Cross-outcome Collaboration, cooperation and integration to work towards achieving and multiple benefits (HWGIT Management Approach 5)

HWGIT Meeting February 13, 2023

Photo: Will Parson Chesapeake Bay Program

Stream Health WG – Stressors

Stressor category	Literature review		Jurisdictional analysis
	Frequency of measurement	Frequency of importance	Watershed-wide ranking
Geomorphology	High	High	High
Salinity & major ions	High	High	High
Nutrients	High	Moderate	High
Toxic contaminants	Low	High	Moderate
Flow	Low	Moderate	Moderate
Acidity	Moderate	Low	Moderate
Riparian	Low	Low	Moderate
Dissolved oxygen	Moderate	Moderate	Low
Temperature	Moderate	Low	Low

- *Identifying Key Stressors Driving Biological Impairment in Freshwater Streams in the Chesapeake Bay Watershed, USA* study highlights some of the biggest stressors on streams
- Utilized two approaches to determine stressors: 1) reviewing and synthesizing published multi-stressor studies, and 2) examining 303(d) listed impairments linked to biological impairment as identified by jurisdiction regulatory agencies (CB Watershed)
- Geomorphology (i.e., physical habitat and sediment), salinity, and nutrients were the most reported stressors.
- Many of the stressors identified are metrics in the CHWA
- Study highlights some opportunities for us to work with other outcomes

STREAM HEALTH WG CONNECTIONS

- Climate change may greatly impact stream health Influenced by:
  - Rising water temperatures
  - Changing (intensity, duration, frequency) precipitation patterns.

How will these changes affect the biological communities and how will the Chessie BIBI scores will change throughout the watershed?

What trends are expected to occur and how to maintain or improve the ability of streams to acclimate to these changes?

The stressors project can guide us to the most appropriate practices to focus on to mitigate the effects of climate change and our additional future indicators may help to capture those changes on a more frequent scale and address them more quickly than the Bay-wide BIBI metrics.

ADDITIONAL CLIMATE METRICS 2022-2023

Four scenarios: Brook Trout Probability of Occurrence under
- current condition
- plus 2 degrees C
- plus 4 degrees C
- plus 6 degrees C (Northeast Atlantic Landscape Conservation Cooperative, Nature Network Project)

USGS - Stream Temperature Model
- Mean Summer Temp. (degrees C)
- Mean Summer Temp. (degrees C) w/ Air Temp +2 degrees C

- Mean Summer Temp. (degrees C) w/ Air Temp +4 degrees C
- Mean Summer Temp. (degrees C) w/ Air Temp +6 degrees C

\# Days/Year Temp. > 18 degrees C

\# Days/Year **Temp. > 22 degrees** C

The Nature Conservancy – Resilient Lands

Northeast Atlantic Landscape Conservation Cooperative, Nature Network Project
- Climate Stress

CBP GIT-FUNDED PROJECT: FACILITATING BROOK TROUT OUTCOME ATTAINABILITY THROUGH COORDINATION WITH CBP JURISDICTIONS AND PARTNERS

- Identify opportunities for cross-GIT collaborations
- Strengthen communication and coordination with other stakeholders
- Collect and compile existing data from stakeholders and analyze monitoring and implementation data necessary to adequately track progress
- Work with the CBP EPA Data Center Team to develop a tracking/reporting application

Cross Outcome Opportunities

- Help with a climate science need: Research on improving our knowledge of carbon stock changes from sea level rise pertaining to marsh drowning and erosion and landscape conversions (e.g., mature forest to new marsh land)

- Stronger feedback loops that connect locals using the data, policy makers, communication efforts, and those that create and summarize the data.

- Stream health WG has action 1.3: Identify additional parameters/metrics to describe and quantify stream health to complement existing biological indicators (e.g., Chessie BIBI) which aligns with our 1.2 :Develop vulnerability information

- The LUOE has action 2.3: Explore the development and implementation of a methodology to establish climate related goals and baseline for individual Chesapeake Bay Agreement Management Strategies such as the Land Use options Evaluation Management Strategy

- The LUMM L&A Plan has action 2.2: Quantify impact of land conversion on healthy watersheds, wildlife, and stream habitats. An opportunity to collaborate with the SHWG