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Spatial and temporal dynamics of large woody debris in first order streams from the Alberta foothills

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Volunteer Oral Presentation

Riparian zones are important ecotones between terrestrial and aquatic ecosystems and strongly influence the morphology and function of streams. The presence of large woody debris (LWD) is one of the most important factors affecting stream geomorphology. The amount and size of LWD that enters a stream depends on the type frequency and magnitude of disturbances. The fate of the LWD at any given point in time post-disturbance is dependent upon the decay and transport processes within the stream as well as within riparian areas themselves. We quantified the amount and age of LWD in stream ecosystems across a chronosequence of disturbances in order to determine the residence time and rate of input of LWD from different stages of stand development post-disturbance. There is a significant episodic input of LWD post-disturbance however evidence of this pulse lasts less than 100 years. There is also evidence of a 33 ± 4 (SE) year lag between the time of the disturbance and the time when LWD begins to influence stream morphological processes. This lag is due to the rate of LWD decay and the concurrent transition from intact bridges which have very little influence on stream geomorphology to partial bridges as well as buried and loose LWD which tend to have greater influence on geomorphology. These outcomes indicate the importance of natural disturbances for the creation and maintenance of LWD and also the importance of understanding of the temporal dynamics of the input and decay processes in small streams.