

YVETTE HALLEY, ERIC MERRIAM, AMY WELSH, J. TODD PETTY, JAMES ANDERSON, Dept of Natural Resources, West Virginia University, Morgantown, WV, 26506. Using Environmental DNA to Assess Hellbender Populations in the West Fork Greenbrier River, West Virginia

The eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) is a fully aquatic giant salamander whose habitats are commonly defined as swift running, fairly shallow, highly oxygenated waters. Hellbenders have been previously established as a sentinel species for water quality and aquatic ecosystem health. Unfortunately, populations have undergone a century long decline due to various anthropogenic influences. Measuring hellbender populations can be challenging and extremely invasive, which can be injurious for the individuals being sampled. Recent advances in non-invasive genetic sampling allows for the processing and analysis of environmental DNA (eDNA) from water samples; which has proven effective for detecting low population density aquatic macroorganisms. In this study, we sought to identify hellbender populations along the West Fork Greenbrier River in West Virginia. We utilized an aqueous filtering approach in conjunction with chloroform-isoamyl extractions to isolate eDNA. To positively identify sites with hellbender presence we utilized PCR to test for two hellbender specific regions of the mitochondrial gene, cytochrome-b; final results were compared to a traditional hellbender survey which had been conducted simultaneously with the eDNA sample collection. This project was supported by a NSF EPSCoR funded project.