

Habitat GIT Fall Meeting
November 15, 2022



Brook Trout

Stephen Faulkner
U.S. Geological Survey

Katie Ombalski
Woods and Waters
Consulting, LLC

Co-Chairs, Brook Trout
Workgroup



Brook Trout



Focus:

- Primary barriers and compiling conservation/restoration actions
- GIT-funded Project: Facilitating Brook Trout Outcome Attainability . . .



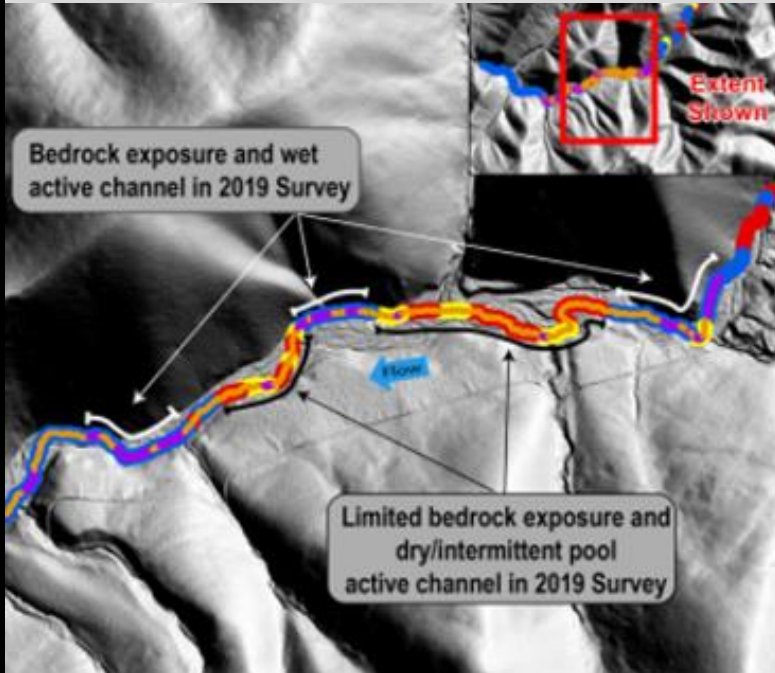
Continuing Projects

- Restoring a native fish (Blue Ridge Sculpin) to Catoctin Mountain Park (USGS, NPS, MD DNR)
- Understanding and managing brook trout declines in Shenandoah National Park (USGS, NPS)
- STAC Genetics and Rising Temperatures Workshop Reports

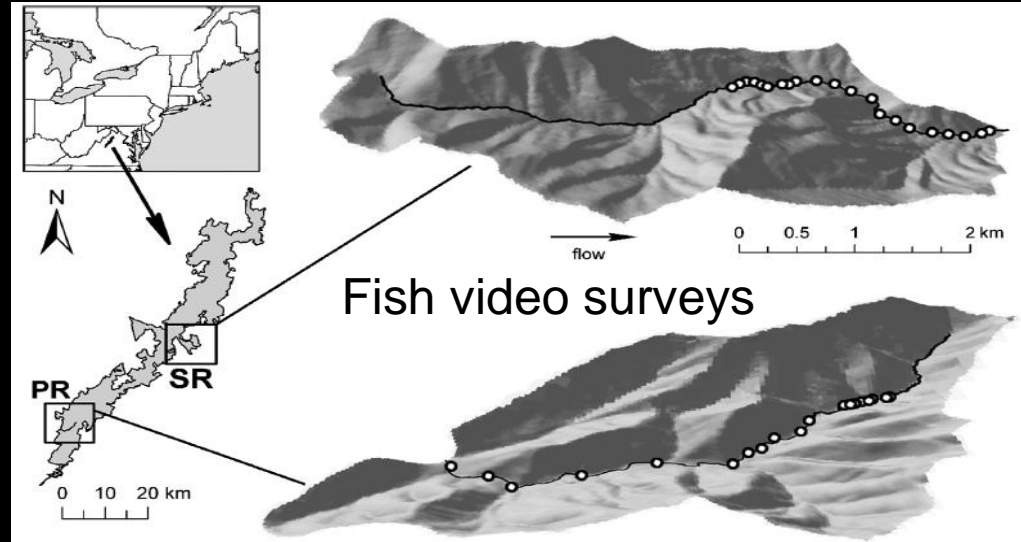
EcoDrought in North Atlantic-Appalachian Region: Native brook trout in Shenandoah National Park



New integration for flow +
fish habitat modeling

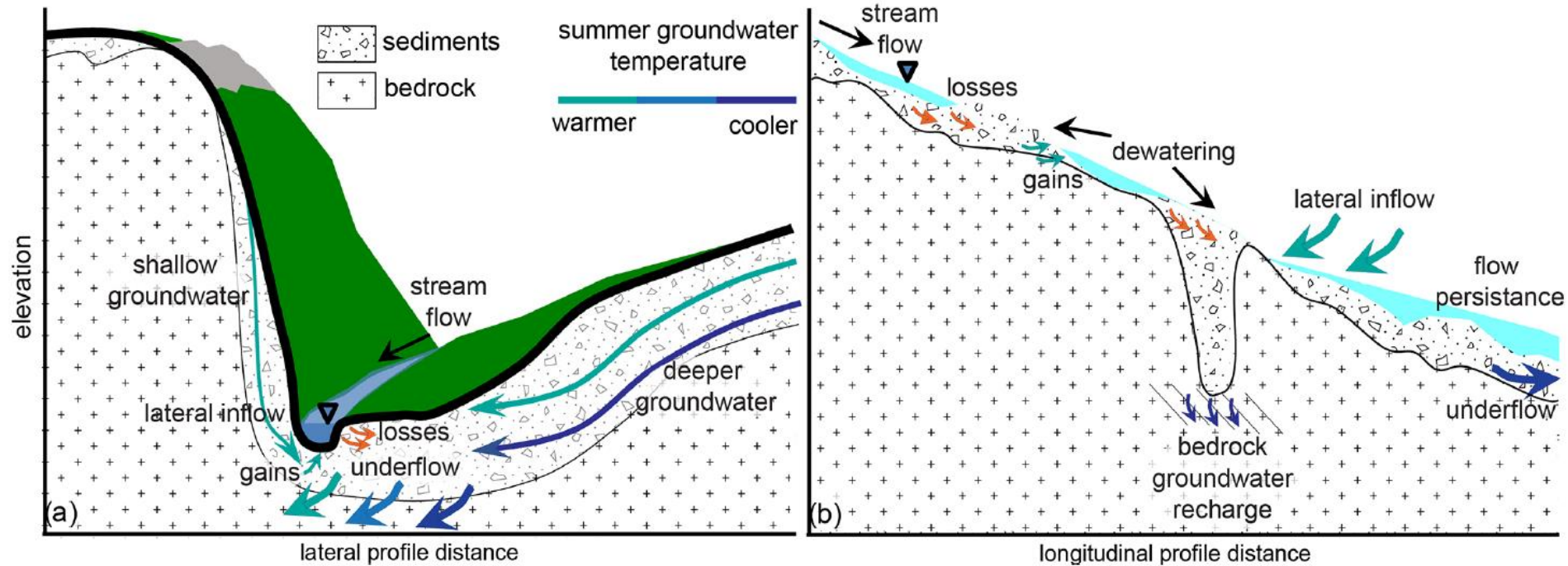


Linking bio + geo + hydro research



Partners: National Park Service, US Forest
Service, Maryland DNR, Trout Unlimited

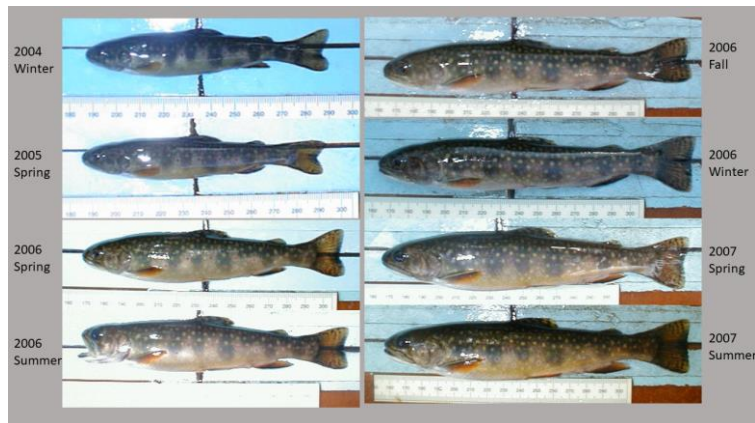
Hydrology + geomorphology for stream fish habitat



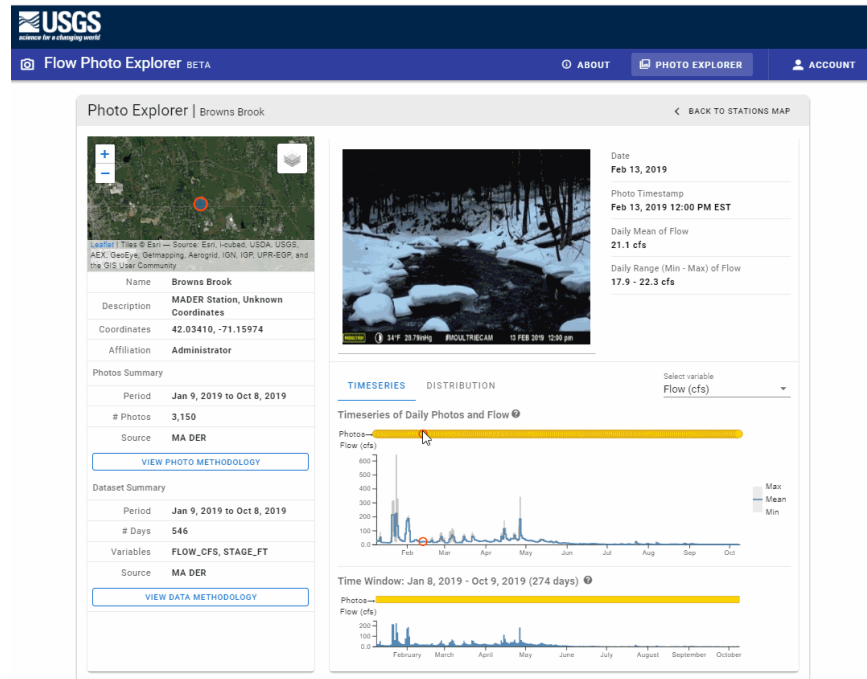
Briggs et al. (2022) Bedrock depth influences spatial patterns of summer baseflow, temperature and flow disconnection for mountainous headwater streams HESS

AI/ML for brook trout ID and headwater streamflow

Estimating where animals are, how many
Individual ID, similar to facial recognition



Flow from images, cheap and easy





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



New Projects

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

- Selected Trout Unlimited as contractor (Eastern Brook Trout Joint Venture)
- Collect and compile existing data from stakeholders and analyze monitoring and implementation data necessary to adequately track progress



New Projects

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

- Work with the CBP EPA Data Center Team to develop a tracking/reporting application.
- Strengthen communication and coordination with CBW stakeholders and other CBP GITs
- Identify opportunities for cross-GIT collaborations



New Projects

Temporal Effects on eDNA Dynamics to Inform Brook Trout Management Practices

- UMBC ICARE program - NSF-funded Master's program committed to increasing the diversity of the environmental workforce
- Professor Dr. Tamra Mendelson; Aiman Raza, M.S. student (UMBC)
- Dr. Aaron Aunins, Dr. Cheryl Morrison, Dr. Than Hitt (USGS-EESC)
- Dr. Bob Hilderbrand (UMCES – Appalachian Laboratory)



New Projects

Temporal Effects on eDNA Dynamics to Inform Brook Trout Management Practices

- How do changes in temperature, season, distance downstream affect brook trout shed rate, eDNA concentration?
- Can we predict fish biomass with eDNA concentrations?



Questions?