A GIS-based Landscape Model to Predict Brook Trout Distributions in West Virginia Watersheds

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Abstract: The Eastern Brook Trout Joint Venture (EBTJV) was formed to implement range wide strategies that sustain healthy, fishable brook trout populations. Hudy et al. (2005) recently completed a comprehensive analysis of eastern brook trout distributions representing a critical first step towards fully integrating brook trout conservation efforts in this region. The study identified a distinct gap in our knowledge of the status and distribution of brook trout in West Virginia. Using WVDNR data collected the past ten years, we developed a landscape scale predictive classification tree model for brook trout presence/absence for each major basin (Potomac, Monongahela, Kanawha). We used the output from these predictive models to select 80 additional sites across the Potomac drainage and 75 additional sites across the Kanawha drainage (the Monongahela drainage was already well sampled). During the summers of 2006 and 2007, we gathered detailed information on stream habitat, water chemistry, brook trout population structure and associated species composition from these sites. This data is being used to create landscape scale classification tree models that will predict brook trout density and biomass and identify critical areas in the watershed for protection and restoration. The results of this research will be used to update the EBTJV's distributional map and guide brook trout management actions throughout West Virginia.

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