

The effect of in-stream wood structures on fine sediment storage in headwater streams of the Canadian Rocky Mountains

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Abstract The recruitment of wood from channel margins to headwater streams can profoundly influence stream hydrology, morphology, ecology and sediment transport dynamics (erosion and deposition). This study examines the effect of in-stream wood deposits on pool formation and fine sediment storage in two headwater streams with contrasting land disturbance on the eastern slopes of the Canadian Rocky Mountains. Six representative study reaches, three from each disturbance type (burned/salvage logged *vs* recreation/grazing) were selected to examine pool spacing, pool type and fine sediment storage. A total of 94 and 66 in-stream wood structures were found in the Lyons East (LE) and Corolla Creek (CC) study areas. The frequency of in-stream wood structures was 1.5/100 m (LE) and 1.48/100 m (CC). Overall, the volume of fine sediment stored in pools was greater in burned-salvage logged reaches (Lyons East) compared to unburned (reference) reaches of Corolla Creek. The increased volume of fine sediment is related to increased sediment availability due to mass wasting processes and overland flow caused by wildfire.

Key words in-stream wood; dams; jams; fine sediment; gravel bed rivers; wildfire; watershed disturbance; Canadian Rocky Mountains