

Log Jams and Carbon Storage in Headwater Streams in Colorado's Front Range

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Abstract. Historical documents and recent field studies suggest that resource use within the Colorado Rockies during the past two centuries has reduced the wood loads and frequency of wood jams along most forested streams. Log jams tend to slow the transport of carbon and encourage its uptake in the riverine environment and therefore may have effects which extend beyond stream. To evaluate possible changes, wood loads and jam frequency are compared based on stream characteristics, forest age, and flow alteration. In addition, sediment samples from reaches with and without log jams are compared based on organic matter (OM) content and Total Carbon (TC) content. Samples taken from behind log jams are compared to samples taken from other backwater areas along a river reach. Preliminary results of the 2010/2011 field seasons indicate that log jams on streams draining old growth forest (more than 200 years since last disturbance) average 45/km, while streams draining younger stands average 15/km. In addition, sediment samples taken from log jams (regardless of forest age) have an overall average of 5% OM, as compared to an average of 1% OM in samples taken from non-jam areas. Samples taken from log jams on streams draining old growth forests have an average of 12% OM.

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