Stream Health Workgroup (SHWG) Technical Advisory Group (TAG) Conference Call
Thursday, February 2nd, 2017
1:00PM-3:00PM
Chesapeake Bay Program Office Conference Room 305

Attendees

Claire Buchanan, ICPRB
Zach Smith, ICPRB
Mike Mallonee, ICPRB
Kelly Maloney, USGS
Kevin Brittingham, Baltimore County
Peter Tango, USGS
Chris Victoria, Anne Arundel County
John Stoddard, EPA
Andrea Nagel, ICPRB
Lea Rubin, IWLA
Brianna Hutchinson, SRBC
Daniel Boward, MD DNR
Kyle Runion, CRC
Greg Pond, EPA
Ellen Campbell, SRBC
Mike Whitman, WV DEP
Mike Bilger, Susquehanna University
Lucretia Brown, DC DOEE
Gerald Haywood, DC DOEE
Richard Mitchell, EPA
Dustin Shull, PA DEP

Data Processing

- On January 4th, a draft report of the Chessie BIBI refinement was distributed along with instructions for accessing the database. This call is being held to allow data providers to review and comment.
    - Do you feel the data sets you sent us are correctly incorporated into the BIBI database?
        - Boward: Will return with comments.
        - Ellen: Will return with comments but notes that SRBC had a similar data submission as first time around and was happy with it then.
        - Victoria: Will return with comments. May have additional IBI data for the project team.
        - Haywood: Haven't looked but data hasn't changed since the last submission.
- The Bay Program would like to use this data as an indicator of stream health. Would you be comfortable with your data being available on through the Chesapeake Environmental Data Repository?
    - SRBC is comfortable with this.
    - Boward: We have been conducting custom data requests to be aware of the users of data. Can a mechanism be built into CEDR to help us get that data?
        - Mallonee: Currently CEDR performs analytics on data downloads but it is limited to the IP address; we aren't collecting agencies, use of data, etc.
            - ACTION: Mallonee will investigate data analytics CEDR can perform.
    - Brown: No issues with raw data being shared.
    - Victoria: Share some of Boward's concerns with information about data use but conceptually, no, have no issues. Will discuss with higher-ups. Tentative yes.
    - Whitman: West Virginia is fine with the data being shared.
    - Brittingham: Baltimore County is fine with data shared.
    - Mitchell: Tentative yes from EPA National Rivers and Streams Assessment (NRSA).
    - Whitman: Regarding making the data available, isn't this data supposed to be publicly available via WQX/STORET as a part of EPA grant conditions? Don't understand resistance to submitting data to CBP's CEDR.

        - Buchanan: Agree, though there are no requirements to submit to CBP. This will help them measure stream health. Some redundancy but hoping that having the data in one format at CBP, it will be easier to use.
            - ACTION: Will look into WQX and see who submits, & what data is available
                - DC does not.
                - WV, SRBC, & PA do.
                - Stoddard: Doesn't know if EPA NRSA data is submitted.
                - Boward: We submit data to MDE & am not sure what they have uploaded. Will further examine.
- How often would you be willing to respond to CBP data calls for your recent data, e.g., every 2 years, every 5 years?
    - Buchanan: In past data calls, we have had issues with data formatting and submittal. Is it easier to have a computer programmer help you set up a submittal mechanism? Or parse the data collected and send over?
        - MD, SRBC, WV DEP, PA DEP, Anne Arundel County: would not need assistance.
        - DC: may need assistance
    - How often could you submit data?
        - MD (Boward), SRBC (Campbell), AAC (Victoria), BC (Brittingham): Could submit as often as annually though the full data cycle takes 3-5 years.
        - Brittingham: Sees that Baltimore County data ends at 2008; we can send newer data.
        - Haywood: Data analysis occurs as funding comes in so DC cannot commit to a schedule on data submission.
        - WV: We sample on a five year cycle; could submit as often as necessary but wouldn't have new data for certain places until every 5th year.
        - PA DEP: We are looking to have our data uploaded continuously to our website and publicly available but this may be a ways off in the future. When examining changes in habitat effects on macroinvertebrates, five years makes sense but we can submit annual data.
    - Tango: There is some precedent to have data come every number of years. Brook Trout is 5 years. Some data points are repeated annually and unsure if that subset is reported at a different frequency so that there is a smaller dataset each year then actual number of sites sampled.
        - Buchanan: This will be a part of a future discussion regarding the 2008 baseline and how to measure trends.

<u>Index Development</u>

Chessie BIBI refinement questions (41:00)

(Claire's notes)

- Background from Buchanan: As you are aware, this effort built on earlier CBP efforts is to create a Chesapeake watershed-wide index of stream biological health.
    - The impetus was the CBP partnership's need for a baywide watershed indicator to report progress. The hope is that by demonstrating an improvement in stream health, two things will happen:
        - Improving stream health over time will clearly translate to an improving Bay
        - The upstream public will become more engaged in both the Chesapeake Bay TMDL effort and local stream restoration efforts.

- There is also a need to common, quantitatively measure the effectiveness of stream restoration efforts in order for states to get "credit" for TMDL-related efforts.
- Generally accepted that biological responses to stream restoration projects may not be immediate, or may not happen at all if the stream is especially degraded. Need multiple measures...
- Reiterate that the Chessie BIBI is not intended to interfere in any way with each states' impairment decisions based on their individual macroinvertebrate IBIs.

- Do you have any major concerns about the study's overall approach?
  - Pond: Applauds effort of the report. I do have concerns over how using the 50th percentile for reference sites as the ceiling truncates the score as any metric value above 50th percentile gets 100%. Not sure this is accurate to reality.
    - Stoddard: Agree with Pond. We have strayed away from using any reference distribution in the scoring because of the variable quality of reference sites. We used all of the data to set ceilings and scores so that we are not dependent on an accurate definition of reference sites.
      - Smith: We modified what was done in the 2011 BIBI – the ceiling was the reference median and the floor was developed. Resulted in small window and nearly binary (good or bad site). This time we kept the reference ceiling but used the floor boundary as the 50% mark to develop a new floor and best separate the reference and other distribution.
  - Pond: A lot of the reference sites are scoring close to zero. Might be a sample comparability or inaccurate reference issue.
    - Smith: May be an issue of sample size. Difficult to have them all, including the tails, classify correctly
      - Pond: Handful of sites that become statistical outliers could be revisited to see if they shouldn't be references.
      - Stoddard: Argument for using whole distribution rather than subset because otherwise you will not have all of the possible stressors/sources of degradation.
        - Buchanan: By using 10th percentile of the reference distribution as a cut-off helps recognize that there is variability.
      - Smith: Would be interesting to look at other scoring methods. Would like to revisit other methods but we are generally happy with the gradient we saw.
  - Pond: Saw an uneven distribution of coastal and inland samples; settled on a random drawing, n=50 in evaluating references. Thinks this is adequate but wonders of rationale – does the coastal bioregion have fewer sites because the drainage density is lower?
    - Smith: There were fewer reference sites in the Mid-Atlantic Coastal bioregion – this was merged with the Southeastern Plains to make up the Coastal region. We followed guidelines of original Chessie BIBI in 2011 and divided the entire basin into bioregions. Creating one BIBI for each bioregion was not possible. The Coastal region was an outlier from the Inland, so these were separated in the BIBI. Inland bioregions summed into the larger Inland region each contained 50 reference and degraded sites used to develop scores. The density of sampling regions differs - Maryland and DC dominate the distribution just because there are more sites there so we needed to randomly draw the 50 sites from each bioregion and use those to create the reference.

            - Is potential that a particular reference site is represented in multiple years in the bioregion sampling. Conversation will continue offline.
    - Comments should go to Zach Smith.
- Buchanan: Would your agency like to review the Chessie BIBI final scores for individual sampling events?
    - We will send out to everyone and whoever wants can (in excel)
- Would r-scripts for calculating biological metrics and the Chessie BIBI be useful to your agency?
    - What functions are you looking for?
    - Would you like to do this in r or use an extension app?
        - PA DEP: App may be helpful for biologists; data people interested in code.
        - DOEE: An app would be good for DC
        - SRBC: Would like both versions
        - AAC: r code
    - Smith: Happy to convert excel calculations to r to establish the BIBI.
        - Fish applications could be a future project.
    - Rarefaction included?
        - Smith: Best thing would be to download the vegan r package.
    - Maloney: Will testing and sensitivity code be available as well?
        - Smith: Going to take time to make metrics available, but is happy to add these functions in afterwards.
- Do you agree with CBP's objective to use the family-level regional indices to report stream health in the Chesapeake watershed?
    - Bilger: Family-level regional indices are good overall. There are multiple taxonomic errors on the list, mostly distributional and function feeding groups issues. So there will not be as much error staying at the family-level indices.
        - Smith: Functional feeding group tables were taken from multiple sources and the most often assigned category was used as the best option available. There may be disagreement between tables between states and if necessary, these can be changed.
        - Bilger: Will send information on errors to fix.
    - Would be helpful to see scatterplots of family level IBI vs order or genus level IBI with thresholds put in as crosshairs to look at misclassification rate.
        - Buchanan: Table 23 somewhat addresses this but we can do a better job at it.
    - Smith: Are you okay with using regions (groups of compiled bioregions) as opposed to bioregions? We did not see any benefit to staying down at the bioregion level when evaluating Bay health.
        - Want to see if bioregions in particular are changing or more sensitive than others rather than just inland vs. coast. Next iteration would be helpful to show if bioregions changed.
- Will you participate in the CBP SHWG's efforts to develop a 2008 baseline for reporting purposes?
    - As a part of the 2014 Watershed Agreement, the Stream Health Workgroup is tasked with developing a "2008 baseline" against which to compare stream health in the future.
    - "2008 baseline" to actually be multiple years. Proposed 2000-2011 as a baseline to compare future scores.
    - How do you measure trends with random, stratified sampling design?

- CBP outcome goal is 10% improvement in SH according to whatever indicator by 2025. Linked to number of stream miles.
    - Will need volunteers to take part on this group. Please email Buchanan if you are willing to participate.
        - Brittingham interested. kbrittingham@baltimorecountymd.gov

Next Steps

- Finalize feedback of raw data.
- Finalize report.
- Present to SHWG and Status & Trends WG for review.
- Form ad hoc SHWG committee to develop 2008 baseline.
- Technical questions are welcome offline.

Call Adjourned