Abundance of Brook Trout in Relation to Structures in Northeast Georgia Streams

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Abstract: The native range of the eastern brook trout (*Salvelinus fontinalis*) extends from Quebec through the eastern United States into the southern Appalachian mountains in Northeast Georgia, where it is restricted to high elevation headwater streams primarily because of competition from non-native rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*). The Eastern Brook Trout Joint Venture (EBTJV) was formed in 2005 to help coordinate management of eastern brook trout throughout the eastern United States. In Georgia, the goals of the EBTJV are to assess remaining populations, protect and enhance habitat, restore populations where necessary, and to improve public education and fishing opportunities for the species. The EBTJV has implemented several habitat improvement projects for eastern brook trout in North Georgia that have focused on the construction of artificial structures that increase overhead cover and helped create deeper, slower pool habitats that provide critical summer refugia during drought conditions. The objective of this study was to compare abundance and condition of adult and juvenile brook trout in stream reaches with and without artificial stream structures. Within each stream reach, we also evaluated specific habitat variables including substrate, pool depth, water velocity, and abundance of large woody debris (LWD). The presence of structures in streams were associated with higher density of adult eastern brook trout and significant increases in several habitat variables (percent total pool area, density LWD, and mean stream depth), whereas the average relative weight and YOY density of eastern brook trout remained unchanged. Managers implementing stream improvement projects should consider how the benefits of these projects relate to their overall management goals.

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 64:204