Habitat GIT Spring Meeting
May 01, 2024

Brook Trout

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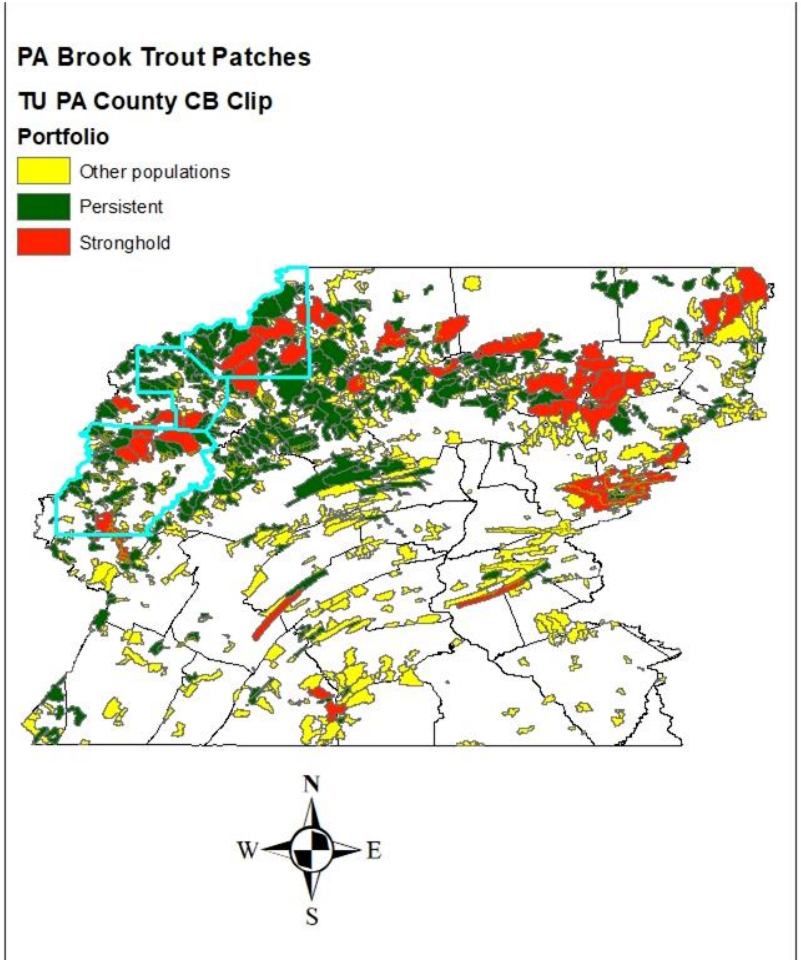
Continuing Projects

2022 GIT Funded Project: 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. Final Report Due July 31st
- Will provide full presentation at Fall meeting.

Management Board

- Presented new strategy for engaging local jurisdictions and partners to increase brook trout conservation effort in stronghold areas
  - Considering Fall STAC funding proposal
- MB Supported: Working with MD (proposed: Garrett and Baltimore Counties) and PA (proposed: Potter, Clearfield, and Cameron)
- Awaiting threats assessment from selected counties-2022 GIT Project



Priority Practices for Outcome Attainment

- Increase Habitat Occupancy (i.e., net gain)
    - Restore streams polluted by Acid Mine Drainage (AMD)
    - Treat priority AMD sites that can quickly be repatriated by nearby Brook Trout populations
        - Often in Environmental Justice Areas
- Improve Aquatic Organism Passage (AOP)
    - Culvert replacements and dam removals
- Protect and Increase Resiliency of Existing Populations (i.e., no net loss)
    - Conserve stronghold and persistent Brook Trout patches
    - Conservation easements and land acquisitions Local zoning ordinances
- Increase forested cover in stronghold and persistent Brook Trout patches (≥75% forested threshold)
    - Riparian buffer implementation
    - Legacy mine land reforestation

Work Plan and Management Strategy

Work Plan- Condensed strategies from 20+ down to nine

- New Focus- Local partnerships/scaling up conservation
    - Groundwater and climate change
    - 6PPD-q???

Management Strategy- Needs a full update/revision.

- Waiting on states to submit brook trout catchment data to EBTJV

2024 GIT Proposal

- ***Investigating the Potential for and Presence of 6PPD-Q in Brook Trout Habitat***

Table 1. Reported 6PPD-quinone LC_{50} concentrations (50% observed mortality) of salmonids.

Species	LC_{50} (µg/L)	Test duration (h)
Coho salmon (*Oncorhynchus kisutch*)	0.04, [24] 0.08, [25] 0.095 [2]	24
White-spotted char (*Salvelinus leucomaenis pluvius*)	0.51 [26]	24
Brook trout (*Salvelinus fontinalis*)	0.59 [3]	24
Rainbow trout/steelhead (*Oncorhynchus mykiss*)	0.64,[29] 1.0,[3] 2.26 [5]	96
Chinook salmon (*Oncorhynchus tshawytscha*)	67.3 [24], 82.1 [25]	24
Sockeye salmon (*Oncorhynchus nerka*)	Not acutely toxic at 50 [25]	24
Atlantic salmon (*Salmo salar*)	Not acutely toxic at 12.2 [28]	48
Brown trout (*Salmo trutta*)	Not acutely toxic at 12.2 [28]	48
Arctic char (*Salvelinus alpinus*)	Not acutely toxic at 12.7 [3]	24
Southern Dolly Varden (*Salvelinus curilus*)	Not acutely toxic at 3.8 [26]	48
Cherry salmon (*Oncorhynchus masou masou*)	Not acutely toxic at 3.5 [26]	48

Toxicity Key: Higher / Lower

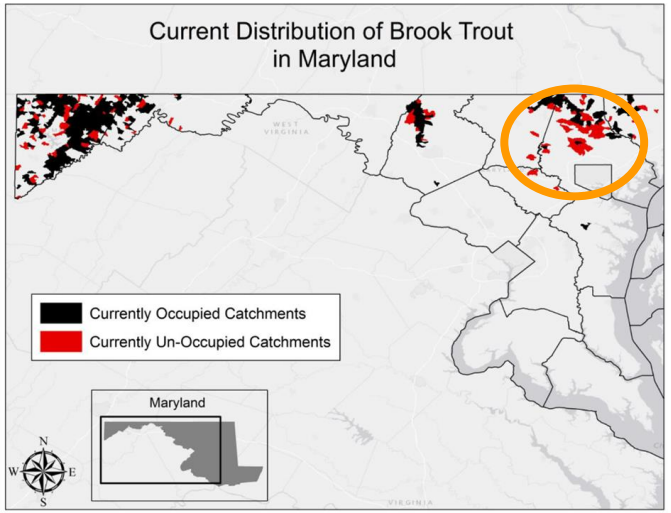


Figure 4. Current (2018) distribution of brook trout in Maryland at the catchment scale.

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

- White, S. L., Rash, J. M., & Kazyak, D. C. (2023). Is now the time? Review of genetic rescue as a conservation tool for brook trout. Ecology and Evolution, 13(5), e10142.

- White, S. L., Rash, J. M., & Kazyak, D. C. (2023). Is now the time? Review of genetic rescue as a conservation tool for brook trout. Ecology and Evolution, 13(5), e10142.

- Smith, R. J., Kazyak, D. C., Kulp, M. A., Lubinski, L. A., & Fitzpatrick, B. M. (2024) Genetic structure of restored Brook Trout populations in the Southern Appalachian Mountains indicates successful reintroductions. Conservation Genetics. https://doi.org/10.1007/s10592-024-01620-y

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?