Scientific, Technical Assessment and Reporting (STAR) Meeting
Integrated Monitoring and Data Integrity

Thursday, May 27, 2021
09:30 AM – 12:30 PM

Join by Webinar:
Meeting Number: **120 337 3411**
Password: STAR
Webinar*: https://umces.webex.com/umces/j.php?MTID=m990a847f0088d3f3a44119a3b47575bc

Or join by phone:
Conference Line: +1-408-418-9388 Access code: **120 337 3411**

Meeting Materials:
https://www.chesapeakebay.net/what/event/scientific_technical_assessment_and_reporting_star_team_meeting_may_2021

This meeting will be recorded for internal use to assure the accuracy of meeting notes.

Action Items:

- Lee McDonnell will present the updated work plan for the PSC monitoring request outlining the direction of recommendations, on June 2nd.
- Jake Leizeasr and John Wolf will work to package the Cross-GIT mapping report to make the findings usable for various stakeholders.
- Continue utilizing federal, state, academic, and Chesapeake BAy Program staff partnerships to synthesize data into useful products for Bay restoration and conservation.
- Chesapeake Bay awareness week is June 5th-13th.
    - *https://secure.cbf.org/site/Calendar;jsessionid=00000000.app30125b?id=103723&view=Detail&NONCE_TOKEN=4F2177F92F18F4E2B2C423BE8D8965AE*
    - *Access the Bay Awareness Week toolkit here: https://drive.google.com/drive/folders/1mW5kOkNTd4Qxfo23EP9vgfxASQobPZCf?usp=sharing*
- June 22 the Chesapeake Bay report card will be released at Sandy Point state park.

AGENDA

09:30 Welcome, Introductions & Announcements – Bill Dennison (UMCES) and **Scott Phillips** (USGS)- STAR Co-Chairs, **Peter Tango** (USGS) Co-Coordinator

- Bill Dennison remarks that it is a good idea to attend some of the virtual conferences or events in order to try things which members might not be able to do in person.

Upcoming Conferences, Meetings, Workshops, & Webinars-

- NatureCity Forum - June 16 & 17
- Mid-Atlantic Climate Change Education Conference - June 28-July 1 (Virtual)
- Approach to Track Chemical Mixtures in Urban Waters Impacted by Road Salts - June 30 (Virtual)
- Chesapeake Bay Landscape Professional Summer Level 1 Training - July 7 & 14
- Agricultural Conservation Technical "Boot Camp" Training Level II - August 23
- Preparing for Generation NEXT Workshop Fall Webinar Series - September 8, 9, 15 & 16
- 2021 Chesapeake Watershed Forum - November 4 & 5 (Virtual)
- American Fisheries Society Annual Meeting - November 6-10 (Baltimore, Md.)

09:35 CBP Communications Update – Marisa Baldine (CRC)

- Marisa Baldine had several blogs come out last month, cicadas are the big focus currently. Breck Sullivan released a blog on wetlands last week. For June there is a focus on the eastern milks nake. They are producing a monthly webinar focused on recreation, for Chesapeake Bay awareness week that is June 5-13th. This is a 9 day celebration of history, culture , and beauty in the CB watershed focused on recreation. They have a social media tool kit. The CBP report card and STAC report are coming out soon. She asks for anything else to be aware of and reminds everyone that CHESAPEAKE BAY AWARENESS WEEK is upcoming!
    - Bill Dennison provides an update that the report card release is scheduled for Sandy Point st park on the 22nd of June. They are trying to get the UMCES Rachel Carson and MD Bay Cabinet involved. There are many moving parts which will be FB live streamed. They are working on data calculations now and will celebrate monitoring team efforts in the midst of covid. They will also add environmental justice work from the April STAR meeting to this report card release.
    - Marisa Baldine says Caroline Donovan will give a plug at the communications wg meeting promoting the report card
    - Bill Dennision then will have more details of time and place of the report card release later.
- *CHAT*
- *from bruce vogt to everyone: 9:40 AM*
    - *sorry to be late. Did anyone mention the Chesapeake Oyster Science Symposium next week June 3.?*
- *from William C Dennison to everyone: 9:40 AM*

    - *Bruce, please put details into the chat. It was NOT mentioned.*
- *from bruce vogt to everyone: 9:41 AM*
    - *Here is the registration page. Don't have tiny url.*
- *from bruce vogt to everyone: 9:41 AM*
    - *https://secure.cbf.org/site/Calendar;jsessionid=00000000.app30125b?id=103723&view=Detail&NONCE_TOKEN=4F2177F92F18F4E2B2C423BE8D8965AE*

09:40 **Improving Monitoring Networks: PSC Request - Peter Tango (**USGS**)** Peter will provide a brief update of the progress towards addressing the PSC monitoring request.

- Peter Tango provides an update on the PSC request, we are going into month 8 now. He is still working on the status assessment and is moving towards the summer stages of developing. They are working on a tiered communication approach with a summary but are also providing references for a deeper dive.
- Peter Tango says they have good foundation material on the 8 questions now.
- Peter Tango says the next step is Lee presenting a work plan (white paper on 8 qs) then outlining the direction of recommendations, which will happen on June 2nd. They will work to have recommendations delivered by Jan 2022 to PSC.
    - Bill Dennison emphasizes the importance of this task which has high commitment from the PSC. This will be an important effort to pull data together that will require ALL STAR partners to bring this project together and improve monitoring efforts.

09:45 **The Future of Cross-GIT Mapping at the Chesapeake Bay Program- John Wolf** (Chesapeake Conservancy and RTI)

- John Wolf opens up with the update on cross GT mapping effort he then tag teams with Jake Leizear. John says this started several years ago that led to static maps and identified some priority areas for conservation. Since then people had ideas on how to further this project. Jake will describe that work at the Research Triangle Institute (RTI). He will want feedback or a brief overview of some information they have. There is lots of information available they can't cover now. Some GIS information contradicts some assumptions so they have comms issues to make people aware of existing products to address some issues from the research phase. He is hoping this will help FY 2022 planning GIS team and plan for continued collaboration with conservancy for GIS activities which is big for next year's planning. He welcomes feedback from individuals after the meeting and turns it over to Jake.
- Jake Leizear presents Cross Git surveying initiative information.
- *CHAT*
- *from Kristin Saunders to everyone: 10:04 AM*
    - *Jake, you may want to turn off your video so your audio is more clear*
- Jake Leizear asks John if they have anything else to touch on before questions?

    - John Wolf says a lot of the written feedback was really good. He purposely made this presentation general since they can go into very high detail. He wants to share RTIs full results, and can share these if people are interested.
    - Bill Dennsion thanks both for the presentation, he says many questions for mapping have been asked but this opens the door to a broader discussion of data modeling and monitoring needs. He wants to see the survey results since they have engaged with users through interviews. This is a key area where technical groups often fall short.
- *CHAT*
- *from Kristin Saunders to everyone: 10:18 AM*
    - *I hope we circulate these findings to the web team, ChesapeakeProgress team and data team*
- *from Kristin Saunders to everyone: 10:20 AM*
    - *As the person who was an early adopter of the "no new tools" mantra, I am grateful for this deep research*
    - John Wolf says he focused on spatial aspects and the cross git theme there were many comments of decision support tools and how to engage with individual WGs to further this. That was valuable feedback, and he agrees with Kristin's comment on connecting with the web team
    - Jake Leizeasr says it was crucial to find out how tools serve goals and what goals are not being met by tool creation. Tying this to GITs and the watershed agreement is key to making useful products. He will package these very large project report findings to make it useful for everyone before sharing.
    - Bill Denison says there are some data needs that are new, DEIJ, climate etc, that aren't traditionally assessed. But those issues lack data that will be needed in the future. This is a chance to get an idea of future data gathering needs and how to adapt data streams to address critical issues.
    - Jake Leizaer says this is a snapshot of spring 2021 needs but the way these needs match up with GIS information and its increase in technology provides a baseline for how to keep data in sync.
        - John Wolf says it points to the need for subject matter experts collaborating with geospatial experts in CBP so they are parallel. That goes into making people aware of what data sets exist, including DEIJ. Getting the word out about resources is important.
        - Bill Dennsison says this should be done regularly. Every few years, to keep up with improved technology and needs. This is not one and done.
        - Jay Leizear says they became involved in interactions with stakeholders so they now know how to redo the process in the future.
        - Denice Wardrup is interested in if it came up to look at something historically, with regards to environmental justice mapping? This

can show past data and improvement to the current state. She wonders if any tools are there to look at the past?
    - John Wolf says yes there are several examples such as redlining which show up over time. This is still new so it will be a focus to mine historical data more and this is good for the environmental justice (EJ) world.
- Ken Hyer agreed with the overview and was struck by the gap in development of tools and informing decisions for managers. In addition to identifying that gap did the survey identify solutions to bridge that gap? Is it how to package info and close that gap? Did the survey answer this?
    - John Wolf says the surveys did break out different end user types by scientists, managers, etc and the kinds of decisions they would make with the tools. There is more about breaking out data by user, this suggested directions for this. He appreciates participation in surveys and interviews. RTI explored potential need for focus groups to audiences. It's hard to generalize across different end users but there are recommendations on how to attack the problem.
    - Jake Leizear says there were portions on ranking solutions in the survey and another section on how tools fit into different GITs vs the program as a whole.
    - Jon Wolf says there is a general recognition that the more specific in defining a problem the more successful the development of a tool.
    - Bill Dennsions says this presentation was a big endorsement to get that report in circulation.

10: 30 - 11:50 Data Synthesis

This section will outline how the Chesapeake Bay Program synthesizes existing monitoring data utilizing Federal, Academic, Jurisdictional, and Bay Program partners to answer Chesapeake Bay specific questions. Each presentation will take roughly 15 minutes with 5 minutes for discussion immediately after each talk.

10:30 Data synthesis at the Chesapeake Bay Program-Bill Denison (UMCES)

Bill will discuss the process of synthesizing data and how the CBP has utilized existing data sources and involved academic, federal, and CBP staff to collaboratively create staff, collaborating to create products useful to achieving goals at the CBP. Examples of projects include an ongoing STAC report on BMPs and Climate Change as well as work by and Jeremy Testa on shallow water modelling

- Bill Dennison segues from John Wolf's talk about how the CBP is utilizing all available data across different partners to dig into CB specific issues. He will provide a brief overview of synthesis then we will see different specific presentations.
- *CHAT*
- *from Kristin Saunders to everyone: 10:45 AM*
    - *Bill, how do people access the resources to do these synthesis efforts? We know STAC workshop proposals are one avenue, but are there other recommendations on where folks should turn to pursue this assistance?*
- Bill Dennison emphasizes that synthesis is the final step in the process of making data available to decision makers.
- Bill Dennison answers Kristin's chat that STAC has been able to create support for synthesis but he says it doesn't take much to mount synthesis efforts. People can self fund to meet in small groups.
- *CHAT*
- *from julie.reichert-nguyen to everyone: 10:48 AM*
    - *Are there opportunities for the collaborative projects with the Socio-Environmental Synthesis Center with UMCES. I recall seeing grant opportunities with them.*
- *from pjtango to everyone: 10:49 AM*
    - *STAR has set up topical meetings as special meeting days separate from normal STAR meetings as a way to set up a venue to pursue such activities.*
- *from pjtango to everyone: 10:50 AM*
    - *Small teams have also set up their own topic specific meetings. Qian will present work today that evolved from small group meetings over a year or two.*
- *from Qian Zhang to everyone: 10:50 AM*
    - *FYI: sesync - https://www.sesync.org/opportunities*
- *from cjohnstone to everyone: 10:51 AM*
    - *@peter, where are those topical meetings advertised and is attendance at them open to collaboration from all across the partnership?*
- *from pjtango to everyone: 10:53 AM*
    - *Caitlyn, it would be developed and announced during regular STAR meetings. We used them in the past, we have not held one in the last couple of years, but we are happy to help develop and plan such meetings. The last one I did was a few years ago on dissolved oxygen assessment - new research. We had about 5 presentations from the research community on their cutting edge work then opening up a discussion session. It was very helpful to establish the state of the science.*
- Bill says there are opportunities to interact with SESYNC and there are funding and workshops to be utilized. Bill adds there are things like the CESAR report which synthesize data which are spun off of STAC workshops. He adds that synthesis is a state of mind where you need immersive sessions. He says we will have time at the end of today's meeting to discuss this more.

10:50 Nutrient Limitation in the Chesapeake Bay - Qian Zhang (UMCES)

Qian will describe his utilization of existing data to synthesize information on nutrient limitation within the Chesapeake Bay. He will then provide an overview of how his synthesis projects describe how the potential of nutrient limitation is affected by management strategies within the Chesapeake Bay.

- Qian Zhang presents his nutrient limitation work.
- Bill Dennison says Qian showed there are many ways to approach complex data sets and put them together, this has allowed us to provide real insights by comparing to different data. He asks how the synthesis was done? How often did you meet with people? How did you do this virtually?
    - Qian Zhang says they have different institutions and people and it started in 2018. It was important to find who might be experienced. They had an initial phone call to share knowledge and questions. It was hard to get together so they had few in-person meetings, and acted like a hybrid model of communication. Really everyone contributed with knowledge of data sets as well as bioassays. They needed two different experts on subject matter as well as statistics and met every 2-3 months. They would come with updates and try to coordinate from there. In total they had less than 10 in person meetings.
    - Bill Dennsison says 12 people regularly meeting with progress between meetings to keep the collaboration rolling was great. He asks for the link to the paper which resulted from this?
- *CHAT*
- *from pjtango to everyone: 11:09 AM*
    - *Qian's presentation nicely highlights extending the use of existing data. We are often asked to mine the data we have. Applying new techniques to the analysis gave us an excellent example of continuing to leverage existing investments for greater return on investment from all the great work on obtaining and managing the data in the first place.*
- *from cjohnstone to everyone: 11:10 AM*
    - *@Peter That would be great. I'd be very interested to hear about the next one that might come up, and to help brainstorm individuals/organizations that would lend new voices to the conversation.*
- *from Qian Zhang to everyone: 11:14 AM*
    - *Thanks everyone for your attention. Here is the nutrient limitation paper from our collaborative effort (open access): https://doi.org/10.1016/j.watres.2020.116407*

11: 10 **Innovation: Exploring Satellite Image Integration for the Chesapeake Bay SAV Monitoring Program** **- Peter Tango** (USGS)

Peter will review the recent STAC Workshop results and lessons learned from the subsequent pilot study on implementing the process for taking the research concept into full operational use for annual monitoring of SAV cover in the tidal waters of Chesapeake Bay.

- Peter Tango talks about his STAC funded workshop output. This was a 3 meeting workshop of the team with a list of 25 questions to guide the progress.
- Peter Tango says this was a small group with focused 2 day meetings with a good outcome.
- Bill Dennison says synthesis target wasn't a publication but was to set the stage for bettering the monitoring program. Not all synthesis is about generating scientific papers.
    - Peter Tango says this was leading the push on whether or not this is an applicable method, bringing field , lab, and satellite folks together.
    - Bill Dennison says using STAC funding to catalyze that was great. He moves us on to Jeremy Testa.
- *CHAT*
- *from pjtango to everyone: 11:35 AM*
    - *Regarding the full STAC Workshop findings, please refer to the workshop report https://www.chesapeake.org/stac/wp-content/uploads/2021/03/FINAL-STAC-Report_Exploring-satellite-data-for-the-CB-SAV-Monitoring-Program.pdf Thanks to Annabelle Harvey, CRC Staffer to STAC, for her outstanding support with organizing this activity start to finish!!! :-)*

11:30 Shallow Water Modelling in Chesapeake Bay -Jeremy Testa (UMCES)

Jeremy will present on progress with a collaboration with Richard Tian and Lewis Linker on a test study of shallow water modeling of the Corsica river. This presentation will relate how existing data sources have been utilized to motivate new shallow water modeling tools that will further the understanding of processes which take place in shallow water environments and the ability of models to capture high frequency dissolved oxygen dynamics.

- Jeremy Testa is focused on shallow water modelling which synthesizes modelling and monitoring. If Bill wanted a monitoring talk that would be ok he can find a talk about that?
    - Bill Dennison says this is fine.
- Jeremy Testa says the idea was to understand DO variability as the Bay Scale with multiple partners. This led to a modeling effort in the shallow water. He was looking to see if modelling can show these dynamics. He emphasizes this is collaborative and is testing model capabilities.
- *CHAT*
- *from Kristin Saunders to everyone: 11:34 AM*
    - *This shallow water modeling talk is very timely as the modeling team is working on the next phases on the model and shallow water is of great interest to the living resource technical folks*
- *from bruce vogt to everyone: 11:53 AM*
    - *hi all, great talks today. thanks for all the info. we are also developing synthesis products for fish and oysters. In fact the past few NCBO FFOs focused on synthesis. It would be nice to do a follow up on this meeting down the road with fish, wildlife,*

human examples. Sending now bc I need to jump off at noon. thanks for an informative meeting.

- Bill Dennison appreciates the illustration of integrating different types of data. He thinks the other well illustrated thing is that the synthesis is generating the next set of questions that we need to address. The focus on shallow water is SUPER critical especially for the STAC report.
    - Lew Linker thanks Bill for mentioning the STAC report. He says some key questions are:
        - Can we do this simulation in shallow water?
            - Yes
        - How do we do this?
            - Jeremy is breaking trail on understanding and generalizing the processes.
        - What are the outcomes? How do we deal with diel superstauration? What's mean for the WQ standard and for a healthy bay? What might this mean for how the estuary functions?
        - In terms of outcomes standard model output today we have deepwater DO. If we could describe conditions in smaller embayments and communicate that to the Corsica river how do we effectively communicate this in 2025 and beyond?
- *CHAT*
- *from julie.reichert-nguyen to everyone: 11:56 AM*
    - *Another synthesis effort: We (many CBP workgroups) are utilizing the STAC Workshop funding to support synthesis of rising water temperature climate change research, impacts to fisheries and habitat, and management options to address or minimize impacts from warming temperatures. Our pre-workshop to share and discuss inital findings from synthesis leads will be on June 21st during the Climate Resiliency Workgroup meeting. All are welcomed to attend. Email me if you would like to be added to the calendar invite (julie.reichert-nguyen@noaa.gov). The agenda will be posted here (still in development): https://www.chesapeakebay.net/what/event/climate_resiliency_workgroup_crwg_june_2021_meeting*
- *from pjtango to everyone: 11:57 AM*
    - *Jeremy - is metabolism based on mean expectations of cell function, or do you test the range of cellular level metabolic rates from studies to see if the full range of literature values might allow for our diel DO range to be better approximated?*
- *from pjtango to everyone: 11:58 AM*
    - *2004 - >50,000 fish died in a September fish kill event. Sometimes they can run, sometimes they can't.*
- *from pjtango to everyone: 11:59 AM*
    - *I meant that in the Corsica River*
        - Jeremy Testa thinks for living resources it's least close to what he does. In these environments monitoring living resources shows that organisms move away effectively. He then describes the need to quantify adjacent areas

where the organisms can escape to. He thinks these models can measure this. He thinks that they're testing in a VERY difficult place. If other people seek to do this in other places that aren't as vulnerable to pollution then they can likely do this well.

- Jeremy Testa answers Peter Tango's chat question and talks about ecosystem metabolism as a tracer for all organisms contributing to DO consumption. In terms of looking at each organism's metabolism he can't do that.
- *CHAT*
- *from bruce vogt to everyone: 12:00 PM*
    - *can you predict changes in shallow water WQ based on planned BMPs? I am really interested in the land water interface here and thinking about planning nearshore bmps effectively.*
- Jeremy Testa says models can predict bloom then bomb cycles associated with fish kills.
    - Peter Tango asked if metabolic rates were built from cellular level processes to metabolic processes of organisms. He wonders if they can be broken out to specific organisms but this is good thanks.
- Bill Dennison asks Jeremy to answer other questions in the chat and moves onto Rebecca Murphy.
- *CHAT*
- *from Jeremy Testa to everyone: 12:03 PM*
    - *hi Bruce, we certainly can make those predictions right now, but the challenge is understanding how good they are. We have done this empirically in the Corsica. The motivation for the SHCHISM application was to be able to do scenarios with BMPs.*

11:50 Chesapeake Bay Tidal Trends Update **– Rebecca Murphy** (UMCES) Rebecca will provide an update on the Tidal Trends in the Chesapeake Bay showing new insights into Nitrogen, Phosphorus, and Dissolved Oxygen.

- Rebecca Murphy will discuss tidal trends generated for the bay which are done each year. This is a group effort with ITAT leading, pulling together all different stakeholders based on the issue of focus.
- Bill Dennision says Rebbecca has pioneered fantastic ways of visualizing synthesized data.
- *CHAT*
- *from bruce vogt to everyone: 12:08 PM*
    - *great. Interest in living shorelines and wetlands is not new but under current admin the use of natural infrastructure is gaining momentum. I've been thinking a bit about what science could help design a more comprehensive approach and tributary scales to plan and implement wetland and shoreline conservation and restoration strategies.*
- *from julie.reichert-nguyen to everyone: 12:11 PM*
    - *I wonder is sea level rise is causing some of the decrease. The modeling*

workgroup found that sea level rise can have a cooling effect.

- *from julie.reichert-nguyen to everyone: 12:12 PM*
    - *It would be interesting to overlay the modeling results with this dataset*
- Bill Dennison thanks Rebecca Murphy and goes to Julie's chat comment of SLR impacts on trends in terms of sea water cooling and bottom water oxygen.
    - Rebecca Murphy says SLR can play a role, she thinks of Kyle Hinson's work which described the impacts of atmosphere vs ocean vs river flow effects on trends. This showed that most impacts are being caused by atmospheric changes. She thinks SLR can play a role.
- *CHAT*
- *from julie.reichert-nguyen to everyone: 12:22 PM*
    - *Could be interesting to explore more*
- Bill Dennsiion likes this is all going online, that's a huge leap forward to get access to data where it can be studied in depth by multiple people.
- *Chat*
- *from julie.reichert-nguyen to everyone: 12:22 PM*
    - *Yes, I'm familiar with Kyle's research. Super interesting and useful.*

12:20 Final Thoughts - Bill Dennison (UMCES) and **Peter Tango** (USGS)

- Bill Dennison steps back to view the talks we have seen. He sees 5 takeaways:
    - There are lots of different ways to do synthesis.
    - There is a diverse array of applications of synthesis efforts.
    - Synthesis is a KEY part of CBP moving forward in the adaptive management context.
        - People learn by doing.
    - To be effective synthesis has to have effective and clear communication.
        - Clear graphics and accurate wording that isn't jargon
    - These presentations have all been examples of effective partnerships.
        - These partnerships included Chesapeake Bay Program (CBP) staff, as well as federal, state, and academic scientists.
            - There were many names that reappeared across multiple efforts which indicates very strong partnerships.
- Bill Dennison opens to Peter Tango for final thoughts
- Peter Tango says it's necessary to get all members across the partnership involved and utilize all the expertise of CBP members. We need to use and reuse information in many different ways. Storytelling is how this happens and he loves these deep dive synthesis efforts that tell specific stories.
    - Bill Dennison very much likes the use of the word storytelling. These are important nonfiction stories that tell us about a massive effort about protecting and restoring the Chesapeake Bay and its watershed.
- Bill Dennison recaps and mentions upcoming events:
    - Next Thursday June 3rd from 10-4 there is an oyster symposium.
    - Marisa Baldine has reminded us that Chesapeake awareness week is June 5th-13th.
    - June 22 the report card release at Sandy Point will occur
    - June 24 is the next STAR meeting with the theme of integrating social science with

natural science.

- *CHAT*
- *from Marisa Baldine to everyone: 12:29 PM*
    - *Access the Bay Awareness Week toolkit here: https://drive.google.com/drive/folders/1mW5kOkNTd4Qxfo23EP9vgfxASQobPZCf?usp=sharing*

12:30 Adjourn

Next Meeting Dates: June 24, 2021 10:00-12:30

Participants:

Tom Butler, Breck Sullivan, Jake Leizear, Adriana Marcela Murphy, Andy Fitch, Angie Wei, Annabelle Harvey, Bailey, Bill Jenkins, Britt Slattery, Bruce Vogt, Cindy Johnson, Denice Wardrup, Fred Irani, Greb Barranco, Douglas Austin, Jessie Turner, John Wolf, Julie Reichert-Nguyen, Justin Shaprio, Katheryn Barnhart, Ken Hyer, Kristin Saunders, Lee McDonnell, Liz Chudoba, Mandy Bromilow, Marisa Baldine, Mark Nardi, Meg Cole, Megan Ossmann, Mike Mallonee, Nora Jackson, Peter Tango, Qian Zhang, Rebecca Murphy, Richard Tian, Tom Parham, Wendy O'Sullivan, William Dennison, Briana Yancy, Lew Linker, Joshua Ramirez, Lew Linker, P Thompson, Kathy Boomer