Large Woody Debris Depletion Rates in Western Montana Streams

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Maintenance of in-stream habitat diversity through recruitment of large woody debris (LWD) is a principal goal of Plum Creek Timber Company's Native Fish Habitat Conservation Plan (NFHCP). Because LWD loads are governed by long-term processes such as riparian tree growth and mortality, direct measurement of LWD to judge effectiveness of management actions is unlikely to provide timely feedback for adaptive management. Instead, trends must be forecast using models. For the NFHCP, the Riparian Aquatic Interaction Simulator (RAIS, Welty et al. 2002) was used to support development of riparian management options. To help validate this model, several key assumptions are being field-tested as part of the NFHCP's adaptive management program. This study examines the effects of channel size and gradient on annual in-stream LWD depletion rates. Thirty-one sample sites were randomly selected from among a pool of stream segments that represent combinations of channel types and sizes for perennial streams on Plum Creek lands. At each 100-m site, all pieces of LWD with minimum qualifying dimensions of 10-cm diameter and 2-m length in zones 1-3 (Robison and Beschta 1990) were tallied and marked with numbered aluminum tags. Resurveys of these sites were completed in 2007. This poster summarizes five-year LWD depletion rates, and the factors most associated with LWD movement.