STAR/Beyond 2025 - Climate Small Group Meeting
Theme: Develop Strategy for Addressing
Beyond 2025 Steering Committee Charge, Part 2
Organizational Focus on Climate Change

Tuesday, December 12, 2023
10:00AM – 12:00 PM
Meeting Materials: Link
This meeting was recorded for internal use only to assure the accuracy of meeting notes.

ACTION ITEMS

- **Danielle will share the NIACS monitoring worksheet with Katie, who can share with STAR and the Beyond 2025 Climate Small Group.**
- **The Beyond 2025 Climate Small Group will map how the existing NIACS menus (presented by Danielle) connect to our goals and outcomes, and then identify any gaps so small group can lay out plans to address them.**
- **The Beyond 2025 Small Group will reach out to Danielle since she offered the services of her team at NIACS to provide some feedback on climate adaptation plans.**
- **Alex Gunnerson will ask Lew Linker to share his perspective on Katie Brownson's question: "With all the climate modeling work for CAST (or work happening elsewhere in the science branch), has there been a thorough synthesis of projected climate impacts for Chesapeake ecosystems (beyond rising water temperatures)?"**
- **Joel Scheraga will put the CBP in contact with the EJ Office in EPA ORD to connect on TCTAC activities in the Chesapeake Bay watershed.**
- **Breck Sullivan will follow up with Andy Miller about EPA ORD's experience with building social science capacity in the co-production of knowledge.**
- **STAR will contact Katerina Gonzales (gonzales.katerina@epa.gov), Megan Fleming (fleming.megan@epa.gov), and Jenna Hartley (hartley.jenna@epa.gov) about getting public information on the EPA Climate Conversations Seminar Series to share with the broader CBP.**

Meeting 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

Ken began with an announcement that this is Bill's last STAR meeting as co-chair and he will now be STAC Vice-Chair. Ken and Breck thanked him for his many years of co-chairing STAR.

Ken said Beyond 2025 is an inflection point in the CBP, and it made sense to leverage the standing STAR meetings to focus on this important topic.

Breck and Bo are the co-chairs for the Beyond 2025 Climate Small Group. At the November STAR / Beyond 2025 Climate Small Group meeting there was a suggestion to listen to how other organizations outside of the CBP are integrating climate change and utilizing climate resources. This meeting is designed to respond to this suggestion.

Upcoming Conferences, Meetings, Workshops and Webinars

- National Conference on Ecosystem Restoration – April 14-19, 2024, Albuquerque, New Mexico.
- Choose Clean Water Conference – May 20-22, 2024, Ellicott City, Maryland. Proposals for presentations, workshops and field trips due January 12.
- Chesapeake Community Research Symposium – June 10-12, 2024, Annapolis, Maryland.

10:05 AM **Northern Institute of Applied Climate Science – *Danielle Shannon (NIACS)***

Danielle shared background information on NIACS and their broader organizational focus on climate adaptation, and examples of how partners in the region have leveraged existing climate adaptation resources and integrated ideas from the NIACS climate adaptation menus to create more robust on-the-ground plans.

Discussion Questions:

- What aspects of NIACS climate adaptation strategies could inform CBP work?
- Any examples from NIACS leveraging resources the CBP could replicate?
    - **EC Charge Question:** Identify opportunities to leverage action across multiple goals and outcomes.
- How can the CBP incorporate climate resiliency and adaptation into our adaptive management framework across the partnership?

Summary

Danielle started her presentation with an overview of the NIACS partnership, whose mission is to bring diverse perspectives in natural resources management together to advance climate change mitigation and adaptation by informing planning, decision making, and management activities. NIACS is inclusive of the mid-Atlantic.

Danielle summarized NIACS' flagship products. One product is the forest ecosystem vulnerability assessments, as part of the climate change response framework. Adaptation resources are designed to be flexible, not prescriptive, and to support managers' decisions. The focus is on practical tools. These resources can be found here.

Danielle said to connect to the Beyond 2025 planning idea, one needs to think about adaptation, which she defined as the adjustment of systems in response to climate change. Ecosystem-based adaptation activities can build on sustainable management, conservation, and restoration. However, there are concepts, mechanisms, and approaches that may need to be reimagined.

Danielle presented a continuum of adaptation options to follow, since resilience is not a set target but instead a trajectory. These fall into three major buckets (resistance, resilience, and transition) and have two tradeoff driven management paradigms: managing for persistence vs change.

Danielle introduced some tools to translate the broad adaptation strategies found in the literature to more practical guidance and steppingstones for natural resource managers. This menu of adaptation strategies is a collection of ideas to help organizations articulate their own adaptation actions, not a prescriptive spatial tool or explicit plan. There are multiple menus developed by NIACS', which can be found here, and are designed to be used within the framework of adaptive management.

Danielle walked through the six adaptation strategies for Forested Watersheds, and focused on two approaches of strategy 5, "Accommodate altered hydrologic processes" (slides 19-21). Danielle briefly walked through an example of adaptation action in the Sligo Creek watershed in Maryland.

Danielle concluded with some key closing thoughts, which were:

- Forest and Watershed management is the same job, with new challenges: similar stressors, but new patterns and agents.
- Adaptation actions will reflect values and risk tolerance.
    - There is no one-sized fits all solution to climate change.
    - Think about place and objectives within the context of risk and values.
    - Document rationale and intent.

Discussion

Breck shared that the scope of this small group is challenging, but the framing in this presentation is helpful, especially the use of terms like coping with climate change.

Jason Dubow asked if the US Forest Service has the same way of looking at adaptation as USGS? Katie Brownson said the Resistance-Resilience-Transition framework used by the Forest Service is pretty analogous to the RAD framework. Bill noted UMCES facilitated a workshop in which they identified three options: Resist, Accept or Direct transformations. Jason said it seems like the "resilience" in the Forest Service approach captures one aspect of the "resist" approach that the RAD framework does not capture as a nuance. While the RAD framework has the "accept" approach that is bit beyond the "transition" approach within the Forest Service framework. Perhaps the two frameworks could be integrated as a continuum of four transformations - resistance-resilience-direct-accept. Danielle said NIACS and the forest service are very interested in using terminology for active management, but she recognizes other groups may have a need for some passive terms. The accept component of RAD is where the distinction between the two frameworks are drawn. Danielle said the terms we use often reflect the capacity we have for action, our intentions, and our risk tolerance.

Bill said he is particularly intrigued by the map of case studies, since a lot of learning comes from what others have done. Danielle shared that the platform for case studies can be accessed here. Danielle said the focus is about creating a community of practice. Bill said at the start of Maryland Governor Martin O'Malley's term, there was a push against using the term "it depends" because it does not inform policy decision making. Danielle said interestingly, managers sometimes can be relieved at the term of "it depends" in her experience because the cone of uncertainty gives them room to navigate and be independent in their decisions.

Breck asked how long it takes to create or update the menus NIACS' creates, because the CBP may be interested in producing their own menu of adaptation strategies. Danielle said managers gravitate towards a set of resources that are local to them but suggested it might be most effective to just directly pull them into planning documents. Until there is a need to create a region-specific menu, it may be best to utilize existing menus.

Jason Dubow said it is interesting that we do not seem to have many forest adaptation case studies in the Coastal Plain. Danielle said this is the case because a series of workshops in the Maryland Coastal Plain that started in 2019 was interrupted by COVID. NIACS is returning to this work in the near future.

Katie Brownson said a piece of homework for the Climate Small Group is to map how the existing menus connect to our goals and outcomes, then identify any gaps so we can pursue them further. There was agreement.

On the topic of the adaptation continuum, Bo said the need to know where one is informs what actions to take. How do we know the state of ecosystem health given uncertainties due to climate change, and how does that play into budgeting limitations and programmatic actions? How do we build triggers into our management perspectives? Danielle said there will need to be brainstorming

and acceptance of uncomfortableness. Danielle emphasized the importance of utilizing existing resources nationally and regionally (e.g., the most recent national climate assessment). An initial analysis of these resources could help with getting a gut-check on the current state of the program. Monitoring assessments of long-term goals is key, with management triggers and associated interventions to re-route direction of degrading trends. Danielle cautioned against writing one's own vulnerability assessment, and instead focusing on synthesizing existing resources.

Julie Reichert-Nguyen said the CBP should do something similar to the Rising Water Temperatures STAC workshop for specific natural resource outcomes. Julie said for the STAC workshop, we synthesized the existing information to inform management recommendations for living resources with rising water temperatures. Kaylyn Gootman added that there is much more capacity to synthesize versus re-invent the wheel.

Danielle offered the services of her team at NIACS to provide some feedback on plans. Katie said in the past, Greater Baltimore Wilderness Trust utilized the help of Danielle's team and found it to be quite insightful.

Ken said he sees climate and land use change as the two main drivers of challenges to CBP goals. Ken asked about the state of modeling efforts to integrate climate and land use change. Danielle said land use change has historically been the biggest threat to forested watersheds, and this threat will not dissipate any time soon. Danielle has not seen many strong examples of integrated land use and climate change modeling; the extent is mostly using 30 meter National Land Cover Database from 2016, which is not sufficient. Danielle has seen a few examples of efforts to integrate utility scale solar modeling with land use change impacts, but this is a more recent development. Ken replied solar development is of significant interest in the Chesapeake Bay watershed.

Jason Dubow said the Maryland Department of Planning forecasts about 800,000 more people coming to Maryland between now and 2050, similar to a new City of Seattle - the amount of forest change from that could be significant, in addition to forest loss to solar fields, data centers and warehouses.

Katie asked, with all the climate modeling work for CAST (or work happening elsewhere in the science branch), has there been a thorough synthesis of projected climate impacts for Chesapeake ecosystems (beyond rising water temperatures)? Kaylyn said this is great question and would be a something for Lew to answer.

Bill said he loves the line "Get comfortable with being uncomfortable" that Danielle shared.

Danielle shared a few adaptation menus in an interactive page format and all of the menus (including the Great Lakes menu).

Breck, Bo, Bill, and Ken thanked Danielle for presenting and sharing these resources.

10:45 AM **EPA's Office of Policy's Climate Adaptation Program and Office of Research and Development's Center for Public Health and Environmental Assessment Integrated Climate Sciences Division – Joel Scheraga (EPA ORD) and Andy Miller (EPA ORD)**

Two presentations on EPA's recent successes in climate work on the ground to share knowledge related to climate change adaptation.

Discussion Questions:

- What aspects of the programs' climate adaptation strategies could inform CBP work?
- As EPA programs, how could the CBP leverage resources and collaborate in the future?
- How can the CBP incorporate climate resiliency and adaptation into our adaptive management framework across the partnership?

Summary of **EPA's Office of Policy's Climate Adaptation Program**

Joel shared the EPA's climate change adaptation program vision and explained why the EPA has an adaptation goal. Joel added context as to how this vision is situated within the strategic plan. Joel described the five major components of the EPA climate adaptation plan and shared there are 20 climate adaptation implementation plans across the agency.

To implement the climate adaptation plan, Joel shared some of the steps EPA is taking to build adaptive capacity. This includes a climate literacy initiative and training for EPA staff and partners. Financial incentives are also key to the climate adaptation plan and are supported by the highest levels of EPA leadership and recent legislation. Another component is embedding climate adaptation into the rulemaking process for regulations related to the Clean Water Act, Clean Air Act, National Environmental Policy Act, and Resource Conservation and Recovery Act. EPA is also embedding climate adaptation into enforcement and EPA's supply chains and facilities management.

One component of particular note is The Environmental Justice Thriving Communities Technical Assistance Centers Program (TCTACs), which will provide training and other assistance to help underserved and overburdened communities by building capacity for navigating federal grant application systems, writing strong grant proposals, and effectively managing grant funding.

EPA will measure and evaluate the climate adaptation plan performance through the Climate Adaptation Measures Program (CAMP), which will require agency wide progress reported to the Deputy Administrator every quarter.

Summary of **Office of Research and Development's Center for Public Health and Environmental Assessment Integrated Climate Sciences Division**

Andy provided an overview of ORD's Integrated Climate Sciences Division (ICSD), focusing on two new climate-focused initiatives, an Interdisciplinary Climate Assessment Program (ICAP) and Regional Climate Assistance Network (RCAN).

ICAP is focused on quantitative assessments of climate damages, assessments of the costs of climate change and the benefits of national, state, and local actions to control GHGs, and input to metrics, like the social cost of carbon.

RCAN will enable a range of services to regional office partners through the co-production of knowledge in place-based context. Co-production is deeply interdisciplinary in nature and based on relationships. ICSD will contribute by establishing best practices in co-production and learning from what we're doing (evaluation). This requires the integration of social sciences from the start and investing resources in building this capacity so that trust can be built in communities where co-production is being practiced.

ICSD is involved in Climate Services and building connections nationally (see slides 11-13).

Discussion

Breck thanked Joel and Andy for presenting and sharing these resources. It will help shape the future climate direction of the CBP.

Jason Dubow asked how is EPA defining resilience in this case, as compared to US Forest Service and USGS? Similarly, how is EPA defining adaptation in this case versus resilience? Joel replied EPA defines: 1) resilience as the capacity of a system to maintain function in the face of stresses imposed by climate change and to adapt the system to be better prepared for the future; 2) community resilience as the capacity of a community to withstand and recover quickly from environmental impacts, like storms, droughts, and floods; 3) adaptation as adjustment in natural or human systems to a new or changing environment that takes advantage of beneficial opportunities or moderates negative impacts. Joel added that EPA is also working with ASTM on a Terminology Guide to establish - through ASTM's consensus process - agreed upon definitions of resilience and adaptation. Jason said it seems like the EPA resilience definition, which focuses on maintaining current functions, fits into the "resist" part of the RAD and RRT

frameworks, while the EPA adaptation definition seems to fit more into the "resilience", "direct" and "accept" part of the RAD and RRT continuum. Glad to hear that ASTM is involved. Jason hope's the nuances of the RAD and RRT frameworks can be part of the ASTM process too. Julie said here is the resiliency definition in the Climate Resiliency Workgroup's management strategy for the climate monitoring and assessment and climate adaptation outcomes: "There are numerous definitions of 'resiliency' in current academic and gray literature. The partnership will review the term ongoing, but the essence of the term is to ensure that the region's living resources, habitats and communities are prepared for changing conditions, are capable of withstanding impacts, where appropriate, and are able to recover and adapt to climate change impacts over time." Jason said it seems that definition is similar to EPA's definition of resiliency.

Bill said STAR will follow up on learning more about the TCTACs. Joel said he can put the CBP in contact with the EJ Office in EPA ORD to connect on those activities in the CB watershed.

Julie said Emily Trentacosta has presented on the blue carbon Crisfield project at a past climate resiliency workgroup meeting. Joel said the EPA Administrator and NOAA administrator had a meeting to discuss speaking with one voice on this topic. Ken asked if there is a central location/resource to learn about this collaboration between federal agencies. Andy said there is not a single location, but early next year a body will be stood up to coordinate climate services across the federal agencies. Joel said the sub-IPCC has been identified as the organization within the federal government to coordinate and provide the one-stop-shop resources that need to be developed. Jason said it is probably tough enough just to coordinate among the regions, much less within each federal agency.

Joel said EPA brought in partners to have listening sessions. The key is building partnerships. Bill said in Maryland, which has the most ambitious state goals, this approach has been key as well. Andy said the difficulty is bringing these concepts into practice. Andy senses a real change compared to previous approaches in addressing climate change. A big help is having the resources to do this.

Bo asked about the application and timing of the RCAN program. Andy said this is not a financial support program, but instead a technical expertise program. The intent is to provide the scientific input to support these efforts. Jason said Maryland Department of Planning has been very happy with the EPA CRWU program, which has provided direct climate change adaptation technical assistance and financial assistance guidance to local water utilities in Maryland.

Breck asked if the webinars and trainings are for just EPA employees or partners as well. Andy said it is a mix of EPA only and open webinars. Joel said the climate conversations webinars are EPA only right now but will be opened to the public soon.

Breck commented the need for social science expertise resonates with the CBP. Breck asked about how EPA ORD went about pursing this. Andy said he will follow up with Breck on this matter offline.

11:25 **Weaving the Green Thread: Integrating Climate into GIT Decisions – GIT Round Robin**

Discussion on one of Climate Small Group key questions, "How can cross program coordination and internal GIT coordination on climate resilience and adaptation be strengthened?" There was a round robin to hear input and needs from each GIT, but not everyone got a chance to speak because of time constraints. Jamboard was used to record thoughts and comments.

Questions to Consider:

- What would a climate influenced outcome look like for your outcome?
- How can GIT conversations integrate climate change?
- What would you need to help integrate climate change more in your outcome actions?

Discussion

Breck began with the WQSAM outcome, which is qualitative. Peter provided some context on the history of the outcome and monitoring efforts. Ken said as it is written, there is no consideration of changes to flow or other climate factor changes.

Bo asked if there is a way to describe, in more concrete terms, what a climate adapted outcome means. Peter said in the criteria, there is a note about adjusting the criteria as conditions change for Sturgeon. We have learned more about species sensitivity over the last 20 years, which we can leverage. Additionally, as Danielle presented, we need to consider our stance on the adaptation framework (i.e., do we still focus on striped bass, do we adjust to shrimp and catfish in the Bay?). Katie said in some cases the outcome language needs to be adapted. Katie said we need to be intentional with how we pursue actions. Ken said we need to agree on new terminology for this work. Maybe the term is climate informed, but there needs to be clear communication of where we are on that adaptation continuum.

Julie said that back in 2018, the Climate Resiliency Workgroup had a GIT-funded project where they developed a Climate Smart Framework and Decision-Support Tables to help think of climate change considerations for the outcomes. May be useful to revisit with the definitions we have been discussing - resilience, adaptation. The report can be found here. Breck said building on this work is in alignment with Danielle's suggestion. Greg Allen said for the two Toxic Contaminants Outcomes, they were part of the pilots in this project. The physical

impacts of climate change were of large concern (e.g., sea level rise and scour bringing toxics into the water from the landscape). The chemical impacts were also of concern, such as transformations happening more readily, changes in persistence, and potential synergies in the overall toxicity in conjunction with multiple contaminants. These chemical drivers are rising temperatures and changes in pH. Greg does not see any explicit changes in outcome language, but perhaps increased emphasis on interrelated components. Breck said it seems there is still a need to adjust our approach for integrating climate impacts. Greg said particularly on the policy and prevention outcome, connecting back to this report and how it informs TMDLs would be a good first step. Rosa Hance, energy policy contractor for Choose Clean Water Coalition, talked about how fossil fuel extraction is still occurring and generating the accumulation of toxic contaminants through production activities. Rosa said the toxic contaminants outcomes should consider this in their climate considerations, including compliance and enforcement for current permit holders and projects. Breck agreed toxic contaminants are important and has often not received the attention it deserves.

Breck asked if we need to have requirements or enforcement on including climate change in these outcomes, as compared to asking for voluntary inclusion. Ken said there a few large steps to help achieve this, such as starting with education initiatives, then adding climate change considerations as requirements to funding programs incentives, before reaching the regulation stage. Peter said incentives could include programs like pay for performance. Julie said NOAA has connected climate change efforts with our funding, specifically in our NOAA Chesapeake Fisheries grants.

Katie said right now the climate resiliency outcomes are very narrow and more coastal focused, so part of Beyond 2025 Climate Small Group scope is to adjust this. Ken said it seems like perhaps one of the most important outcomes of Beyond 2025 is shaping how we address climate. Bill said STAR should lead the way.

Jason Dubow said as Healthy Watershed Goal Implementation Team (HWGIT) co-chair, we need to have a climate vision for the entire watershed agreement, which requires envisioning what the Bay of the future will look like. This might involve focusing on specific species, or having goals related to broader metrics like ecosystem ability to support plant productivity or levels of animal biomass. Breck agreed that vision is key and thoughts on this topic are welcome. Bill added as an anecdote, that the 2014 Agreement only had climate outcomes included at the last minute because Terry McAuliffe and Martin O'Malley teamed up, so it almost did not make it. Bill agreed climate will need to have a central role in the next set of goals and outcomes.

Danielle thanked STAR for the invitation and said this was a fascinating meeting. She enjoyed the presentations, and discussions.

12:00 PM Adjourn

Participants: Alex Gunnerson, Andy Miller, Ann Foo, Ashley Hullinger, August Goldfischer, Auston Smith, Bailey Robertory, Ben McFarlane, Bill Dennison, Bo Williams, Breck Sullivan, Britt Slattery, Danielle Shannon, David Wood, Denice Wardrop, Doug Austin, Eric Hughes, George Onyullo, Gina Hunt, Greg Allen, Greg Barranco, Heidi Bonnaffon, Jamileh Soueidan, Jason Dubow, Jay Ford, Jenna Hartley, Jeremy Hanson, Jimmy Looper, Joe Galarraga, Joel Scheraga, Julie Reichert-Nguyen, Kate Allcock, Katie Brownson, Kaylyn Gootman, KC Filippino, Ken Hyer, Lillian Evergreen, Lillian Evergreen, Lorenzo Cinalli, Matthew Kierce, Meg Cole, Megan Fleming, Peter Claggett, Peter Tango, Rosa Hance, Ruth Cassilly, Taylor Woods, Tou Matthews, Holly Walker, Wuillam Urvina.