Chesapeake Bay Program
Science. Restoration. Partnership.

Climate Resiliency Workgroup
April 20th, 2023
1:30-3:30 PM EST

Event webpage:
https://www.chesapeakebay.net/what/event/climate-resiliency-workgroup-meeting-april-2023

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

Minutes

Action Items:

- **Items from MD Report Card Discussion:**
  - Connect VA RAFT partners, CRWG members, and UMCES report card team to explore option of an adaptation report card for VA.
  - Workgroup members can reach out to Katie May, (klaumann@umces.edu), for the methods they used for stakeholder engagement if interested.
  - Explore options to incorporate climate mitigation related to nature-based carbon sequestration as a measure of resilience with Katie May and her team.

- **Items from EPA ORD Crisfield Project Discussion:**
  - Connect CRWG and EPA ORD teams to further discuss blue carbon science needs as it relates to CRWG Logic and Action Plan actions 2.3c (*Consolidate blue carbon crediting/science needs review into a shareable document that can be distributed to interested stakeholders*) and 2.5d (*Evaluate workgroup's role in supporting ocean acidification and blue carbon/carbon sequestration monitoring and assessment needs, in coordination with STAR*).
  - Connect Marsh Adaptation Team with Emily and the Crisfield project team to discuss data layers to support targeting projects.
  - Connect with Crisfield project team to discuss NOAA funding opportunities for project implementation.
  - *Future Meeting Item*: Invite Kirk Havens or his team to a future CRWG meeting to present their work with USGS focused on determining the existing carbon pool associated with coastal wetlands in the Chesapeake Bay

- **Items from Discussion on Defining and Assessing Resilience Effectiveness**
  - *Future Meeting Item*: Explore future presentations on natural infrastructure-type projects and how they are monitoring to assess success of the projects that have been funded by grants that require monitoring.

- o *Future Meeting Item*: Look into future presentations on community rating system and forest gain goal passed in MD General Assembly.
- o *Future Meeting Item*: Look at suggestions from Jamboard for future presentations on efforts aimed to quantify climate resilience of nature-based projects.
- o Evaluate whether to re-submit climate resilience EPA ROAR project.

1:30 PM   Welcome, Opening Remarks, and Announcements – Mark Bennett, Co-Chair (USGS), Jackie Specht, Co-Chair (The Nature Conservancy) & Julie Reichert-Nguyen, Coordinator (NOAA) [5 minutes]

Focus of meeting:

- *Share partner efforts around defining climate resilience and evaluating effectiveness of climate adaptation efforts*

Key Announcement:

- *A recently published paper by Guthrie et al., titled "Property owner shoreline modification decisions vary based on their perceptions of shoreline change and interests in ecological benefits," discusses their recent research into understanding the factors that motivate property owners' shoreline modification decisions (e.g., living shoreline or armoring structures. The full article, published in Frontiers in Marine Science, can be found here.*

Summary

Julie welcomed the workgroup members and interested parties to the April meeting. She started by announcing the Climate Resiliency Workgroup has officially completed this cycle of the Strategy Review System process. The new 2023-2024 Logic and Action Plan (workplan) and Management Strategy can be found on the CRWG webpage. She then mentioned that the focus of today's meeting helps support one of the actions in this new workplan, which is focused on hearing from partners on how they are working towards defining and quantifying resilience effectiveness of nature-based and natural infrastructure projects.

1:35 PM   [Community Resilience and Natural Habitat Metrics](#) (Sabine Bailey, The Nature Conservancy) [25 Minutes]

Sabine will be presenting on her work defining community resilience metrics which aim to understand a community's ability to adapt to climate impacts, and thus the resulting impacts to natural habitats and resources.

Summary

Julie introduced Sabine Bailey, who is a Digital Coast Fellow for The Nature Conservancy and Maryland Department of Natural Resources on the resilience coasts team. Sabine reviewed the reasoning behind why they are considering how community benefits can be evaluated and

integrated into nature based projects. Research shows that a bottom-up/ community driven approach improves the success of the project due to the shared ownership of the effort. She also highlighted key definitions that they are using for this work, which are: (1) community resilience, which is the ability to prepare for, respond to, and grow from adversity to move toward a self-defined and more vibrant community; (2) indicators, which are quantitative or qualitative factors that provide a means to measure changes; and (3) metrics, which are a means of assessing the size, amount, degree, or quality of something. Using information from a FEMA meta-analysis, she determined indicators of community resilience and it how to develop indicators related to vibrancy instead of vulnerability, as it shows opportunities for growth. Thinking about vibrancy instead of vulnerability creates a narrative of using existing assets and resources to pursue opportunities.

The project they are currently working on is identifying flood adaptation strategies in the community of Crisfield, MD. They identified shared goals through conversations with community. To support these goals, they identified marsh restoration projects to increase the community's resilience to storm impacts. She linked this work to the work that the CRWG is supporting with the GIT-Funded Marsh Adaptation Project, as the metrics she is reviewing today could support project opportunities identified in this effort.

She reviewed a handful of the indicators that she thought could be incorporated into a nature-based project, which is relevant to the work that the CRWG is conducting. The indicators were categorized into four different categories (i.e., ecosystem services, climate resilient infrastructure, adaptive community capacity, and community vibrancy). For each category, she provided examples of indicators they are examining and the metrics and methods used to inform the indicators. Each of the metrics were categorized into three different groups (i.e., process, outcomes, and impact). This helps with understanding which types of metrics one might need at different phases of the project. Sabine also highlighted the need for interdisciplinary teams to gather these metrics as they range in methodologies. She touched on how they are thinking about scalability of these indicators; currently the indicators they are exploring are project-based, but she underscored that they are thinking about which of these indicators might work on a Bay-wide scale. She finished the presentation by stating that she hopes that she has given insight into how communities can be integrated into a project through community metrics.

Discussion
Julie highlighted that this topic is relevant for the workgroup as there are efforts and actions in the workplan focused on understanding how to quantify resilience effectiveness of these nature-based projects. She mentioned that there are best management strategies (BMPS) for Water Quality Standards that may also have benefits to living resources and communities and there is need to quantify these benefits. She also highlighted that this kind of work will help with tracking the Climate Resiliency Adaptation Outcome. She also mentioned she likes the term community vibrancy, as it is a solution seeking perspective.

Kirk Havens highlighted similar efforts in this space that are already underway or completed and could be utilized to inform the project that was presented, especially regarding the work around inundation pathways, nature-based systems, and critical infrastructure. He sent two projects in the chat: (1) "[Increasing use of natural and nature-based features to build resilience to storm-driven flooding](#)" and (2) "[Prioritizing the protection and creation of natural and nature-based features for coastal resilience using a GIS-based ranking framework - an exportable approach](#)." Sabine responded that she appreciates the additional resources that were shared, as she is in the beginning phases of this work and still compiling information and does not want duplicative efforts. She underscored that her work is focused on integrating the community into the project from the beginning, which is not as practiced as much in previous efforts. Kirk Havens agreed and highlighted Amanda Guthrie's [research](#), which aims to understand homeowners' behaviors regarding shoreline protection and can inform Sabine's work. Kevin Du Bois thought Amanda's research was interesting as the primary motivation for choosing living shorelines over hardened counterparts was not for shoreline stabilization but more about ecological restoration, which is the inverse for homeowners who opted for hardened infrastructure. The key takeaway from this research is that there needs to be a better effort to promote living shoreline as a means of shoreline management and erosion control. Kirk added that the study indicated there was not a large concern about cost.

Alex Gunnerson asked in the chat about if they have considered using influencing factors to analyze the indicators and metrics that were presented. He added that the CBP indicators framework defines influencing factors as asking the question "What KEY influencing factors are impacting the achievement of an outcome?" Sabine responded that this is a good consideration to think about what influencing factors might influence the various metrics that are being measured. She mentioned that it is helpful to be receiving this feedback in the early stages of this work so that these considerations may be incorporated. Fredrika Moser also commented on this point, saying that these projects all have the challenge of developing indicators that go beyond a single project, but also it is important to think about how to define community vibrancy and what does that look like and how can it be measured. She commented that measuring community vibrancy and creating metrics and indicators seems a big challenge. And that it is interesting how one can do a timely measure of cohesion and sense of belonging without a longitudinal study. She added that this information is really useful for how things are currently managed, but she added that there is a need for thoughtfulness around understanding community vibrancy. Sabine highlighted that with the current funding and opportunities available for this type of work right now, it is a pivotal time to be thinking about these larger questions regarding community vibrancy.

Jackie Specht agreed with the points that Sabine made and underscored that this work is occurring at a time where there is this large amount of funding and there is the opportunity to make sure these efforts are equitable and that they are co-created with the communities they will be supporting. She also made a point that community vibrancy should also be discussed and defined by the communities as well, as it will give insights into what is important to them, which can be incorporated into the work.

2:00 PM   [Maryland Coastal Adaptation Report Card](#) (Katie May Laumann, UMCES) [25 minutes]

Katie will be presenting an overview of the [Maryland Coastal Adaptation Report Card](#). This effort aims to address the need to clarify adaptation goals in order to measure progress and hold the state accountable. By developing a suite of adaptation indicators and thresholds based on stakeholder expertise, the Coastal Adaptation Report Card gives a snapshot of current adaptation status in Maryland's coastal zone, and establishes a framework for measuring future progress.

Summary

Julie introduced Katie May Laumann, who presented on the MD Coastal Adaptation Report Card, which was produced through the University of Maryland Center for Environmental Science (UMCES). Katie began by providing context as to why they developed this report card; the coastal impacts of climate change have been felt throughout MD's coastal regions for a while and include wetland loss, coastal erosion, migration of commercially important species away from MD's shores, and flooding from storm surge. She presented their working definitions for adaptation and resilience, which were developed alongside stakeholder, and described that essentially adaptation builds resilience. The report card was created to determine whether current adaptation efforts to build resilience were enough, and in response to two questions: (1) how do we measure adaptation, and (2) how do we measure success?

To develop the report card, the research team conducted a literature review to determine how others have measure adaptation and resilience success. They found that many studies suggested metrics to assess adaptation but not many studies actually implemented these metrics. They then collaborated with over 100 stakeholders from MD's coastal counties in choosing indicators by which adaptation can be measured. The indicators were then incorporated into the report card and fall into four main groups: socioeconomic, ecosystem, planning, and resilience to flooding. Target and threshold conditions were determined for each indicator based on research, expert consultation, and legislative goals to assist in scoring the indicator. The report card color codes each indicator based on the grade they received, with a failing grade coded in red and passing grades coded in green, which provides a visual representation of how the region is meeting their adaptation goals.

Katie May then reviewed each of the categories, focusing on one indicator from each as an example. For the socioeconomic category, she reviewed the repetitive loss of properties indicator, which received a failing grade, however when averaged with the other indicators in this category, the entire category received a "C." For the ecosystem category, she reviewed the wetlands indicator, which was a measure of wetlands gains and losses and showed that there was a net zero loss of wetlands. This indicator received a passing grade, and when averaged with the other ecosystem indicators, the entire category received an "A." For the flooding category, she reviewed the critical facilities indicator, which received a failing grade, and when averaged with the other indicators, the entire indicator received a "C." For the planning

category, she reviewed the flood mapping indicator, which received a failing grade, and when averaged with the other indicators, the entire category received a "B."

Recommendations for the future include focusing on and investing in efforts that fall within the scope of the indicators that received lagging/failing scores (e.g., critical facilities, repetitive loss properties, flood mapping, business disruption, community rating system). Next steps will include assessing these indicators over time to understand if efforts are helping and to refine indicators as necessary. Additionally, they recommend filling data gaps to support new indicator and downscaling this system for finer scale assessments.

Discussion
Julie mentioning that she liked the concept that adaptation is needed to build resilience. Kevin Du Bois also commented that he liked the term "parachute science" that was used during the presentation.

Grace Hansen asked if the indicators were applicable to places outside of MD, and if they have considered developing report cards on a county-by-county basis. Her second question was answered at the end of the presentation, when Katie May discussed their plans with Charles County to work on a county report card. Grace mentioned that it would be something very useful in VA. Katie May responded by saying yes they are applicable, and that they really want to expand efforts. She added that having a state snapshot of condition is great but having a finer-scale, regional snapshot would be even better. She mentioned that she would love to work in VA and would be willing to meet and talk with Grace about developing a regional report card. Julie added VA has some work in this space underway, including their Resilience Adaptation Feasibility Tool (RAFT), where they have already engaged with the counties. She mentioned that folks within the workgroup have assisted with this effort and can help connect them with Katie May and her team.

Susan Minnemeyer commented in the chat that she would love to see where climate mitigation goals (sequestering carbon) mutually reinforce other climate resiliency goals and Bay Program goals. And that she looks forward to Maryland Counties making commitments related to carbon and GHG emissions that also contribute to the ecosystem, flooding and resiliency goals (e.g., Metropolitan Washington Council of Governments region did a GHG inventory for forests and trees and Montgomery County is counting reduction in forest loss towards meeting emission reduction goals). She thinks that there is a lot of interest in local governments setting climate mitigation goals specifically around carbon that involve green infrastructure. Katie May agreed that the carbon storage of forests is hugely important, and that the next steps they are exploring include assessing the carbon storage in marine systems (e.g., seagrasses and wetlands). By building this into the overall calculation for carbon storage, more mitigation efforts including these strategies can be implemented, which not only provides carbon storage benefits but also other ecosystem services. Susan Minnemeyer also commented in the chat to provide the tool that MWCOG uses to understand forests and trees impacts on greenhouse gas.

Kirk Havens commented that the European Union is holding the [6th European Climate Change Adaptation Conference](#) during June 2023 that includes the theme, "Nature Based Solutions for Climate Change Adaptation," and they are currently discussing stakeholder engagement and the issue of reaching stakeholders who may not even recognize that they are stakeholders, and who are typically underrepresented and under-resourced communities. He continued that when these groups are engaged, their interests may not always be in nature-based solutions, as they may have other, more pressing needs such as addressing food scarcity. Katie May agreed and added that when they develop these recommendations for a community, they focus on what the community has stated they need. They focus on engaging with a wide range of stakeholders to better understand these needs. She mentioned that she could provide the methods they use for stakeholder engagement to anyone interested.

Pam Mason commented in the chat that VA has many of the data already incorporated into the previously mentioned natural and nature-based features ranking tool on AdaptVA. Katie May mentioned that this tool would be extremely helpful as they look to expand this work into VA.

Julie commented on the wetlands indicator that Katie May reviewed. She was interested about how the threshold was met for this indicator as there were no net losses in wetlands. She mentioned that at the Bay Program, there have been a lot of conversations around lagging outcome attainability for the Wetland Outcome, as the report card scores the wetland indicator high, however the Bay Program is working on meeting their Wetland Outcome of restoring and protecting a certain amount of acres of wetland. Katie May responded, while the Bay Program Wetland Outcome is not currently being achieved, the amount wetlands in MD are at least being maintained. She says that as they refine this report card methodology, they will be looking at how much wetlands are being created as well. Kevin Du Bois commented in the chat that even though the amount of wetlands is being maintained, there might be a need to refine the indicator to look at the types of wetlands. He provided an example that if intertidal low marsh wetlands were lost leaving only high marsh, then that would equate to a loss of ecosystem services.

Fredrika Moser commented that she thinks it is interesting to keep consideration of the contribution or mitigation of greenhouse gas emissions by different adaptation priorities as part of the measure of adaptation. Kevin Du Bois also commented that he was interested in the methods used to calculate carbon sequestration from wetland restoration. Katie May mentioned that she would like to connect outside of the meeting to discuss this methodology more.

2:25 PM   [**Solutions-Driven Research Project: Building and Maintaining Coastal Community Resilience through Blue Carbon Resources**](#) **(Emily Trentacoste, EPA) [25 minutes]**

Emily will be presenting EPA ORD's project "Building and Maintaining Coastal Community Resilience through Blue Carbon Resources." The goals of this project

focus on working with a local Chesapeake Bay community to help solve its coastal resilience issues; identify and assess co-benefits associated with coastal resilience solutions; and investigate natural infrastructure options that have blue carbon sequestration potential.

Summary

Julie introduced Emily Trentacoste who presented on EPA ORD's effort with Crisfield, MD to help build coastal resilience. She started the presentation by stating that much the efforts presented build off the types of work both Katie May and Sabine presented earlier in the meeting. A main theme that resonated with Emily as she listened to the previous presentations was the need to conduct community driven projects; this is the basis for the efforts in Crisfield, which she shared in her presentation.

EPA ORD's efforts are community driven, where the projects are co-developed with the community to address their issues and needs. The project in Crisfield is focuses on building and maintaining coastal resilience through natural infrastructure with blue carbon sequestration potential. Through this project they also want to identify and assess the co-benefits associated with different coastal resilience adaptation pathways. This project is a solutions driven research effort that not only aims to integrate the community throughout the process but also aims to apply research to address real-world problems, measure the effectiveness of the strategies implemented, and determine transferability to other locations. She highlighted how there are opportunities to apply the indicators developed through Katie May's and Sabine's work to this effort.

After much research and outreach, Crisfield was chosen as the location for this effort. This community's economy is largely supported by the environment and ecosystem, through fisheries and tourism, however it is facing threats from flooding and coastal resilience concerns. Geographically, it is surrounded by water on three sides, with potential for natural infrastructure efforts (e.g., marsh, seagrasses). This effort aligns with other efforts by partner groups in the areas (e.g., TNC, FEMA). The community's coastal resilience goals include resilient infrastructure, job creation, affordable housing, recreational opportunities, social/cultural spaces, and youth development.

This project is working with the community on implementing strategies incorporating natural infrastructure. To achieve this, they plan to: (1) understand the community's capacity for adapting to environmental change through interviews, workshops, and community science; (2) align natural infrastructure strategies with community needs through focus groups, workshops, and Ecosystem Goods & Services tools; (3) assess natural adaptation strategies that benefit community values through mapping and quantifying ecosystem services, conducting a social vulnerability assessment, and analyzing blue carbon; and (4) help the community consider natural strategies in their planning to support their short- and long-term decision making through implementing the EPA's Adaptation Design Tool. She highlighted that blue carbon was not identified one of the community's value, underscoring the work they have to align this effort with the community's needs. She ended the presentation by highlighting the various

partners who are working within this community or space and how they are aligning their efforts to build upon these other efforts.

<u>Discussion</u>
Julie commented that the work they are doing with blue carbon resonated with her, as workgroup and STAR efforts in the past have focused on identifying the science needs to support blue carbon crediting implementation. Alex Gunnerson has worked on compiling this information and plans to connect with Emily to discuss it further; he commented in the chat, the portion of the *[Enhancing CBP Monitoring Report](#)* that focuses on the blue carbon science needs. Julie also commented she found the approach of looking at the community values first and then aligning the values with the project efforts interesting. Emily further commented that is the project team's job to listen to what the community needs and values and then to do the background work to understand how the project can connect to the values and needs.

Nicole Carlozo shared the [MD MyCoast](#) tool in the chat, which helps with documentation of flood impacts and to inform future assessments and needs. MD DNR is promoting the use of it in the development of nuisance flood plans in MD and can help communities understand what is flooding and where. The tool is available as a website and phone app. Emily thanked Nicole for sharing the tool and also mentioned connecting with her to discuss the GIT-Funded Marsh Adaptation Project, as they are compiling data layers for the Crisfield project.

Kevin Du Bois asked if there are opportunities to develop blue carbon banks where others can buy the offsets, especially in a community like Crisfield where their nature-based industry relies on clean water, there could be multiple benefits to that approach. Emily commented that this is a great point and one of issues they are trying to address is the data gaps around the potential blue carbon sequestration of these natural features and what is needed to move towards crediting or banking.

Peter Tango commented that idea community driven assessment before diving in was a major theme for a panel of community leaders at one of the last Citizen Science Association conferences, and is hugely important versus supposing what will benefit the community. Julie commented that she would like to hear updates on these community driven projects as they get further along, noting that one of the biggest challenges that occurs is the capacity to conduct the outreach. She asked about the funding sources that they are using to conduct this work. Emily responded that Crisfield project has several social scientists on the team, which will help with the outreach and are funded through the project itself. She mentioned that FEMA is providing technical assistance to the community to seek funding to implement the projects. Julie mentioned that NOAA does have funding for implementation, and would like to connect and discuss the opportunities with Emily to see if it could support projects in Crisfield. Julie also mentioned that the information presented today will be helpful for the GIT-Funded Marsh Adaptation Project as they are still working on understanding which social vulnerability metrics to use when targeting regional focus areas.

Kirk Havens commented that they are currently working with USGS on determining the existing carbon pool associated with coastal wetlands in the Chesapeake Bay. This is the first step in integrating it into the carbon market. He highlighted the issue of the sustainability of marshes in the face of sea level rise; the permanence of wetlands is important for carbon markets. Julie commented that this would be an interesting project to hear about at a future CRWG meeting.

2:50 PM   Discussion [30 minutes]

This discussion will focus on how we can learn from the efforts and research presented in the first half of the meeting.
- *How can the work that is being conducted inform development of methods to measure resilience benefits to living resources and communities*

This discussion will support CRWG 2023-2024 Logic and Action Plan 2.1a which states:

"Plan discussions during CRWG meetings on how to feasibly track progress on the Adaptation Outcome. Support outreach efforts to learn how partners (state, federal, local, NGOs, other CBP workgroups) are defining resiliency and measuring the efficacy of their programs/actions. Seek and invite researchers to present on approaches to quantify habitat and community resilience to climate change impacts. Connect with CBP's strategic planning discussions for 2025 and beyond."

Summary

Julie started the conversation by highlighting the 2023-2024 Logic and Action Plan (workplan) that the workgroup developed. Within the workplan, action 2.1 focuses on *supporting efforts in identifying strategies to track progress in enhancing resiliency of the Bay and aquatic ecosystems from climate change impacts and support discussions on setting goals for Chesapeake Bay beyond 2025.* She mentioned that the discussions for 2025 and beyond are already underway at the Bay Program, and that it the workgroup can assist by understanding what types of efforts are already underway for defining and quantifying climate change resilience effectiveness of natural resource-related strategies. The projects that were presented earlier in the meeting help support this action.

On the jamboard (see the slide 1), the first question that was discussed focused on understanding if any of the approaches presented during the meeting resonated with members as a way that can be used to track progress towards the Climate Resiliency Adaptation Outcome. Furthermore, the question asked participants to list any additional ideas or thoughts on how to quantify or define climate resilience effectiveness of natural resource-related strategies. Nicole commented that a lot of funding (e.g., the NOAA and NFWF grants) require monitoring, and she was wondering about the results of the monitoring efforts that are carried out through these funded projects. She added in the jamboard that it would be interesting to invite folks to share how monitoring has been used to assess success of their projects. Julie agreed that it would be beneficial to learn from these monitoring efforts to determine if the

methodology can be applied elsewhere. Susan Minnemeyer posted that MD now has a [Forest Gain Goal](#), and three Lower Shore counties have net gains already. She commented that this could be connected to coastal resilience and the gain could count towards the Community Rating System. Susan added the Forest Gain Goal was a bill that just passed in the MD General Assembly, which shifts legislation from a zero net loss goal to a net gain goal. Nicole Carlozo asked if during the net gains analysis, if they looked at areas expected to be impacted by sea level rise. Susan responded that they did not; they looked at gain from 2013-2018 with the new 1m resolution tree canopy data. She did mention that there were some regions that experienced forests converting to wetland, however in the three lower shore counties that did experience net gains, it was from an expansion of already managed forests. Julie mentioned that this effort would be interesting to follow up on and get more information. Another comment posted stated that they were impressed with the collaborative, multiple agency/NGO effort in Crisfield, and how can this be duplicated that elsewhere. Julie agreed with this and commented that it might be something the workgroup could assist with. She mentioned that the workgroup did submit a proposal for EPA ORD's ROAR funding for a similar effort, however it did not get selected. She did mention that they are discussing resubmitting for this round of funding and can discuss it further with the workgroup next month. Another comment highlighted that determining how to effectively measure 'community vibrancy' seems to be a critical component to assessing community adaptation options.

The second question asked participants to list any current efforts to define and/or quantify climate resilience effectiveness of natural resource-related strategies. Julie mentioned that the workgroup could assist in compiling information about current efforts and hold future meetings about these different approaches and connecting it to Climate Resiliency Goal for the Chesapeake Bay Watershed Agreement. Fredrika Moser posted on the jamboard include a MD Sea Grant funded study, led by Cindy Palinkas to evaluate the function of living shoreline built over a decade ago compared to living shorelines built more recently; Julie commented that it would be interesting to hear the results of this research. Nicole Carlozo posted that MD-CBNERR and UMCES are monitoring living shorelines to inform site level adaptive management and broader natural and nature-based feature (NNBF) best practice guidance. Cassie Davis posted that NY is developing [guidance](#) on using natural measures to reduce the risk of flooding and erosion. Kevin Du Bois commented that the DoD CBP has been working on measuring their efforts' carbon sequestration potential to meet commitments in the Service climate resilience plans. He mentioned that there needs to be a standardized way to measure the carbon sequestration resulting from implementing NNBFs. Julie responded that there might be some progress made in the blue carbon crediting approaches that could assist with developing that standardization. Jackie Specht posted that TNC and MDNR are collaborating on a blue carbon and resilience assessment to assess marsh restoration blue carbon sequestration and surge reduction

3:20 PM   Wrap-up and Announcements [10 minutes]

- The Coastal & Estuarine Research Federation is accepting abstracts for their 2023 Biennial Conference taking place November 12-16, 2023 in Portland Oregon. The CERF 2023 Scientific Program Committee (SPC) invites you to submit an abstract for an oral or poster presentation in one of the range of CERF sessions that examine new findings across CERF's traditional scientific, management, and education disciplines. The deadline to submit an abstract is **May 10, 2023**.

- The Interstate Commission on the Potomac River Basin's *2023 Potomac River Conference: One River's Perspective on a Changing Climate* will be taking place September 12, 2023. The conference will highlight the state of the science, case studies, equity and environmental justice considerations, policy implications, management actions, and funding considerations for climate change in the Potomac River basin. If you are interested in presenting, please submit an abstract by **COB Friday, April 21, 2023.**

- Engineering with Nature is pleased to announce the call for projects to include in the upcoming book, *Engineering With Nature: An Atlas, Volume 3*. This is an opportunity to showcase your engineering projects that demonstrate partnership with nature, delivering solutions with a diverse range of economic, environmental and social benefits. To be considered for inclusion in Volume 3 of the EWN Atlas, please submit your project in the online submission form. The deadline for entry is **May 15, 2023**. If you have questions, please contact Michelle Bourne (michelle.bourne@usace.army.mil) or Zelini Hubbard (zhubbard@anchorqea.com). For more information about the EWN Atlas series, and to access the eBooks for Volumes 1 and 2, please visit, https://ewn.erdc.dren.mil/atlas-series/

3:30 PM   **Adjourn**

Participants:

First Name	Last Name	Affiliation
Sabine	Bailey	TNC/MDNR
Moriah	Baybrick	
Mark	Bennett	USGS

Katie	Brownson	USFS
Nicole	Carlozo	MDNR
Joel	Carr	USGS
Cassandra	Davis	NYS
Kevin	Du Bois	DoD CBP
Alex	Gunnerson	CRC
Chris	Guy	USFWS
Anna	Hamilton	Tetra Tech
Grace	Hansen	HRPDC
Kirk	Havens	VIMS
Debbie	Herr Cornwell	MDP
Will	Isenberg	VA CZM
Bill	Jenkins	EPA ORD
Angela	Jones	DoD CBP
Katie May	Laumann	UMCES
Dede	Lawal	CRC
Lori	Maloney	EBTJV
Pamela	Mason	VIMS
Susan	Minnemeyer	Nature Plus
Fredrika	Moser	MDSG
Andrew	Muller	USNA
Katherine	Rainone	MWCOG/TPB
Julie	Reichert-Nguyen	NOAA
Nathan	Shunk	VIMS
Jamileh	Soueidan	CRC
Jackie	Specht	TNC
Taryn	Sudol	MDSG
Breck	Sullivan	USGS
Peter	Tango	USGS
Emily	Trentacoste	EPA ORD
Suzanne	van Drunick	EPA ORD
Sophie	Waterman	CRC
John	Wolf	USGS
Taylor	Woods	USGS

Slide 1:

List any current efforts to define and/or quantify climate resilience effectiveness of natural resource-related strategies.
(Please put name/affiliation on response)

MD Sea Grant if funding a study led by Cindy Palinkas to evaluate function of living shorelines built over a decade ago and more recently (Fredrika Moser - MDSG)

MD-CBNERR and UMCES are monitoring living shorelines to inform site level adaptive management and broader NNBF best practice guidance. -Nicole Carlozo, MDNR

I have been saying, we need a standardized way to measure the carbon sequestration resulting from implementing NNBF. At the DoD CBP, we will be trying to measure our projects'

carbon sequestration potential to meet commitments in Service climate resilience plans.

MDSG also supporting a number of studies looking at oyster aquaculture, carbon, nutrients, seagrass, storm attenuation attributes.

NY Developed guidance on "Using Natural Measures to Reduce the Risk of Flooding and Erosion" https://www.dec.ny.gov/docs/administration_pdf/crranaturalmeasuresgndc.pdf

TNC & MDNR are collaborating on a blue carbon & resilience assessment to assess marsh restoration blue carbon sequestration and surge reduction - Jackie Specht, TNC

List any additional ideas or thoughts on how to quantify or define climate resilience effectiveness of natural resource-related strategies.
(Please put name/affiliation on response)

NOAA grants include monitoring - invite folks to share how monitoring has been used to assess success

Determine how to effectively measure 'community vibrancy' seems critical component to assessing community adaptation options (MDSG)

agreed - I wonder if each community would define vibrancy differently?

Thinking about connections with the water temps workshop– stream temperature moderation could be a measure of climate resilience effectiveness

Depending on the area/strategy: revenue generated by eco-tourism, recreational value (HRPDC)

An idea: the economic productivity of an area post climate adaptation? (i.e. # of days businesses closed before strategy vs after?) (HRPDC)

Impressed with the collaborative, multiple agency/NGO effort in Crisfield. How do we duplicate that elsewhere and fund it? Maybe with additional research components (MDSG)

MD now has a forest gain goal and 3 Lower Shore counties have net gain already --> how to connect to coastal resilience? Could gain count towards Community Rating System? Susan

Net forest change chart is Figure ES-2 on p. 12 of the report PDF https://www.chesapeakeconservancy.org/mdforeststudy2022