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TOWARDS MAPPING THE PROVISION OF ECOSYSTEM SERVICES FROM HEADWATER WETLANDS IN THE SUSQUEHANNA RIVER BASIN

Kristen C. Hychka ¹; Susan Yetter ²; Denice H. Wardrop
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¹USEPA, Office of Research and Development, Atlantic Ecology Division,
Narragansett, RI USA

²Riparia, Department of Geography, Penn State University, University Park,
PA USA

Headwater wetlands provide a range of ecosystem services including habitat provisioning and flood retention. Following the River Ecosystem Synthesis framework we identified and assessed not only headwater wetlands, but unconstrained reaches with the potential to support diverse stream, floodplain, and wetland ecosystems. We developed and tested a method to predict unconstrained reaches using topographic data, known locations of wetlands, and classification trees in one Ridge and Valley watershed. The model was used to predict reach type distributions in five watersheds across different physiographic provinces and land use distributions. In order to validate the predictions and estimate potential ecosystems services provided by the reaches, a rapid assessment of habitat area, complexity, and condition was performed at 120 sites. Analysis of the rapid assessment data show that the mapping approach predicts constrained versus unconstrained reaches, however stochastic geomorphic processes and land use influence which types of habitats occur at the sites. Predicted distributions of reach types plotted on hypsometric curves showed differing spatial arrangements of reach types across the physiographic provinces. Implications for the spatial provisioning of services will be discussed.

Contact Information: Kristen C. Hychka, USEPA Environmental Effects Research Laboratory, Office of Research and Development, Atlantic Ecology Division, 27 Tarzwell Drive, Narragansett, RI 02882 USA, Phone: 401-782-3153; Fax: 401-782-9670; Email: hychka.kristen@epa.gov