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PURLEAR CREEK HABITAT RESTORATION CASE STUDY

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ABSTRACT Beginning in 2005, North Carolina State University and the North Carolina Division of Forest Resources implemented a comprehensive stream restoration project on Purlear Creek on the Rendezvous Mountain Educational State Forest property in Northwestern North Carolina, USA. The goals were to improve water quality and habitat in mountain streams to provide recreational fisheries. Purlear Creek serves as a public demonstration and research site to promote best management practices for restoring and maintaining natural stream functions in watersheds with excessive stream sedimentation resulting from forestry and agricultural land uses. The restoration project included several components: (1) stream channel realignment and floodplain vegetation planting for a 200-m tributary in 2006; (2) restoration of a 2-ha wetland by ditch-plugging and planting in 2006; (3) streambank stabilization and in-stream structure installation in a 500-m reach of Purlear Creek in 2007; (4) stream channel realignment and floodplain vegetation planting for a 600-m reach of Purlear Creek in 2007; and (5) stream channel realignment and floodplain vegetation planting for a 500-m reach of Purlear Creek in 2009. During each phase, engineered plans were created based on reference streams to restore natural physical and ecological stream functions. During construction, educational workshops were conducted to teach contractors, consultants, and agency representatives about natural stream construction techniques. Comprehensive project site monitoring includes hydrology, morphology, vegetation, and in-stream habitat. Results to date indicate that the stream system is stable with a growing diverse plant and animal community. Ongoing benthic macroinvertebrate studies indicate rapid reestablishment of stable populations. This presentation will highlight lessons learned during and following project implementation while highlighting the need for long-term monitoring studies to evaluate ecosystem restoration performance.

Keywords: Stream Restoration, Ecosystem, Macroinvertebrate, Riparian Buffer.