SAMUEL CANFIELD, Dept of Natural Sciences and Mathematics, West Liberty University, West Liberty, WV, 26074, and JAMES WOOD, Dept of Natural Sciences and Mathematics, West Liberty University, West Liberty, WV, 26074. Investigating the physicochemical niche of the macrophyte *Podostemum ceratophyllum* Michx. (Hornleaf riverweed).

*Podostemum ceratophyllum* Michx. (Podostemaceae), henceforth known as *Podostemum*, is an angiosperm that inhabits mid-order montane and piedmont rivers in eastern North America. *Podostemum*, a "foundation species," strongly influences stream ecosystems by increasing substrate habitat heterogeneity for macroinvertebrates and fishes, sequestering water column nutrients, and contributing to food webs.

Currently, NatureServe reports *Podostemum* is critically imperiled to vulnerable (S1 to S3) in 15 of the 26 US states it occurs in, and seven state populations are unranked/under review. Stream degradation, including excessive sedimentation, hydrological alterations, and acute water chemistry fluctuations are postulated to impact *Podostemum*'s survival negatively; however, the physical and chemical environment that supports *Podostemum* requires additional investigation to improve habitat degradation evaluations. In response, the primary study objective was to identify physicochemical conditions associated with *Podostemum ceratophyllum*.

*Podostemum* percent cover and stem length, as well as eleven physicochemical characteristics, were collected from fourteen sites in nine West Virginia (S1) mid-order rivers. These data were analyzed using Markov Chain Monte Carlo (R package: MCMCglmm) hierarchical modeling to incorporate sampling site as a grouping variable.

Percent cover and stem length exhibited significant positive and negative associations with substrate size and canopy cover, respectively. Additionally, both percent cover and stem length were positively correlated with the interaction between flow velocity and water depth. Relationships between *Podostemum* and chemical predictors were inconclusive due to low sample sizes. Subsequently, long-term physicochemical studies would further elucidate *Podostemum* niche requirements. The research was supported by the NASA West Virginia Space Grant Consortium and West Liberty University.