



Healthy Watersheds Indicator

Sarah McDonald (she/her)¹ and Sophie Waterman²

¹ U.S. Geological Survey

² Chesapeake Research Consortium

Healthy Watersheds Goal Implementation Team
February 12, 2024



Healthy Watersheds Indicator Action Team

Outcome: Maintain 100 percent of state-identified healthy waters and watersheds remain healthy.

Goal: Identify indicators of watershed health to monitor progress on the outcome.

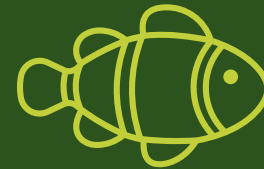
Expertise: biology, habitat, ecology, hydrogeomorphology, forestry, and geography.

Step 1: Define a “Healthy” Watershed



Land Protection?

Public access? Parks? Recreation?



Habitat?

Black Duck? Brook Trout? Others?

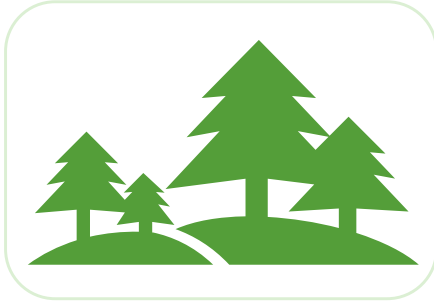
According to the states...

Jurisdiction	Definition of “Healthy”	Categories
D.C. *	No identified healthy watersheds.	
Delaware*	Total Maximum Daily Loads (TMDLs) are achieved, and their surface water quality standards are met (toxins, nutrients, DO, temperature, etc.).	Water quality
Maryland	Tier II waters. Biological characteristics are significantly better than minimum water quality standards.	Biology
New York	Absence of use restrictions (nutrients, DO, etc.).	Water Quality
Pennsylvania	High Quality or Exceptional Value waters. Biological (wilderness trout stream and benthics), chemical (DO, pH, toxics), and habitat assessments (located in designated state or national protected, owned, or managed areas).	Biology, Water Quality, Habitat, Land Protection
Virginia	High aquatic integrity and ecologically healthy waters. Fish and macroinvertebrate communities, instream and riparian habitat. High numbers of native/broad diversity of species, few or no non-native aquatic species, few generalist species.	Biology, Habitat.
West Virginia	Tier 3 waters. Exceptionally high benthic macroinvertebrate communities, located in Federal Wilderness areas, state and national parks, national forests, and protected by the Wild and Scenic Rivers Act, naturally reproducing trout streams.	Biology, Habitat, Land Protection

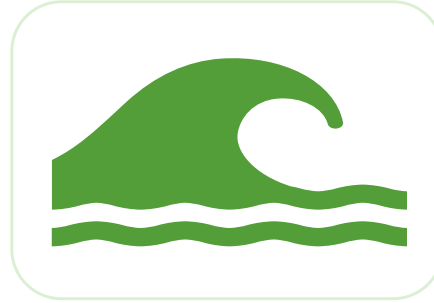
* Currently no healthy watersheds.

According to CBP and EPA...

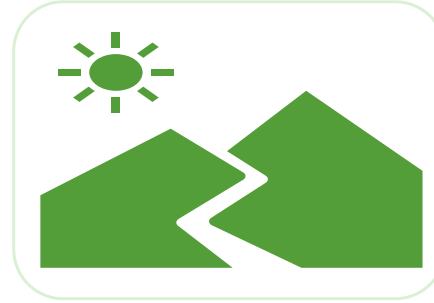
CHWA 2.0 Health Categories and EPA Watershed Health Index



Landscape
Condition



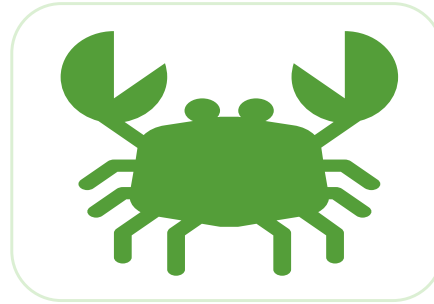
Hydrology



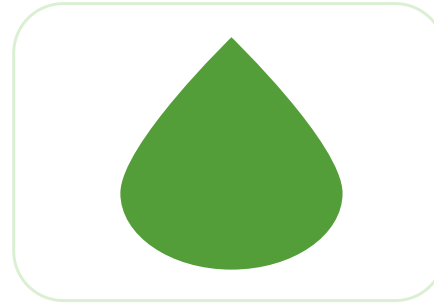
Geomorphology



Habitat



Biological
Condition



Water Quality

Step 2: Catalog Data Availability

What metrics are in the Chesapeake Healthy Watersheds Assessment 2.0?

Other metrics not in CHWA 2.0 that are related to watershed health?

What can be measured for monitoring purposes?

Step 3: Identify Available Data that are Indicators of Watershed Health

- Jamboard exercise to rank metrics.
- All metrics included in the jamboard were marked as important by at least one person.



Protected
lands

Land use

Population
density

Proposed Indicators

Percent protected natural lands (forests and wetlands) in state-identified healthy watersheds

Percent natural lands (forests and wetlands) in state-identified healthy watersheds

Contact



Sarah McDonald (she/her/hers)

Geographer, U.S. Geological Survey

Land Use Workgroup Coordinator, Chesapeake Bay Program

smcdonald@chesapeakebay.net

smcdonald@usgs.gov