Scientific, Technical Assessment and Reporting (STAR) Meeting
Theme: Addressing Science Needs Through Academia

Thursday, May 25, 2023
10:00 AM – 12:00 PM

Meeting Materials: Link
This meeting was recorded for internal use only to assure the accuracy of meeting notes.

Action Items:

- ✓ Discuss FY24 ROAR proposal ideas at STAR or other meeting in late November/early December 2023.
- ✓ Email Breck Sullivan (bsullivan@chesapeakebay.net) if you have answers to these questions:
    - What engagement are you currently doing with UMBC students and faculty that you want to see maintained in the MOU?
    - What are some action items you'd like to see in the Action Plan?
- ✓ Have someone from the Chesapeake Bay Program discuss the Science Needs at next year's NOAA Living Marine Resources Cooperative Science Center (LMRCSC) annual meeting (contact – Paulinus Chigbu, UMES).
- ✓ Discuss with Chesapeake Research Consortium (CRC) the opportunity to organize a 2-day workshop with academic faculty, graduate students, non-academic stakeholders, Goal Implementation Teams (GITs), and funders all in attendance to discuss key research issues leading to co-development of science needs and strategies to address them.
    - This workshop will rotate throughout different academic institutions in different states in the watershed.
- ✓ Kristin Saunders (UMCES) will take back to the Strategy Review System (SRS) planning team the idea of integrating academic science earlier into the SRS process.
- ✓ STAR will send Anthony Robinson list of GIS science needs.
- ✓ STAR Leadership will review suggested edits to the Science Needs Database and approaches to interacting with the academic community and identify changes that may be made to the framework.
- ✓ STAR Leadership will show GITs how the science needs they bring to STAR are being met and examples of success stories.

Minutes:

10:00 AM **Welcome, Introductions & Announcements – Bill Dennison** (UMCES), **Ken Hyer** (USGS) and **Kimberly Van Meter** (Penn State) - STAR co-chairs and vice chair,

Breck Sullivan (USGS) STAR Coordinator, **Peter Tango** (USGS) CBP Monitoring Coordinator

Announcements

Strategic Engagement Team Update - Marisa Baldine (CRC)

- Chesapeake Awareness Week is coming up June 3 – June 11.

Update on ROAR Proposal Funding – Breck Sullivan (USGS) and Kaylyn Gootman (EPA)

- A Regional ORD Applied Research Program (ROAR) was awarded to support the shallow water work and development of the 4-Dimensional Interpolator. A graduate student will be hired through the ORISE fellowship for 1 year starting in January 2024 to work on this project.
- ORD is moving the ROAR deadline up a month every cycle. CBP colleagues are submitting at least 1, potentially 2 proposals to ROAR this year. Each proposal needs an EPA lead (EPA staff member in the CBPO). It might be good to do a call for proposals for the next year following Thanksgiving at a future STAR meeting.
- The EPA Region 3 lead is responsible for ensuring paperwork is completed, and shepherding that to the regional science liaison. Once the project is funded, the EPA lead is responsible for leading the making of the project management plan for the project (with help from collaborators).

STAR Accessibility Survey

Upcoming Conferences, Meetings, Workshops and Webinars

- Citizen Science Association conference, C*Sci 2023 - May 22-26, 2023, Arizona State University campus in Tempe/Phoenix, Arizona.
- Interagency Conference on Research in the Watersheds (ICRW8) – June 5-8, 2023, Corvallis, Oregon.
- Chesapeake Studies Conference – September 15-16, 2023, Salisbury University, Salisbury, MD.
- CERF 2023 Conference: Resilience & Recovery – November 12-16, 2023, Portland, Oregon. Abstracts were due May 10, 2023.

10:05 AM **Speed talk on Strategic Science and Research Framework (SSRF) and science needs database** – ***August Goldfischer (CRC)***

Summary

The CBP's Strategic Science and Research Framework (SSRF) is an approach to gather, track and maintain science needs for all 31 Outcomes in the Watershed Agreement. Science needs are stored in the Science Needs Database. The SSRF helps the CBP focus existing resources to address these science needs, leveraging the research enterprise and more effectively providing science to advance decision making. The SSRF complements CBP's Strategy Review System (SRS), and Outcomes go through both processes in the same 2 year cycle. Scientific resources are leveraged to address science needs within the CBPO and through partnership with federal and state government, nonprofits and academia.

10:15 AM **USGS, UMBC, & EPA Memorandum of Understanding: Methods for Building Science Capacity with Academic Institutions** – ***Breck Sullivan (USGS)***

Summary

Partnership opportunities such as Memorandums of Understanding (MOUs) help CBP work with academia on efforts that address Bay science and progress science needs while providing opportunities for students in the environmental field, particularly students at minority serving institutions (MSIs). USGS and EPA signed an MOU with the University of Maryland Baltimore County (UMBC), and this partnership will advance agency science while enhancing research opportunities, teaching, outreach and career development for students, faculty and staff. Currently, work on an action plan for the MOU is under way to detail what will be accomplished during each year of the 5-year MOU. STAR also collaborates with UMBC through providing scientist mentors for their ICARE Program, a masters' program that aims to increase diversity in the environmental field. Two employees of the CBP are also basing their UMBC masters' theses off science needs in the science needs database.

- What engagement are you currently doing with UMBC students and faculty that you want to see maintained in the MOU?
- What are some action items you'd like to see in the Action Plan?

Discussion

- *Breck Sullivan in the chat: One thing for testing with the MOU that I have heard from those higher up within USGS is that they can hire a diverse workforce but unless we can retain them and make them feel welcome it then will not create change. The MOU allows for direct hiring for USGS at MSI institutions within the partnership, so we are hoping to test hiring a cohort of diverse students to the federal government. From my level, I am very interested in how we can collaborate more with different departments because right we only have a strong connection with a handful of professors. UMBC really has a wide breadth of departments, and we know it is best to bring in these different viewpoints into the conversation of tackling our science needs and challenges.*

10:30 AM **Academic Research Panel**

About the panelists

Paulinus Chigbu is Associate Dean for Research, Development and Graduate Education & Professor of Marine Environmental (Fisheries) Science at the School of Agricultural and Natural Sciences, University of Maryland Eastern Shore (UMES). His research interests include fish and zooplankton ecology, crustacean biology, and trophic dynamics in marine and freshwater environments.

Molly Mitchell is a Research Assistant Professor at Virginia Institute of Marine Science (VIMS), researching how sea levels are changing along coastlines, how sea level rise impacts wetlands and wetland-related ecosystem functions, and adaptation of human and natural resources to sea level rise.

Hans-Peter Plag is Director of the Mitigation and Adaptation Research Institute (MARI) and Professor of Ocean, Earth and Atmospheric Sciences at Old Dominion University (ODU). His areas of expertise include sustainability and adaptation science, Earth system science, geophysics, climate change and sea level rise.

Anthony Robinson is an Associate Professor of Geography and Director of Online Geospatial Education Programs at Penn State University (PSU). His research focuses on designing and evaluating geovisualization tools to improve geographic information utility and usability.

Lisa Wainger is a Professor of environmental economics at the University of Maryland Center for Environmental Science (UMCES) and has over 20 years of experience in integrating ecological and economic analysis tools to evaluate costs, benefits and risks of ecosystem restoration and protection.

Eric Schott is an Associate Research Professor at the Institute of Marine and Environmental Technology (IMET) at UMCES. His lab studies aquatic health, particularly the discovery and tracking of estuarine pathogens in the blue crab and other shellfish.

Key Takeaways from Panel

- Barriers to using the database include:
  - Lack of advertisement.
  - Lack of contextualization of science needs within broader issues.
  - Lack of funding to address science needs.
- Incentivize use of the Science Needs database through:
  - Funding.
  - Student projects.
  - Fulfilling “broader impact” requirement of grants and degrees.
  - Letters of support from CBP stating that addressing a science need fills a broader impact.
  - Connecting needs to larger issues.
  - Opportunities for junior faculty and graduate students to give talks and network.

    - Host workshops for co-production of science needs with funders, academics, GITs and stakeholders all present.
- Suggestions for improving the database:
    - Categorize GIS needs as application projects vs projects that advance the science.
    - Connect to academic learning outcomes.
    - Co-develop the science needs with those you wish to engage with at the start of the process rather than waiting until the end to engage.
    - Nest the science needs under science questions or hypotheses so it is easier for academics to see how they might connect to their research.
    - STAR should work with management and GITs to prioritize science needs based on impact and other criteria.

<u>Discussion</u>

Molly Mitchell: Many of these needs are discrete and easy to address, and parts may already be addressed. Making connections between people who are working on different parts of different science needs would be helpful to leverage the database more efficiently. Additionally, a large barrier is funding. For example, it can be difficult to align projects with specific RFP questions. However, opportunities exist to focus students on addressing science needs questions, if funding can be found.

Hans-Peter Plag: We have significant problems using the Database because in this program we developed with the US Fish and Wildlife Service, we develop leaders who take a cross disciplinary approach based in an understanding of how society makes environmental decisions. Our approach starts with the problem, and not with the science. For example rather than asking, how much microplastic is in the Chesapeake Bay, we ask what is happening in society that leads to plastic pollution in the environment. Then eventually we do have some science needs but those are directly connected to what the participatory modeling is trying to do, bringing the stakeholders in the room and discussing with the stakeholders what future they actually want. When we have identified the goal knowledge, then we develop the pathways to this future. We assess different interventions to do the transformation necessary. Then we can make recommendations to the societal stakeholders. For example, for microplastics, it is stormwater treatment and sewage systems that need to be improved. When I look in the database, I've tried to connect different needs to the problems we're addressing but I don't see the connections. In other words, they need more context. I have evolved from a scientist to someone who is far more engaged in a declaration of planetary emergency and making it available to everyone. I don't think we have time to do science because we want to do science; in my opinion we have to use the resources we have to address what is happening and put humanity on a path that doesn't lead to collapse. We focus on developing the leadership skills of our students more than the science skills.

- *Kristin Saunders in the chat: What is the best way for us to make the academic community aware of this database? How should we amplify the availability?*

- *Denice Wardrop in the chat: We made one attempt through the CRC, and a webinar, but a repeated messaging would be helpful. One issue is the language of the science needs, some integration of needs on an issue basis would be helpful (as Hans is discussing).*
- *Bruce Vogt in the chat: At NOAA we have developed RFPs and done outreach to prospective PIs around the science needs we have listed for the Fish GIT. We have taken a proactive approach not just expected scientists to read the database. Our NOAA RFP put significant emphasis on a student being involved in the project, there role being clear in the proposal and that the student should be underrepresented in marine science.*
- *Eric Schott in the chat: That's consistent with the NOAA EPP mission. I see other agencies going that way.*

Lisa Wainger: I agree with Hans-Peter, although I know these needs are not as isolated as they may seem. The process through which these science needs came about is this process of adaptive management to understand what's needed to forward different goals. So, they're not as divorced from the larger problems as they seem. Still, I see the same issue. Not everyone has the time to come to the meetings that generate these questions. If you want a broader range of academics to engage, you need more opportunities for co-development of these needs. We have research ideas that may overlap, as Molly was saying. Can we broaden the question, make it more interdisciplinary, attach it to an incentive question? When I look at the database, I see a lot of "document the problem" and "provide more information". Social science suggests it's not just about providing the information; we have to create appropriate incentives and communicate the information in a meaningful way. I still see impediments to using these in inter- and transdisciplinary research. Academics respond to RFPs. Funding is the number one incentive to get us to work on your projects. Maybe we have an idea for an existing RFP and your question partially fits in there – then we need to ask if there is an opportunity to alter or expand your question so it can align.

- *Kristin Saunders in the chat: Lisa, knowing our structure and the way we work now, can you suggest some steps we might take to overcome this disconnect on co-development?*
- *Breck Sullivan in the chat: Yes, I have seen the database as a conversation starter. We need that co-development to make sure it is reaching our needs and addressing other aspects the co-developer is an expert in or interest in.*
- *Peter Tango in the chat: To Lisa's point on co-development considerations, what are the best venues to create the co-development work? In my experience, side-bars of conference time have been in the ad-hoc events that led to such discussions. It's great, but that's rather organic. Is there are more structured way to enhance the collaboration discussions for co-development?*

Anthony Robinson: From the GIS side – I would need to know which science needs that have mapping components will be applications, and which will advance the science. Applications are fine and useful, but a requirement of a Masters of Science at Penn State is to advance the science, so in order to fulfil degree requirements for a student they would need to work on a

science need that will advance the science, going beyond applications only. It would be helpful to have someone quickly go through the database and characterize which science needs are more on the applied side vs which ones are more groundbreaking in terms of novelty and significance for GIS. Additionally, some of the science needs have goals that are very vague about the outcomes (such as "explore"). How do the goals connect to the learning objectives and outcomes of our learning curriculums? I would like to see something more like a hypothesis. Making them more consistent and connecting more to learning outcomes for our students would help.

Eric Schott: An incentive to move things forward for us is to have a graduate student working on a project – because you don't want to let them down, they need things to work out so they can get their degree. That means that funding needs to go all the way through their degree program. But many of these needs aren't big enough to be an entire degree. How do you chain together a bunch of projects funded by smaller things to make a PhD out of it? It's possible, but exhausting. There are other options like the UMBC ICARE program or the NOAA Fisheries Educational Partnership Program which fund students. MOUs between institutions are helpful in expanding capacity.

Molly Mitchell: Agree that MOUs could help with co-development. Many of these needs are good student projects, and funding is always difficult. However, when funding sources are specifically set up for student projects, that can be less expensive, and an added benefit for students. For example, the Coastal Zone Management Program in Virginia has funded students. In addition to funding as incentives for database utilization, the Chesapeake Bay Program is a broader impact, and having a broader impact is often required for grant programs. For someone addressing one of these needs, getting a letter of support from CBP saying this does address a broader impact might be a way to incentivize people to address these needs.

Breck Sullivan: How can we better make connections across partners for co-development of these needs?

Lisa Wainger: Having dedicated meetings to specific topics and networking with people who do that kind of research. Example – one hour discussion around research need "x".

Anthony Robinson: I agree that workshopping meetings would be helpful, and specifically invite people in allied disciplines that are engaged and potentially allied disciplines that are not currently engaged. To motivate faculty participation in these (and I also encourage graduate student involvement), hold workshops somewhere nice. Junior faculty and graduate students need networking opportunities. Junior faculty also need invited talks on their way to tenure. If you make a space for that, it will incentivize their involvement.

- *Denice Wardrop in the chat: The CRC could convene some meetings for co-development, at least at our member institutions with ability for other institutions to attend.*
- *Molly Mitchell in the chat: That's a good idea--we would be happy to host one. Also would be good to highlight the C-StREAM program!*

- *Kristin Saunders in the chat: We also would benefit from thinking about the sequencing. Right now, the goal implementation teams do their analysis and present a full package to the Management Board, and have a subsequent discussion with STAC to make the scientific community aware of the needs. We might really think about having STAC members and academic community beyond participate in the actual adaptive management analysis and design the science needs together. It would shift some things around but it might be more effective.*
- *Lisa Wainger in the chat: Many good ideas that emerge from brainstorming never find funding. So, we need to bring funders to these workshops who can provide the opportunities to do the work.*
- *Bill Dennison in the chat: Great point Lisa! Carefully constructed workshops with thoughtful attention to the participants attending makes sense.*

Kim Van Meter: An on-campus workshop for brainstorming proposals and how to bring money in could help.

Paulinus Chigbu: Every year the NOAA Living Marine Resources Cooperative Science Center (LMRCSC) has a central science meeting that brings together graduate students, scientists and NOAA scientists to discuss issues and priorities, and potential research projects for students. We can use that as a mechanism to get our faculty members and graduate students to know about the Chesapeake Bay science needs. We can invite someone to talk about the science needs. We had the science meeting in March this year.

Eric Schott: Here in Baltimore, we are trying to learn more from communities that live in Baltimore especially communities that have been excluded from decision making and science. That's a part of the climate emergency we talked about. It's not something we can take a decade to fix. There are many people my age who have done science a certain way, and we need to change the way we do science. Participating with LMRCSC has changed my behavior. We need to train the new generation of scientists. Students coming in now are fired up. We need to train the new generation in the emergency science that needs to be done. Lastly, the science I do is political. The people who were excluded were excluded for a reason. How comfortable are we as scientists trying to stay in our nonpolitical bubble?

- *Kristin Saunders in the chat: @Eric, the entire program is trying to think through how we more effectively center our work on people and community so your comment is very timely.*

Hans-Peter Plag: One of the ten criteria of wicked problems is that they are unique. That's why we do case studies. We developed a participatory and transdisciplinary template for case studies. We start with understanding the decision space, and bringing the stakeholders who are relevant together to come up with a goal statement for the future we want. Once we have that, we start conceptual modeling of the system. If I take a problem from the science needs database, for example, climate related changes in fish distribution, of course that is very important for the future of fisheries in the Chesapeake Bay. We would try to do a conceptual model that includes the social, economic and environmental aspects, developed with the stakeholders rather than for the stakeholders. Then we try to understand the fragilities in the

system, the assets that are exposed and what are the hazards the system is exposed. After that we are able to look at the spectrum of possible futures for the system, and how close or far they are from the goal future. We do risk assessment because risk perception is important for getting stakeholders on board. We have to develop a joint risk understanding. Then when we do interventions after, we come up with recommendations, not solutions to improve the situation. These may be social or engineering or scientific. The scientist comes in as an assistant for the people who are trying to tackle the problem they are facing. We need to be there with the core users of the knowledge using it with them, rather than walking away. It's a continuous, participatory process.

- *Eric Schott in the chat: I agree with Hans-Peter, that scientists cannot just create science and leave. We are getting better at communicating it, and to more broad audiences. MD Sea Grant just held a workshop at College Park on the built environment that approximated this. Mike Allen and Fredrika Moser would be good advisors.*
- *Bruce Vogt in the chat: Hans-Peter, can you share the template and an example of a conceptual model you've done? It sounds similar to the way we are thinking about problems and bringing in scientists to assist. And develop risk assessments that are built around the risk certain stressors may have on stakeholder/management objectives (or in your case the vision statement).*
    - *Hans-Peter Plag in the chat: Bruce, if you go to https://www.mari-odu.org/academics you can find the description of the template under the lefthand link "MARI Case Study Template". The 467 course pages give access to the group case study reports. Note that the template on the MARI page is for graduate and undergraduate students. We have gone beyond and are using a very similar template for a case study "Preparing Grenada for an Uncertain Future". Many groups are now interested in using the same approach for their location (e.g., a few groups in Australia). Send me an email and we can talk more about the details.*
- *Chris Guy in the chat: I think there is a need to bring GITs and workgroups into the discussions. They are largely disconnected after they submit science needs.*

Ken Hyer: Do we have existing meetings or workshops we could utilize? Should we build a session at existing workshops to invite relevant academics, stakeholders and funders, or make a brand new one to discuss this co-production/co-development?

Molly Mitchell: Dedicated efforts would be better. My concern with building on existing venues is that it is expensive to go to conferences so you are pre-selecting who can participate by only working with people already participating in a workshop.

- *Anthony Robinson in chat: ICAR at ODU would seem like a great potential partner as well. I went to grad school with their director, Dr. Jessica Whitehead. I assume Dr. Plag is already connected?*

- *Denice Wardrop in the chat: I would recommend a format similar to the one used in the Bay Delta science program to produce a Science Action Agenda. Co-development process that has funders and $ attached to it. CRC would be happy to organize.*

Bill Dennison: If the funders are in the room, the academics will show up. Rotating through academic institutions in different states in the watershed would be a great way forward, bringing students, faculty, funders all together.

- *Eric Schott in the chat: At UMCES, there is a hint that professional advancement will depend less on innovation and more on addressing real-now problems. If this can be done across more of academia, it will give faculty the space to support CBP needs.*

Lisa Wainger: As someone who's been involved in the Bay Delta experience – as opposed to an academic workshop, where we come up with cool ideas and stuff we want to work on, the Bay Program wants some science to answer some more immediate needs. We need an approach that's not an academic conference and not how the GITs work now, but a blend. The Bay Delta program had some issue incentivizing people to participate. We didn't get the best people participating, we got those who had time. So that needs to be very intentional.

Chris Guy: The GITs come up with the ideas and we have constraints in our Goals and Outcomes, and we have to work around those. As we go through the adaptive management process, we're asked for the science needs. We put the science needs forward but they're disconnected because the GITs don't have the research capabilities to answer the science needs, and they don't have money. Bringing the funders in the room isn't enough – we also need the folks who have to use this to support the Outcomes (aka, the GITs and their workgroups). We have the technical capabilities for moving it forward and the connections for financing it. Funding sources such as INSR, small watershed grant, Chesapeake Wild, BIL funding. When we're writing these things into the grants, we can influence them. For example, in the small watershed grants we put emphasis on wetlands which are falling behind. We're not asking you to attend all the workgroup meetings, just to make sure GITs are included on one of these rotating collaborative sessions. We do our GIT meetings on a rotating basis throughout the watershed and make them hybrid, and that seems to work well.

- *Lisa Wainger in the chat: Another challenge is integrating social science into the research. Ecologists might not know how to engage social scientists in addressing their problems but there are many opportunities.*
- *Lisa Wainger in the chat: @Chris. To reiterate an earlier point, if you were to nest the science needs under science questions or hypotheses, it would be easier for academics to see how they might connect to their research.*
- *Molly Mitchell in the chat: That's a good idea, Lisa!*
- *Kaylyn Gootman in the chat: Really like that idea @Lisa.*
- *Julie Reichert-Nguyen in the chat: Couldn't the two-day collaborative meeting build the science needs between the researchers and the GITs?*

Ken Hyer: While the Science Needs Database is a great place for aggregating all these needs and questions, maybe it's time to think about Version 2.0, where we build it out with a little more context, connection to stakeholders and connection to funding sources.

Chris Guy: GITs haven't prioritized the Science Needs because we're not seeing products out of them.

Molly Mitchell: I agree with having the GITs as part of the conversation additionally to add the context these needs are developed in. I also like the idea of moving the meeting around the watershed.

- *Kaylyn Gootman in the chat: When would be a good time of year for this type of meeting? Is summer too busy with research? Or is there a better target season?*
- *Molly Mitchell in the chat: Winter before classes start!*

Kristin Saunders: As a program we need to think about the sequencing of where and when this conversation happens. Denice Wardrop and I have discussed how we do our Strategy Review System. Typically, GITs talk with STAC and STAR at the end of the process. We've thought about ways to bring in academic science earlier in the process. Moving the interaction with science and academia to the beginning of the process would result in better analysis by the GITs because we'd be doing it with people who have ability to challenge our thinking, introduce social science considerations and formulate hypotheses. We'd be in a better position to launch these into implementing these needs. I will take this idea back to the SRS small planning team.

- *Katheryn Barnhart in the chat: I was proposing something very similar within our status and trends group yesterday! Great minds think alike.*
- *Lisa Wainger in the chat: @Kristen. I agree with your comments. Another issue to consider is potential impact of the science need. I'm thinking of social science (SS) needs because our research on CBP use of SS showed that some of the more impactful science wasn't necessarily prioritized.*

Eric Schott: A pitfall to this is that experienced researchers in the field have their favorite ideas. There is going to be friction, and that's ok. It's a sign of progress. It will be useful to get newer, younger faculty and scientists involved.

Lisa Wainger: Engaging young faculty is a great idea but that brings up a disconnect Anthony raised that to advance your career you have to develop cutting edge science. We want to do stuff that takes a little more time than next year having the answer. That issue of timelines needs to be addressed.

- *Bruce Vogt in the chat: Maybe we need to re-think GIT structures so each GIT has decisionmakers leading along with a funder like a federal agency and then be very intentional about recruiting and engaging scientists and most affected stakeholders to me GIT members. Right now, each GIT is structured differently. We are fortunate at Fish GIT.*

Doug Bell: I think you could address that through the grant review process. Often, grants select for people who already have the expertise and on-going projects without giving younger faculty the opportunity to learn new things and expand research.

Ken Hyer: And many things in the Science Needs Database aren't scoped for cutting edge research, they're scoped for a defined application.

Breck Sullivan: At one point we had more of those questions and then got feedback to make the needs more actionable. So how do we balance science needs being approachable and actionable for someone outside the CBP and make sure it has enough context.

Bill Dennison: We want to ensure a 2-way conversation between managers and researchers. We both have to have the right people in the room and then structure the conversation intentionally.

Kim Van Meter: I want to reiterate the opportunity for these science needs to provide broader impact which is important for many proposals especially NSF proposals. Bigger grants for early career faculty have to have a real program you're putting together for broader impacts. This can improve our outreach. We have programs younger faculty can get involved in.

Denice Wardrop: In the past the Chesapeake Bay Trust (CBT) did a professional development workshop at Penn State and asked to convene people with implementable pieces of work relevant to the Chesapeake Bay. One benefit of that was the people working on aspects of the same issue at Penn State had never met each other. This illustrates how you can't have one conversation and check the box; it takes iteration and multiple connections within and between institutions and communities. In-person conversation is important to that.

- *Alexandra Fries in the chat: I agree with Denise. We have to build relationships and that takes time.*

Hans-Peter Plag: I agree it's important to bring young people in but I see a challenge in how we present ourselves to the young faculty and students. I have some challenges in that I am doing interdisciplinary, transdisciplinary work focused on societal problems. One student asked me what I would tell my 20 year old self? That has motivated me. I present myself as a scientist who is involved in society, not just focused on the science. Are we helping young students and faculty understand that it is important that science is not just informing society, but integrated into society?

Lisa Wainger: We also have a lack of broad strategy when developing science needs. We don't Phave a strong feedback loop. Let's figure out how to prioritize science needs based on how to have the biggest impact. That shouldn't be the only criteria, but one criteria. How can we facilitate the most impactful science that will lead to large scale change.

- *Eric Schott in chat: in addition to using resources more strategically, we need to advocate for more resources full stop. That's inherently political. 1) keeping an eye on federal or commercial priorities and seeing how to tap into the resources around those, and 2) move the decision makers to allocate $. The latter is a science communication task in part.*

Bruce Vogt: As we look beyond 2025, we need to think about how we're structured at the CBP and whether we're recruiting the right people to be involved. I've heard great ideas coming from people not as heavily involved with the Bay Program. Bringing more people in is important. We might want to devise a vision statement around the future we want to see, and that takes stakeholders and decision makers and resources. We don't currently have a structure that includes all the right folks in the right places, and we're missing valuable voices at the table that can help us address some of the problems coming up.

Bill Dennison: We should be working with social scientists. We have a strong natural science basis but not so much of a social science basis.

- *Hans-Peter Plag in the chat: Bill, I would add future science to your list of whom to include.*

12:00 PM Adjourn

Participants:

Alexandra Fries (UMCES), Ann Foo (UMCES), Anthony Robinson (Penn State), August Goldfischer (CRC), Aurelia Gracia (NPS), Bill Dennison (UMCES), Breck Sullivan (USGS), Brian Burch (EPA), Britt Slattery (NPS), Bruce Vogt (NOAA), Chris Guy (USFWS), Dede Lawal (CRC), Denice Wardrop (Penn State), Doug Bell (EPA), Emily O'Keefe (NOAA), Eric Schott (UMCES), Hans-Peter Plag (ODU), Jamileh Soueidan (CRC), Jeff Lerner (EPA), Jeremy Hanson (CRC), Katheryn Barnhart (EPA), Kaylyn Gootman (EPA), Ken Hyer (USGS), Kim Van Meter (Penn State), Kristin Saunders (UMCES), Lisa Wainger (UMCES), Liz Chudoba (Alliance for the Chesapeake Bay), Mark Nardi (USGS), Matthew Kierce (IWLA), Melissa Fagan (CRC), Michael Weyand (City of Gaithersburg, MD), Molly Mitchell (VIMS), Paulinus Chigbu (UMES), Peter Tango (USGS), Qian Zhang (UMCES), Renee Thompson (USGS), Sophie Waterman (CRC)