

Establishing Regional Restoration Priorities for Brook Trout Populations Based on Reach and Subwatershed-Scale Connectivity

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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 across the entire range of the eastern brook trout (*Salvelinus fontinalis*). In order to accomplish the goals of the EBTJV in West Virginia we set out to accomplish the following objectives: to assess brook trout populations where current data is lacking and to set restoration priorities for stream reaches within this area based on both reach and subwatershed scale connectivity. Our study area was Region 1 of West Virginia, the Upper Potomac River watershed. We used West Virginia Department of Natural Resources (WVDNR) brook trout data to create a model to predict presence/absence throughout the study area; this model was validated using independent field data collected in 2006. Using the output from this model we were able to assess core brook trout populations. This allowed us to establish restoration priorities based on source-sink and metapopulation theories, where stream reaches connecting core areas receive the highest priority for restoration as they would provide increased connectivity between existing populations. This allowed us to establish restoration priorities for streams based on their potential value to brook trout populations at the regional scale. Basing restoration priorities on this scheme should allow for maximum brook trout population growth and stability for the smallest unit cost of restoration. This information will be shared with the EBTJV who will use it for ranking future rehabilitation efforts.

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