Stream Health Workgroup Meeting

Friday, December 10, 2021, 10:00-12:00 ET

Meeting materials can be found at this link

PARTICIPANTS:

Neely Law, Co-chair	Alison Santoro, Co-chair	Sara Weglein, Vice Chair	Katlyn Fuentes, Staffer
Alana Hartman	Alexandra Fries	Ari Engelberg	Brittney Flaten
Brock Reggi	Chris Spaur	Claire Buchanan	Denise Clearwater
Emily Bialowas	Emily Zollweg-Horan	Iris Allen	Joe Berg
Katherine Brownson	Kelly Maloney	Kenneth Hyer	Kevin Krause
Kristen Saacke Blunk	Lydia Brinkley	Mark Hoffman	Matthew Cashman
Nancy Roth	Renee Thompson	Rikke Jepsen	Rosemary Fanelli
Sadie Drescher	Sandra Davis	Scott Stranko	Scott Phillips
Sophia Waterman			

MEETING NOTES:

10:00 – WORKGROUP UPDATES & GENERAL INFORMATION:

- Workgroup members Kelly Maloney (USGS), Greg Noe (USGS), and Rosemary Fanelli (USGS), as well as others at MD DNR, recently published a paper on the different factors affecting stream health over time. The article "*Time marches on, but do the causal pathways driving instream habitat and biology remain consistent*?" can be found at this link: ttps://doi.org/10.1016/j.scitotenv.2021.147985
- Pooled Monitoring Initiative's Restoration Research RFP now open: Restoration Research - Chesapeake Bay Trust (cbtrust.org)
- The Chesapeake Bay Trust (CBT) is working with the Maryland Department of the Environment (MDE) on a new grant funding program to fund projects on non-tidal wetlands in MD. The RFP and additional information will be sent out in Spring 2022. Details on the previous funding program can be found **here**.

10:15 – UPDATES ON GIT FUNDING, SRS, AND REQUESTS TO THE MANAGEMENT BOARD (Alison Santoro, MDNR)

- **GIT FUNDING:**
  - **The workgroup's project proposal was selected for funding.** However, the workgroup's original proposal for $150,000 was denied due to funding constraints. Instead, an updated proposal featuring a decreased project scope was approved for $75,000. The new project scope will not include a literature review,

and the project will be limited to specific metrics and parameters, mostly hydraulics and geomorphology.
    - The workgroup chairs and staffer will be submitting a draft Scope of Work (Table 2) on **1/14** for review by the Chesapeake Bay Trust. The **deadline for the final Table 2 is 02/22**.
    - **Renee Thompson**, Coordinator of the Healthy Watersheds GIT, offered support to sit on the Steering Committee of the Stream Health WG's GIT-funded project.
        - The Healthy Watersheds GIT has been included in the Scope of Work, and additional discussions between the workgroup/GIT regarding this project will take place in the near future.
- **STRATEGIC REVIEW SYSTEM (SRS):**
    - The Stream Health Workgroup, as part of the Healthy Watersheds Cohort, has completed the most recent SRS cycle.
    - The workgroup's updated 2022-2023 Logic & Action Plan was approved by the Management Board (MB) at yesterday's MB meeting. This document, as well as the previous SRS presentations, can be viewed at **this link**.
- **REQUESTS TO THE MANAGEMENT BOARD:**
    - During the previous Management Board meeting, the Stream Health workgroup, as well as several others, made requests to the Management Board, for assistance in achieving their outcomes. The Stream Health Workgroup requested for the Management Board Representatives to reach out to their state's jurisdictional representatives, to discuss a variety of topics including defining stream health.
    - A Google Survey was created and sent to the Management Board Members to input their interview responses. The deadline for this poll was in November, but some MB members requested a deadline extension. The survey results will be distributed when finalized.

10:25 – EVALUATING ALTERNATIVE METRICS AND APPROACHES TO MEASURE STATUS & TRENDS AMONG BIOLOGICAL COMMUNITIES (Kevin Krause, USGS)

- **HOW THIS WORK RELATES TO THE STREAM HEALTH WORKGROUP LOGIC & ACTION PLAN:**
    - **Action 1.3**: identify additional parameters/metrics to describe and quantify stream health to complement existing biological indicators (e.g., Chessie BIBI).
    - **Action 4.1**: collaborate with USGS as a part of their new Science Plan to investigate and define stream stressors and their management to improve Stream Health. This collaboration is necessary to better understand what factors lead to functional uplift and which may lead to degradation
- **REGIONAL PREDICTIVE MODELS:** developing predictive models for biological condition using survey data and widely available landscape predictors and using calibrated models to predict conditions in under-represented watersheds. Examples of predictive modeling include:

  - **CHESSIE BIBI PREDICTIVE MODELING:** applied to unsurveyed reaches using 2004-2008 benthic data; is currently being updated with newly available data.
  - **FISH HABITAT CONDITION PREDICTIVE MODELING:** data from 1969-2019 (multiple separate data sources/sampling programs and >30,000 sampling events) were organized into a unified/common format. Species information was linked to their life history/functional traits. Summary metrics were then developed using these data to describe various aspects of the community.
    - *This project was recently completed, and the report (Maloney et al.) is currently under review.*
- **OBSERVED LONG-TERM DATA:**
  - **Need to leverage locations with repeated observed data samples**
    - Identify ecological uplift/degradation
    - Watershed-wide view
  - **OBJECTIVE: communicate the current status and direction/magnitude of change in biological communities (benthic macroinvertebrates and fishes) across the Chesapeake Bay Watershed.**
- **WATER QUALITY LOADS AND TRENDS MODEL: https://cbrim.er.usgs.gov/**
  - Status is determined based on 5+ years of data and 10+ years of trends
- **METHODS FOR TREND ANALYSIS**: simple regression; segmented/broken-stick regression; Mann-Kendall trend test; GLM, GAM
- **WHAT METRICS TO MEASURE MACROINVERTEBRATES**: Diversity/Richness Metrics; Tolerance metrics; Functional Feeding Metrics; Habitat Metrics; Composition Metrics
- **WHAT METRICS TO MEASURE FISHES:** Diversity/Richness Metrics; Tolerance metrics; Habitat Metrics; Composition Metrics; Reproductive Metrics; Trophic Metrics; Life History Metrics; Native Status Metrics
- **HOW TO NARROW METRICS TO INVESTIGATE?**
  - **OPTION 1:** Look at available metrics → select a sufficient value range → pull out samples that do not have intra-annual variability → further select metrics that are responsive to stressors of interest → these are candidate metrics
  - **OPTION 2:** pick out metrics identified from key literature that are indicators to particular stressors
- **CONTEXT FOR STATUS AND TRENDS:**
  - Integrate biology with other domains and landscape conditions
  - If you would like to provide feedback regarding specific metrics and/or species of interest, or if you have additional comments or questions regarding this presentation,
- ***Examples on status and trends for biological communities were presented, however these models contained preliminary data not for distribution and as such were not captured in these meeting minutes.***
- **ACTION: If you would like to provide feedback regarding specific metrics and/or species of interest, or if you have additional comments/questions regarding this presentation, please contact Kevin Krause (USGS) at kkrause@usgs.gov**
  - *Alison Santoro suggests metrics on Climate Change*
  - *Denise Clearwater suggests evaluating metrics on the condition of the riparian areas and their effects on biological stream communities*

KEY: ACTION ITEMS, KEY TAKEAWAYS

- **QUESTIONS/COMMENTS:**
  - **Chris Spaur:** The CBP has made efforts to get into the weeds beyond Total Nitrogen and Total Phosphorus because different chemical forms of N and P differ greatly in impacts to water quality and therefore aquatic life. Are the biological status and trends efforts you're describing going beyond TN and TP with regard to nutrient loading?
    - **Kevin Krause:** Yes, we are looking broadly into other indicators, including various aspects of water quality, geomorphology, conductivity, etc.
  - **Renee Thompson**: We have been working hard to refine the riparian area within the Chesapeake Healthy Watersheds Assessment and have developed a robust interim way to do this but will be updating this methodology when the high-resolution stream data is available. The type of riparian area that we are delineating and calculating metrics in can inform other modeling efforts moving forward. Conversations should continue moving forward, to ensure that methodology and reporting remain consistent.
  - **Renee Thompson**: Will you be including the higher-resolution land coverage data for 2013 and 2017 that will become available in the near future?
    - **Kevin Krause:** yes, we will be using these data.
    - **Matthew Cashman:** Making sure those high-resolution datasets are readily available in NHD-attributed model-ready formats would help as well.
  - **Neely Law**: This set of work that USGS is doing will definitely benefit the Stream Health Workgroup in identifying metrics. One of the largest tasks/areas of analysis in the upcoming GIT Funded project is narrowing down the potential set of metrics. Is there an analytical approach to this task that USGS is thinking about?
    - **Kevin Krause**: A similar analytical framework was described in the above "OPTION 1". These analyses will continue through the end of FY2022 and we will keep the workgroup informed moving forward on this developing methodology.

10:55 – CHARACTERIZING SPATIAL AND TEMPORAL PATTERNS OF FRESHWATER SALINIZATION IN THE CHESAPEAKE BAY WATERSHED (Rosemary Fanelli, PhD, USGS)

- **CONSEQUENCES OF FRESHWATER SALINIZATION:**
  - **Direct biological stress:** disruption of osmoregulation, and can alter toxicity of other ions
  - **Indirect effects:** altered stoichiometry of food sources and altered biogeochemical cycling
  - **Human health implications:** drinking water standard exceedance, increased corrosivity of water infrastructure, and radium mobilization in drinking water aquafers
- **FRESHWATER SALINIZATION IN THE CHESAPEAKE BAY WATERSHED**:
  - Several jurisdictions have identified specific conductance (SC) as an aquatic stressor
  - Specific conductance is low in the region and ion concentrations are increasing
- **CURRENT USGS EFFORTS:**
  - **Current efforts on freshwater stream ecosystems**: no groundwater, no lakes, and no tidal influenced reaches
  - **Focusing on SC only, no ion-specific work yet**
  - **Predicting departures from background conductivity**
    - Collaborators are Joel Moore (Townson University), Charles Stillwell (USGS), Andrew Sekellick (USGS), Will Hamilton (USGS) and Rich Walker (USGS).

        - **Objective:** use multi-jurisdictional SC observations to predict conductivity and departures from background conductivity in all NHD+ V2.0 reaches across the Bay Watershed.
        - ***Preliminary results were shared with the workgroup for feedback purposes; final results will be distributed after publication.***
    - **Quantifying status and trends in conductivity builds off NTN status and trends effort**
        - Recent trend efforts in conductivity or ions have been at a national scale
        - Regional need: status and trends in smaller watersheds, at management-relevant scales
        - Opportunity to leverage state and local monitoring programs through multi-jurisdictional dataset
        - **TECHNICAL APPROACH:** collect observational data from multi-jurisdictional datasets, conduct QA/QC checks, and screen for sites that fit criteria re: data availability & density. Then researchers will explore and compare different status and trend computation approaches, followed by summarizing, visualizing, and communicating the results.
        - ***Preliminary results were shared with the workgroup for feedback purposes; final results will be distributed after publication.***
- **ACTION: Workgroup Chairs Alison Santoro and Sara Weglein will reach out to Rosemary Fanelli, Kevin Krause, and the rest of the Status and Trends team to discuss goals for the next year to prevent overlapping with the Workgroup's GIT Funded project.**
- **ACTION: For questions and concerns on the topics discussed during this presentation, please contact Rosemary Fanelli (USGS), at rfanelli@usgs.gov**
- **QUESTIONS/COMMENTS:**
    - **Scott Phillips** suggests using Jamboard (during a meeting) or a questionnaire (as a meeting follow-up) as a more structured way to get feedback from the SHWG.
        - **Rosemary:** Agreed.

11:25 – REPORT OUT ON 12/02 MARYLAND WATER MONITORING COUNCIL STAC WORKSHOP SESSION (Neely Law, Fairfax County)

- **WHAT ARE STAC WORKSHOPS:** Brings the broad expertise of the scientific and technical community to bear on critical and timely issues, relevant to the successful restoration of the Chesapeake Bay.
- **WHY CONVENE THIS WORKSHOP:**
    - Understanding restoration outcomes
    - Increasing number/miles of stream restoration projects
    - Evolving science and practice
    - Monitoring a range of scales (temporal, spatial, landscape, etc.)
    - Building knowledge base and experience with diverse stream restoration approaches
- **PROPOSED WORKSHOP GOALS:**
    1. Identify the evolution of restoration goals and practice implementation;
    2. Present and discuss science and assessment of outcomes; and

3. Create a synthesis of science and practice to enable adaptive management.

- **ADDITIONAL WORKSHOP DETAILS:**
  - **SPONSOR:** Stream Health Workgroup
  - **ADDITIONAL SUPPORT FROM**: MWMC Stream Restoration Monitoring Committee, MSRA, others?
- **PROPOSED STACK WORKSHOP TIMELINE:**
  - **02/16/2022 –** workshop proposal application deadline
  - **03/01/2022 –** decision
  - **Fall 2022/Spring 2023 –** workshop
- **SPECIFICALLY REQUESTING INPUT AND FEEDBACK ON: Workshop goals, format, content, and interest in the steering committee.**
  - **ACTION: If you are interested in joining the Steering Committee, or if you have questions or comments concerning the STAC Workshop Proposal, please contact Neely Law (neely.law@farifaxcounty.gov) and Katlyn Fuentes (fuentesk@chesapeake.org).**

11:35 – ADDITIONAL UPDATES, CONCLUDING REMARKS

- **DENISE CLEARWATER** shared the following update regarding an upcoming webinar. Katlyn Fuentes sent an email on 12/10 containing additional information for this event.
  - **On December 16, 2021, from 1:00-3:00pm ET**: The Wetlands and Waterways Program, Maryland Department of the Environment (MDE), is pleased to present a webinar with our partner, the Maryland Department of Natural Resources (DNR) on "New Guidance for Stream Restoration in Stream/Wetland Complexes." This guidance has been under development for several years and is funded by a U.S. Environmental Protection Agency State Wetland Program Development Grant. This project focuses on sites in the western shore Coastal Plain. Additional guidance is under development for sites in the Piedmont region and lower Eastern Shore. This project and resulting guidance arose from a need to better recognize the condition and resources of wetlands in the riparian area adjacent to streams proposed for restoration, particularly for Chesapeake Bay Total Maximum Daily Load (TMDL) credit. Debate and delays over review and approval for some stream restoration projects has occurred over the resource tradeoffs which may occur due to direct construction disturbance and/or increased inundation in the floodplain. See the following link for more information: https://mde.maryland.gov/programs/Water/WetlandsandWaterways/Pages/Webinar-StreamRestoration.aspx MDE will release additional guidance based on real examples and practices used to minimize tree loss and adverse wetland impacts. Guidance covers all phases of project design and construction.
- **Today is Neely Law's last day as Stream Health Workgroup Co-chair. Starting tomorrow (12/11), Alison Santoro and Sara Weglein will be the workgroup co-chairs. Neely will continue to be a member of the workgroup.** Thank you, Neely, for all your hard work over the past several years!

MEETING ADJOURNED.

KEY: ACTION ITEMS, KEY TAKEAWAYS