

Habitat GIT Spring Meeting

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Brook Trout

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Brook Trout



Focus:

- GIT-funded Project:
Facilitating Brook Trout
Outcome Attainability . . .
- UMBC ICARE eDNA project



Challenges

- Need metrics to quantify conservation actions protecting current brook trout habitat
- Need to develop a reporting framework to collect and quantify all watershed restoration activities
- More capacity to engage and coordinate on large-scale priority action items with greatest impact
- Support stakeholder needs related to coldwater refugia, climate change, restoration



Continuing Projects

Facilitating Brook Trout Outcome Attainability through Coordination with CBP Jurisdictions and Partners

- Trout Unlimited (Shawn Rummel)-Eastern Brook Trout Joint Venture (Lori Maloney)
- Collect and compile existing data from stakeholders and analyze monitoring and implementation data necessary to adequately track progress

What data are we looking for?



- Specific on-the ground project type and location and other relevant information on restoration projects
- Brook trout monitoring data associated with on-the-ground projects
- Chesapeake Bay watershed ONLY
- Only projects **completed between 2016 and 2022.**

Project Types

| | |
|--------------------------|----------------------------------|
| Instream Habitat | Abandoned Mine Drainage |
| Riparian Restoration | Dirt and Gravel Road Improvement |
| Aquatic Organism Passage | Brook Trout Reintroduction |
| Land Protection | Non-native Salmonid Removal |

- Meetings with workgroups\stakeholders
- Survey developed, sent to ~100 groups
- ~20 most-relevant finalists attended webinars on populating data survey
- Working with Olivia D. on incorporating into Habitat Tracker tool



Continuing Projects

Temperature and Spatial Effects on eDNA Dynamics to Inform Brook Trout Management Practices

- UMBC ICARE – USGS/EESC – UMCES/App Lab
- How do changes in temperature/season, distance downstream affect brook trout shed rate, eDNA concentration?

Stream lab, 10°/20°C exposures, eDNA qPCR sampling





Continuing Projects

Temporal Effects on eDNA Dynamics to Inform Brook Trout Management Practices

- How do changes in distance downstream affect brook trout shed rate, eDNA concentration?
 - Field experiment sampling water at different distances downstream of caged brook trout
- Can we predict fish biomass with eDNA concentrations?
 - Field experiment with MD DNR in Gunpowder River



Continuing Projects

Temporal Effects on eDNA Dynamics to Inform Brook Trout Management Practices

- ICARE emphasizes community stakeholders
- Added Theaux Le Gardeur, Gunpowder Riverkeeper, to project.
 - Gunpowder River system critical to Baltimore's drinking water
 - “Forest to Faucet” concept to connect underrepresented communities to brook conservation



Publications

- Kessler, K., K.M. Rogers, C. Marsh, and N.P. Hitt. In press. Karst terrain promotes thermal resiliency in headwater streams. Proceedings of the West Virginia Academy of Science
- Hitt, N. P., Rogers, K. M., Kessler, K. G., Briggs, M. A., & Fair, J. H. (2023). Stabilising effects of karstic groundwater on stream fish communities. Ecology of Freshwater Fish, 00, 1–14.
<https://doi.org/10.1111/eff.12705>



Publications

- D.C. Kazyak, S.L. White, N. Mamoozadeh, J.S. Hargrove, M. Meek. (2022) Conservation Genetics and Wild Trout: Evolving Opportunities to Support Management. Pages 143-150 in Proceedings of the Wild Trout XIII Symposium
- D.C. Kazyak, S.L. White, N. Mamoozadeh, J.S. Hargrove, M. Meek. (2022) Benefits of Genetic Data in Design of Brook Trout Translocation Efforts. Pages 179-184 in Proceedings of the Wild Trout XIII Symposium



Publications

- Data Releases
 - Hitt, N.P. 2023. Brook trout abundance in streams across southern Appalachia from 1958-2021. U.S. Geological Survey data release
 - Hitt, N.P. 2023, Conductivity and temperature data for selected springs in the Potomac River headwaters from 2021-2023: U.S. Geological Survey data release



Questions?