

Development of a Fish Index of Biotic Integrity within the Coosa and Tennessee Basins of Blue Ridge Ecoregion, Georgia

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Abstract: Indices of biotic integrity (IBI) are integral tools in assessing the health of aquatic ecosystems. In 1999 the Georgia Department of Natural Resources, Wildlife Resources Division (GDNRWRD), began developing criteria of a fish IBI for all Level III Ecoregions within the state. Using the 13 metrics developed for the Piedmont, Southeastern Plains, and Ridge and Valley ecoregions, we recently completed criteria for the Blue Ridge Ecoregion (BRM) within the state of Georgia. The BRM is located in northeast Georgia and includes portions of the Chattahoochee, Coosa (COO), Savannah, and Tennessee (TEN) River basins; however, these criteria only pertain to the COO and TEN. With data collected from 154 sites, we determined criteria using Maximum Species Richness Graph methodology for the species richness metrics (metrics 1–6) and horizontal trisection for species composition metrics (metrics 7–10). IBI scores ranged from 12 to 58 (possible range is 8 to 60) with a median of 36; differences between the COO and TEN basins were not significant (ANOVA; $P < 0.05$). Based on IBI integrity classes, five sites (COO) scored in the excellent, 34 (19 COO, 15 TEN) scored good, 58 (37 COO, 21 TEN) scored fair, 39 (18 COO, 21 TEN) scored poor, and 18 (10 COO, 8 TEN) scored very poor. Due to several characteristics of high elevation streams that affect fish assemblages, a small portion of sites were not included in this analysis. We developed selection criteria that can be used to determine whether this IBI will provide the best fish community assessment.

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