

ANNALYSE WHITE & KELLY FLAHERTY, Dept of Natural Sciences, Fairmont State University, WV, Fairmont, WV, 26554. Sampling eDNA of brook trout within Tygart Valley River Watershed West Virginia.

Appalachia is home to diverse range of organisms and ecosystems including freshwater streams and rivers. A common species found here is the native brook trout (*Salvelinus fontinalis*). This particular species of fish is often used to evaluate water quality and ecosystem stability; however, declining populations have risen concern for environmental stressors. This study focuses on sites in the Tygart Valley River Watershed region in West Virginia. We sampled brook trout eDNA from 20 streams historically known to carry brook trout. eDNA is DNA collected from the environment that is naturally shed by organisms. This includes substances such as mucus, feces, or skin cells. eDNA is a valuable tool used for monitoring wildlife diversity, tracking endangered species, or detecting invasive species. GIS mapping was used to map potential locations of brook trout populations based on DNR electrofishing samples. The samples collected were analyzed for brook trout DNA using RT-PCR. We have calculated the proportion of known sites where brook trout DNA was identified, and used this data to compare eDNA sampling of brook trout populations to past electrofishing samples. These samples of brook trout specifically, have provided insight into the overall health and stability of the Tygart Valley River headwaters. These results are important because they provide a low-effort tool to monitor Appalachian populations potentially threatened by climate change. The results can then be used to protect and preserve critical habitat for Appalachian species.