Citizen Science: Directions for Macroinvertebrate Data

INWG Meeting

February 17, 2015

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How is Current Macroinvertebrate Data Being Used?

- CBP Stream Health Indicator (2000-2010)
- State 303(d) assessments

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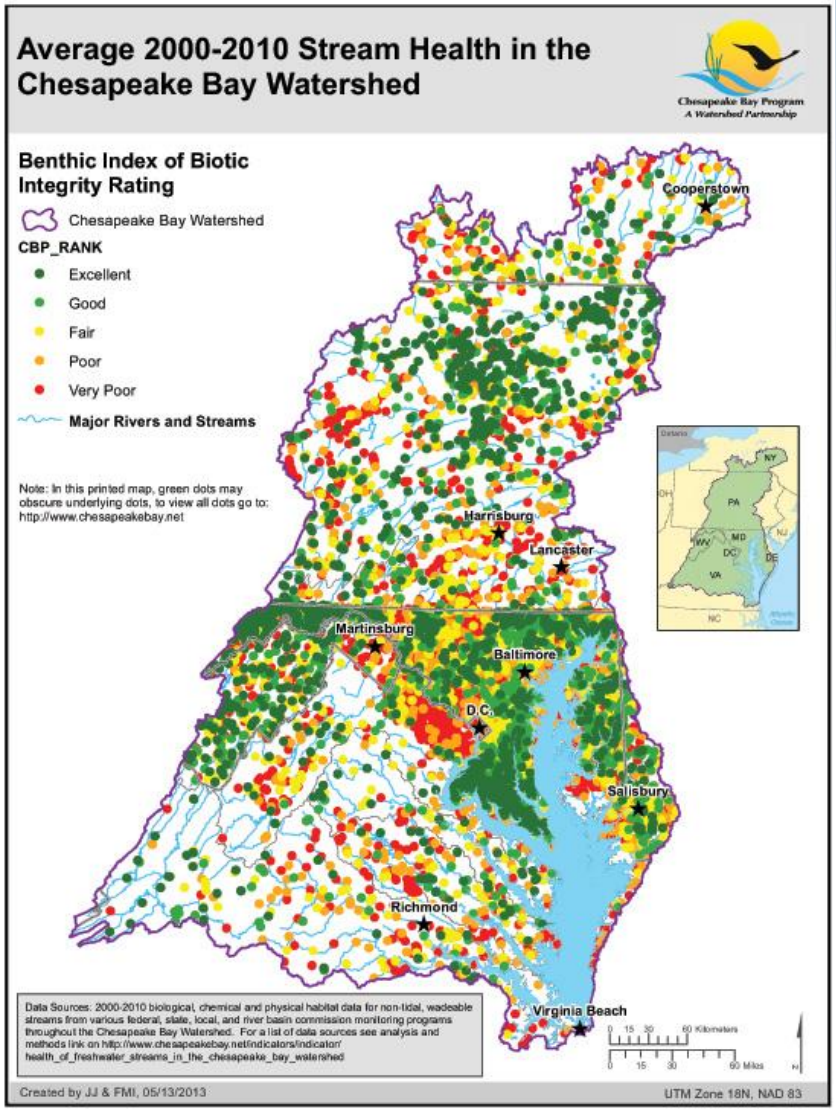

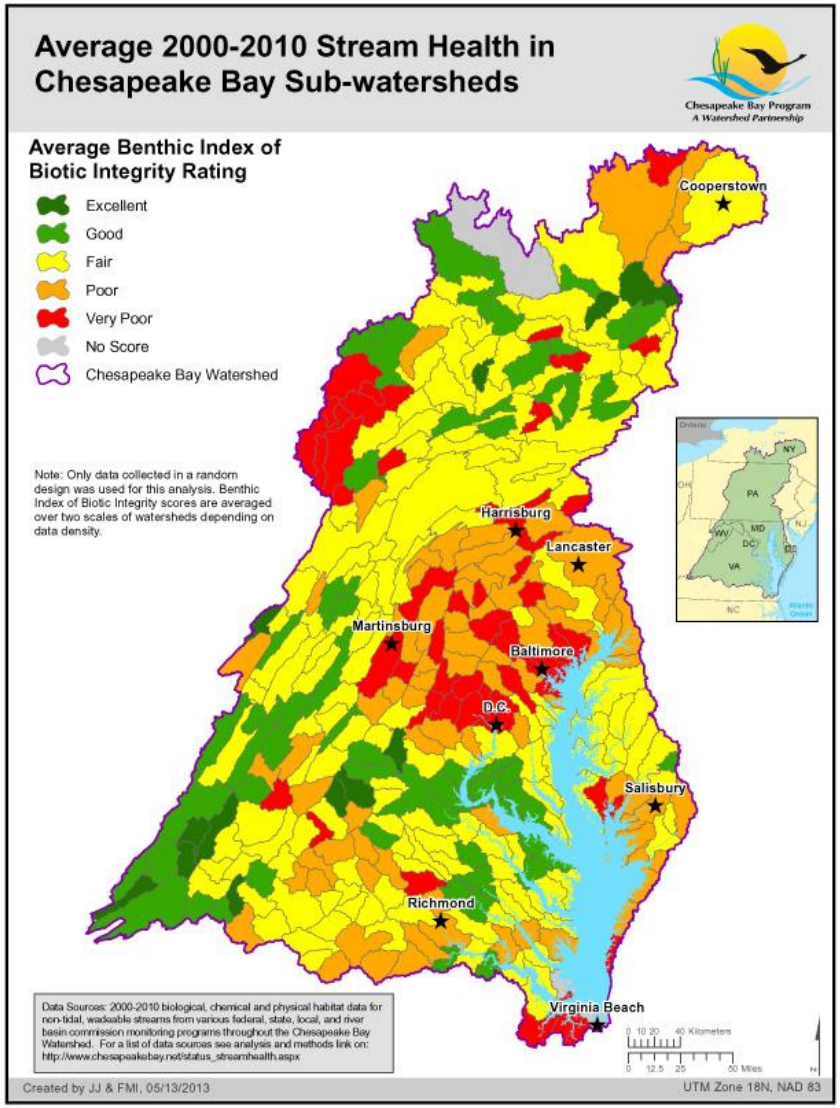

www.chesapeakebay.net/indicators/indicator/health_of_freshwater_streams_in_the_chesapeake_bay_watershed

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Intended Use:

Stream Health Outcome

- Continually improve stream health and function throughout the watershed. Improve health and function of ten percent of stream miles above the 2008 baseline for the watershed.

- Management Strategy refers to stream indicators:
  - Track improvement in stream health and function with the Chesapeake Basin-wide Index of Biotic Integrity (Chessie BIBI).
  - Develop additional indicators from routinely collected, non-biological monitoring data (land use, land cover, water quality)

Update CBP database of nontidal stream data

- Date users

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ICPRB: Update and Refine Chessie BIBI Index for Nontidal Streams

Objectives

1) Update CBP database of non-tidal stream data
2) Biological metric and index calculations (over 50 metrics)
3) Index sensitivity and refinement
4) Under-representation (i.e. ecoregions and data sets)
5) Genus-level to Order-level metrics

ICPRB Staff

Andrea Nagel, Zachary Smith, Claire Buchanan, and Mike Mallonee (ICPRB/CBP)

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Where Can Volunteer Monitoring Data Help?

4) Under-representation (i.e. ecoregions and data sets)
   - ICPRB and states can help identify under-represented areas where volunteer monitoring data can supplement other data sets.

5) Genus-level to Order-level metrics
   - Most volunteer macroinvertebrate data are classified to order-level, some to family-level. ICPRB can help identify what biological metrics and index calculations are viable at the order- or family-level.

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Proposed Study with ICPRB

Hypothesis:

We believe that with the addition of volunteer macroinvertebrate monitoring data in an under-represented region and the use of ICPRB's suite of analytical tools, CBP will be better able to track progress of stream health.

Study Design:

Collaboratively being designed with ICPRB and Citizen Science and Nontraditional Monitoring Project Team

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What Other Questions Could We Answer?

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Tier 1 – Education & Environmental Health Screening

Definition	Data do not meet Tier 2 or 3 but are of known quality and can contribute to understanding
Data Uses	• Provide location information on where monitoring is taking place; • Provide on-the ground information for future site development; • Indicate potential pollution hot spots; • Prioritize sites for follow-up monitoring; • Target restoration projects; • Inform sub watershed report cards; and • Highlight local, community projects that are implemented to improve the health of the Bay watershed.
Data Requirements	Clearly documented monitoring methodology, site locations, and written study designs (which document basic QA/QC measures).

Tier 2 – Report Cards, Screening, Targeting of Management Actions

Definition	Data have clearly defined and approved methodology (using EPA Volunteer Monitoring QAPP guidelines) but don't meet Tier 3.
Data Uses	• Be used for Bay Program report cards; • Be used to help target stream segments for water quality standards attainment assessments and Clean Water Act 305(b) reports; • Be used for screening for Clean Water Act 303(d) stream segments; • Target new priority agency sites; • Track the performance of Total Maximum Daily Load (TMDL) implementation projects; and • Be used for all uses identified in Tier 1.
Data Requirements	At minimum, has an approved EPA Volunteer Monitoring QAPP.

Classifying Data As Tier 1 or Tier 2

- What specific uses do you have for Volunteer-collected Macroinvertebrate data?

- How can we prioritize which monitoring data to request first?
  - Eco-regions
  - Geographical areas of interest
  - Need more information to answer specific questions

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Partners

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Chesapeake Bay Program
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