Marjy Friedrichs, Kirk Havens (T), Carl Hershner, Robert Hirsch, Thomas Ihde, Susan Julius, Hamid Karimi, Mark Luckenbach, Chancee Lundy, Andrew Miller, Mark Monaco, Steve Newbold, David Newburn, Marc Ribaudo, Lisa Wainger, Denice Wardrop, Gene Yagow, Weixing Zhu

Guests: Seung Ah Byun (T), Rich Batiuk, Jeffrey Brainard (T), Denise Breitburg, Matt Colip, Jana Davis, Jennifer Greiner, Shawn Garvin, Mary Gattis (T), Zoe Johnson, Lee Karrh, Jeni Keisman, Brooke Landry, Anna Lubetski, Pam Mason, Bruce Michael, Roberta Person, Scott Phillips, Kyle Runion, Gary Shenk, Kara Skipper, Ann Swanson, Peter Tango, Don Weller

Administration: Bill Ball, Rachel Dixon, Melissa Fagan, Natalie Gardner, Renee Kelly

Call to Order – *Lisa Wainger (STAC Chair - UMCES)*

Wainger called the meeting to order shortly after 10:00am. Following introductions, Wainger requested a motion to approve the appointment of Marc Ribaudo (USDA-ERS) to the STAC Executive Board (EB). There were no objections, and Ribaudo was formally appointed to the EB. Next, Wainger requested a motion to approve the December 2015 quarterly meeting minutes and February 2016 EB meeting minutes; motion approved.

VOTE: **Wainger** requested a motion to approve the appointment of Ribaudo to the EB. Result: Motion carried – Ribaudo term will start at the next EB meeting.

VOTE: **Wainger** requested a motion to approve the December 2015 quarterly meeting minutes and February 2016 EB meeting minutes. Result: Motion carried.

Recap of STAC December Quarterly Meeting/Introduction of March Theme – *Lisa Wainger (UMCES)*

Wainger highlighted key discussions/actions from the December quarterly meeting, noting the efforts made to focus quarterly meetings on STAC identified priority needs. Wainger continued by reviewing the agenda and introducing the theme of the March meeting, which was "humans influencing habitats."

Smithsonian Environmental Research Center (SERC) Study: Effects of Shoreline Armoring on Submerged Aquatic Vegetation (SAV) – *Don Weller (SERC)*

Weller introduced his presentation as part of a larger study on shoreline armoring and watershed land use in shallow water. This seven-year study funded by the National Oceanic and Atmospheric Administration (NOAA) was a broad collaborative effort between eight different institutions and nineteen principal investigators. The study's overall goal was to look at land use effects compounded with stressors at the intertidal zone. Specifically, Weller focused on: 1) watershed inputs of nutrients, sediments, and toxic substances, 2) effects of shoreline alterations: bulkhead, riprap revetments, and "living shorelines", and 3) the spread of invasive *Phragmites*. The project was focused on comparing different shore types in bays and sub-estuaries with watersheds that have differing land uses. The estuarine responses studied included water quality, SAV, macrofauna, and *Phragmites* invasion.

Weller was involved with research on the effects of land use and shoreline armoring on SAV. Weller's presentation included statistical analysis of digital maps of the 100 study sub-estuaries studied depicting different land covers, salinity zones, and shoreline conditions. Weller also presented a graphic of SAV abundance in different land use areas taken from an aerial perspective. The study deduced that forested shorelines were positively related to sub-estuary SAV abundance, shoreline marsh is negatively related to SAV abundance (possibly due to the release of peat and mud), abundance is greater and recovery stronger in sub-estuaries with little armoring, and land use constrains the effects of shoreline hardening. In addition, Weller presented shoreline scale (finer scale) models which indicated that armoring effects vary with the salinity zones, riprap significantly reduces SAV cover, riprap significantly reduces bed width, and human land use reduces SAV cover and bed width.

Weller concluded with a summary of various headlines from the study ranging from local watershed land use effects on sub-estuary SAV abundance to impacts of shoreline hardening on SAV targeted towards management experts. STAC members participated in a brief question and answer (Q&A) session to conclude Weller's presentation.

SERC Study (continued): The Effects of Hardening Shorelines on Aquatic Organisms – *Denise Breitburg (SERC)*

Breitburg presented the effects of shoreline hardening on aquatic organisms, with a specific focus on watershed land use effects on macrofauna. Given the difficulty predicting these effects, Breitburg was initially skeptical that a response to land use would be easy to detect in the macrofauna studied.

Breitburg's presentation addressed the impact of local shoreline on the use of near shore habitats by macrofauna, and how the cumulative amount of hardened structure and land development along the shoreline effects the sub-estuary. The study also addressed the effects of shoreline hardening on *Phragmites*, fish, and sea nettles. Field sampling was conducted in riprap, beach, bulkhead, and native marshes; data collected were combined with groups conducting similar studies in different locations. This allowed a combined meta-analysis to be created with data

spanning 45 sub-estuaries and 648 samples, necessary to establish trends and patterns effecting macrofauna. The data examined abundance patterns for over 16 species.

The take-home messages from the study were: 1) hardened shoreline disrupts shallow water refuge habitat provided by natural shorelines (greater depth provides access for large bodied benthivore-piscivores), 2) the proportion of the watershed land use comprised of agriculture is negatively related to nearshore abundances of blue crab, spot and Atlantic croaker, 3) the proportion of the shoreline comprised of wetland is positively related to nearshore abundances of 9 of the 16 species tested, 4) some planktivores increase with increasing agriculture, 5) the proportion of shoreline that is hardened within a sub-estuary is negatively related to nearshore abundances of 9 of the 16 tested, 6) there are important differences between native wetland vegetation and invasive *Phragmites*, 7) fish abundance is higher along riprap-sill shoreline than traditional riprap, 8) subtidal riprap provides winter homes for sea nettle polyps, 9) natural shoreline habitats have higher abundance, biomass, and diversity of benthic invertebrates than developed habitats, and 10) developed and mixed-developed watersheds have reduced benthic biomass, and richness.

Overall, the study found that fish, shellfish, and jellyfish are strongly effected by land use and shoreline hardening. Breitburg concluded that both shoreline hardening and watershed land use effect economically and ecologically important macrofauna species in the Chesapeake Bay and Delaware Coastal Bays, and that large scale studies with good sampling design are critical to detecting these effects. STAC members were provided time for Q&A.

CRC Staffer Presentations – *Kara Skipper (CRC) and Kyle Runion (CRC)*

CRC's Environmental Management Career Development Program provides early career professionals with a stepping stone to a future career in the fields of environmental science, policy and management, and outreach and education. Staffers provide technical and administrative support to the various Chesapeake Bay Program (CBP) partnership committees, GITs and workgroups and not only gain a solid professional foundation from which to build their careers, but also individualized development and career exploration opportunities. Skipper provided an update on current Sustainable Fisheries Goal Implementation Team (GIT) activities as well as her own work and future plans, while Runion provided an update on current Habitat GIT activities as well as his own work and future plans.

Potential Effectiveness of Living Shorelines – *Jana Davis (Chesapeake Bay Trust: CBT)*

Erosion naturally occurs in one-third of all Chesapeake Bay shorelines and not all sediment that enters the water is negative. In order to prevent erosion, humans are hardening shorelines, but armor doesn't always work and may have fewer ecologic benefits than what managers believe. Davis provided an overview of the history of living shoreline policy and management, including a recap of six recommendations from the 2006 Chesapeake Living Shorelines Summit, and pointed out existing research on armor vs. natural habitat and the conversion of armor to living shoreline.

Davis went further into detail regarding the CBT research on armor vs. natural marsh habitat. The research indicated that most species were more abundant in marsh than in armor areas, and bulkhead areas had lower values of species diversity and density. Davis' study hypothesized that a change in diversity and density would be higher at living shoreline sites than control sites, and subsequently concluded that density of species from removing a bulkhead to either a living shoreline or the erosion shoreline both increased in species diversity and density. Some next steps for the study include testing the design effectiveness for erosion protection and habitat, and optimizing designs to maximize ecological function and erosion control function. In addition, Davis noted that 2013 Chesapeake Living Shoreline Summit's research priorities were not agreed upon - occasionally the research needs are not always the needs of the research community. Scientists see value in establishing monitoring needs and the efficacy of living shorelines, while regulatory/policy makers were interested in trade-offs in critical areas and cost-benefit analyses.

What Science Is Used/Not Used to Make Decisions About Shoreline Erosion Control? – *Pam Mason (Virginia Institute of Marine Science: VIMS)*

Mason began by stating that federal governments, states, localities, property owners, and contractors are all responsible for shoreline decision making. Specific organizations or regulators have particular responsibilities and/or privileges of those groups in the decision making process. Effectiveness, longevity, cost, knowledge of options, time, feasibility/acceptability, legislation/regulation, and science are all considered when making decisions regarding shorelines. Mason presented results of a VIMS questionnaire to 400 property owners concerning their perception of erosion control advice. The survey illustrated that social norms, like the opinions of neighbors, can exert a powerful influence over property owner's behavior towards erosion control.

Next, Mason presented the science behind decision making. Specifically, ways in which science is incorporated in Virginia decisions, moreover, VIMS role in providing science to shoreline decisions. VIMS has multiple living shoreline initiatives including: a shoreline management model, living shoreline monitoring projects, and outreach programs (education modules, annual workshops, and print and digital publications). Mason followed with a list of barriers to the use of science in decision making which included: private versus public interests, limited awareness of the link between ecosystems and human well-being, difficulty in monetizing ecosystem services, and the interdisciplinary nature of ecosystem science which complicates science.

Mason concluded her discussion by presenting recommendations to improve science "use" in shoreline decision making, including: valuing pluralism, demonstrating the link between decisions and effect on natural capital and human well-being, bringing government, business leaders and scientists together, and changing policy and practices to align private short-term goals with societal long-term goals.

Federal Appointee Vacancy Discussion

Wainger presented a request to nominate Martin Lowenfish (United States Department of Agriculture –Natural Resources Conservation Service (USDA-NRCS) as a Federal appointee

filling Kurt Gottschalk's (USFS) vacancy. Kirk Havens (VIMS) suggested that Lowenfish's appointment would enhance STAC's collaborative capabilities with the USDA, United States Geological Survey (USGS), and Environmental Protection Agency (EPA). Rich Batiuk (EPA-CBPO) also endorsed Lowenfish as a nominee who would effectively raise STAC's needs throughout NRCS, but not as a working scientist. STAC members agreed that the EB should make the final decision regarding Lowenfish after comparing STAC's expertise needs with Lowenfish's CV. The EB will discuss next steps in the appointment process during their next call.

ACTION: **STAC staff** will request a CV from Lowenfish. The EB will use Lowenfish's CV and decide how to move forward with the nomination. If a consensus is reached, STAC staff and Wainger will draft a letter to CBP Director, Nicholas DiPasquale (EPA) recommending Lowenfish's appointment to STAC.

Conversation with Shawn Garvin, Regional Administrator, US EPA, Region 3

STAC members participated in an open dialogue with Garvin discussing EPA Region 3 activities, priorities, and where STAC can help. Garvin mentioned the abundance of recognition received regarding the work done for the Bay's water quality, but a lack of recognition for other Bay-wide efforts. Garvin wants STAC to be a "measuring stick" of those accomplishments and efforts made towards meeting the goals of the Bay Agreement. STAC has the capacity to prove accountability and transparency meeting goals of the Bay Agreement. Garvin stressed that when implementing plans to meet the goals of the Bay Agreement, it needs to be proven (strong science and technical backing) and verified that the actions will meet the goals. Wainger asked Garvin: "where can STAC be most effective in the time leading up to the Midpoint Assessment?" Garvin's response was that STAC should intensify focus on reviews of the best management practices (BMPs) and increase knowledge about the efficiencies. In addition, Garvin encouraged STAC to focus efforts on key priorities only, to accomplish the major goals of the Bay Total Maximum Daily Load (TMDL).

STAC members asked Garvin to visualize what is expected as a Bay after the TMDL. Garvin supported this suggestion, but warned that there is a lot to do before articulating the progress made that would be meaningful to individuals. What happens between now and the TMDL will help build that vision of the future Bay. Garvin stressed that communities should be encouraged to look at the local benefits of a restored Bay. This type of strategy will leverage investments and increase participation at the local level. Chesapeake Research Consortium (CRC) Executive Director, Bill Ball continued a conversation with Garvin suggesting that the CRC could contact the National Science Foundation (NSF) (under the Food-Energy-Water Nexus) and request funds for a "visioning" workshop. Various stakeholders within the watershed could convene to answer questions about BMP efficiencies, begin the "creating the Bay we envision" conversation, and decide who should take responsibility for implementing next steps on a more local level.

ACTION: **Ball** offered to continue a conversation with Garvin suggesting that the CRC could contact NSF and request funds for a "visioning" workshop.

FY16 Request for Proposal (RFP) Results and Discussion – *Full Membership Discussion*

Six proposals were submitted to STAC for FY16 workshop funds. STAC staff, Rachel Dixon (CRC) presented the breakdown of the ranking process and comments received for the proposals. Each workshop proposal was briefly described by the STAC member on the steering committee. STAC members were given the opportunity to ask clarifying questions. The lowest ranked workshop proposal (Dairy Farms) was discussed in detail and STAC members provided feedback to be distributed back to the steering committee. The top five proposals were approved for funding. An additional $3,000 will need to be redistributed in the STAC budget to support the fifth proposal. If funds cannot be relocated, Batiuk offered to find funds to support this proposal. Since this was the first time using the revised STAC workshop RFP process, STAC members were asked to send any comments or suggestions regarding the process and discussion to Dixon. In addition, as suggested during the discussion, STAC staff will ensure that members will have an opportunity during the next RFP process to provide questions to proposers during the first round of comments/necessary edits from STAC staff.

ACTION: STAC staff will notify the steering committees of the top five ranked workshop proposals that they have been approved and will receive STAC funding. Batiuk guaranteed an additional $3000 of funding for the fifth ranked proposal if STAC cannot find the funds to support the fifth proposal.

ACTION: STAC staff will notify the steering committee of the lowest ranked workshop proposal (Dairy Farms) that this activity was not selected by STAC for FY16. A future proposal with more detail can be resubmitted during the FY17 RFP cycle.

ACTION: STAC members should send any comments or suggestions regarding the STAC workshop RFP process and discussion to Dixon at dixonra@si.edu. In addition, STAC staff will ensure that members have an opportunity to provide questions to proposers during the first round of comments/necessary edits from STAC staff.

Technical review/white paper request from the Chesapeake Bay Commission (CBC)

STAC was approached by the CBC to support a technical review/white paper aligned with STAC's interest in utilizing alternative products to communicate science. Ann Swanson (CBC) presented the history behind CBC's request for a technical review of the relevant information on the potential impacts of boat generated waves on shoreline stability and attendant ecosystem properties, and provide advice on available policy actions to minimize any adverse effects. Swanson stressed the proposal's relevance in translating science into policy. The timeline for the review, mentioned by STAC member, Donna Bilkovic (VIMS), would not begin until after the start of the new fiscal year. This technical review is not expected to conflict with the ongoing Midpoint Assessment reviews. STAC staff also ensured that there were sufficient funds in the FY16 budget to support this review. STAC members were highly supportive of the request and its importance to the scientific community. Wainger requested a motion to approve STAC sponsorship of the CBC request Boat Wake Impacts technical review. STAC members approved the request.

VOTE: **Wainger** requested a motion to approve STAC sponsorship of the CBC Boat Wakes Impacts technical review. Result: Motion carried – STAC will support the CBC review which is scheduled to being in June 2017.

Wednesday, March 16th Minutes

Attendance:

Members: Joshua Behr, Brian Benham, Donna Bilkovic, Kathleen Boomer, Charles Bott (T), Amy Collick, Bill Dennison, Lara Fowler (T), Carl Friedrichs, Marjy Friedrichs (T), Kirk Havens (T), Carl Hershner, Robert Hirsch, Thomas Ihde, Susan Julius, Hamid Karimi, Chancee Lundy, Andrew Miller (T), Mark Monaco, Steve Newbold, David Newburn, Marc Ribaudo (T), Lisa Wainger, Denice Wardrop, Gene Yagow, Weixing Zhu

Guests: Denise Breitburg, Jana Davis, Shawn Garvin, Pam Mason, Kyle Runion, Gary Shenk, Kara Skipper, Don Weller, Qian Zhang

Administration: Bill Ball, Rachel Dixon, Melissa Fagan, Natalie Gardner, Renee Kelly

Open Forum: Recent STAC Sponsored Workshops and Reviews

Five workshops (Conowingo, Enhancing Capacity, Assessing Uncertainty, Optimization and Climate Change) and two reviews (Criteria Addendum, Microplastics) took place since the December meeting. STAC staff created a brief overview of each of those activities for the discussion. Each slide detailed the STAC members involved, objectives, outcomes, and next steps for each activity. The STAC activity leads updated members on the status of each activity.

One workshop in particular required the immediate attention of the full membership. The objective of the 'Enhancing Capacity' workshop was to identify ways to enhance the capacity of the Wetland Workgroup in meeting the goals outlined via two-year workplans and demonstrate a pilot process on how other workgroups might similarly meet and implement their overall goals. The workshop was a microcosm for a bigger problem with the other workgroups. Although the workshop produced a useful outcome, it was not to the groups desired level. STAC lead, Lara Fowler (PSU) mentioned that the steering committee sent a memo describing overall comments and recommendations, as well as specific comments on the management approaches, to the Wetlands Workgroup during the public comment period. Fowler suggested a follow-up with other workgroups on barriers and opportunities to enhance their capacity to meet their goals needs to take place and that STAC should consider this discussion for the next quarterly meeting. Cross-Program Coordinator, Kristin Saunders (UMCES) was suggested as a resource for enhancing the depth of that conversation. This discussion will aim to identify gaps within CBP work so that communication and coordination between the GITs, workgroups, STAC, and the Management Board (MB) activities to meet the goals and outcomes in the Bay Agreement.

ACTION: STAC staff will invite Saunders to the June 2016 STAC quarterly meeting to continue discussion on the "Enhancing Capacity" workshop outcomes, and ways to improve communication between the GITs, workgroups, STAC, and the MB to meet the goals of their two-year workplans.

Policy-Ready Science – *Kirk Havens (VIMS), Denice Wardrop (PSU), and Donna Bilkovic (VIMS)*

Wardrop reviewed the context of the microplastics issue and the process by which STAC collaborated with the CBC on this issue; this review provided a case study for explaining the importance of science-ready policy. Wardrop referenced the recent microplastics legislation that occurred during the review, noting the timeliness of the review. Policymakers need to continue to ask scientists (i.e., STAC) what the gaps are. An informal approach, according to Wardrop, could be developed to continue this process.

This review was a primary example of how the CBC effectively communicated the results of science to policymakers. This type of process will eliminate STAC's challenges of presenting information through the different parts of the CBP. Throughout the process, Swanson even offered to be the carrier of the review's outcomes to federal legislators. STAC should remember that there are resources such as the CBC to carry policy-ready science up the food chain, and that the timeliness of presenting such science could prevent future legislation from amendments.

Alternative STAC Activity Products

At the STAC retreat, it was recommended that STAC consider using alternative products to communicate findings and recommendations from STAC activities. This session was designed to discuss the communication products that were generated/could be generated from recent and future workshops and reviews. STAC Coordinator, Natalie Gardner (CRC) presented the suggestions for increasing STAC's effectiveness made during the retreat and asked members to consider the following: 1) What products should be used to ensure STAC is most effective?, 2) How can we make STAC reports more effective?, and 3) What products could we use for recent/upcoming STAC activities?

After Gardner presented a list of the products/tools for communicating STAC activities, members suggested a number of additional products for better communication, such as: electronic resources, podcasts, interactive websites, social media posts, actual print copies to handout to managers, TED Talks, YouTube videos etc. In addition, members emphasized the importance of deciding what we are trying to influence and who our target audience is before implementing a communication tool. The management community, possibly through STAC presentations of reports/findings to the MB, was suggested as a primary audience for communicating science. STAC suggested polling MB meeting attendees on the effectiveness of the STAC product that was being communicated. Conducting a 'pilot' study would specifically poll the MB to determine which method(s) of communication could be most effective (presentations, white papers, reports, factsheets etc.). Since different groups receive information in different ways, some STAC members recommended that identifying an audience before implementing a communication strategy is key to the effective transfer of information.

The next step in determining which communication tools are best is to identify the desired response of the audience – for example, to take action or simply change mindsets. STAC members also suggested that in order to be proactive, workshop steering committee members should determine who their objectives specifically apply to. STAC members also came to a consensus on the importance of printing hard copies of certain reports. This would not be a necessity for every STAC report, but definitely an option within a communication plan. STAC staff agreed to look closely at the publications budget in anticipation of printed FY16 activity documents. Based on the results of this discussion, Ball and STAC staff agreed to continue brainstorming a communications action plan to better deliver and communicate STAC products. The plan may include, but is not limited to: creation of STAC social media pages, requests for more detailed communication plans from workshop steering committees, arranging more frequent presentations at MB meetings, or developing policy-ready factsheets distributed as a product of a STAC activity.

End of Meeting Report Out

The meeting concluded with a brief review of action items from the meeting and discussion of topics to consider for the June quarterly meeting. STAC members should send agenda topics to STAC staff and Wainger for consideration. Tentative topics for the June quarterly meeting included: discussion with Cross-Program Coordinator, discussion of Forage Fish workshop report, water quality trends reporting from USGS, or presentations from Jeremy Testa (UMCES) and Pat Glibert (UMES) on Nitrogen and Phosphorus.

ACTION: STAC members expressed the need for printing hard copies of STAC products to effectively communicate. **STAC staff** will look closely at the publications budget in anticipation of printing hard copies of STAC products in FY16.

ACTION: **Ball and STAC staff** will continue brainstorming a communications action plan to better deliver and communicate STAC recommendations.

ACTION: **STAC members** should send agenda topics to STAC staff and Wainger for the June quarterly meeting.