

The Effects of Riparian Logging and Large Woody Debris Addition on Stream Morphology

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Abstract: Large woody debris (LWD) is an integral part of the ecology of forested headwater streams and has been shown to store organic matter, provide overhead cover, and create pools. Pool creation is of particular interest to resource managers since it forms critical summer refugia for brook trout (*Salvelinus fontinalis*). We investigated the morphological effects of riparian logging and LWD additions in seven headwater streams in central West Virginia. Each stream was divided into three sections: reference (uncut), logged (50% or 90% riparian basal removal), and logged + LWD additions. Each section was 250 m long and had a riparian zone defined as being 30m from the stream edge. The sections were logged and had LWD added during summer and fall 2006, with stream measurements and LWD surveys during baseflow conditions in 2005 and 2007. LWD is expected to have increased within all logged sections, with the greatest change in the logged + LWD sections. Pool area, and more specifically pools created by LWD, is expected to have increased. Additionally, major deviations from the original channel have been observed in at least one of the streams. These results indicate that LWD additions can have major effects on stream morphology and might increase the brook trout carrying capacity by increasing refugia and habitat complexity.

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