

Fish, Aquatic Ecosystem Response

Recovery of Fish Populations and Physical Channel Characteristics in Streams Impacted by Catastrophic Debris Flows

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Disturbances in headwater streams can impact fish populations. In 2007, a 500-year flood event occurred in the upper Chehalis River basin of southwest Washington. Many streams in the area experienced record high flows, as well as channelized landslides that developed into catastrophic debris flows. Comprehensive data on stream habitat and fish populations had been collected by Weyerhaeuser Company in these streams since the mid-1970s, which provided an opportunity to assess the impact of the storm and debris flows on fish distribution and habitat conditions and to monitor post-storm recovery. The re-colonization of fish populations and recovery of habitat conditions in streams impacted by catastrophic debris flows is currently being monitored in over 29 kilometers of stream channel within 19 individual sub-basins using spatially continuous, single-pass electrofishing and physical stream habitat surveys. As of 2017, fish have recolonized habitats up to or beyond the upper extent of their pre-storm distribution in 12 of the 19 sub-basins. Preliminary results indicate fine-scale physical habitat characteristics including stream gradient, size, and the presence of natural blockages significantly influence the rate and extent of fish re-colonization in these systems.



Example of a stream channel in the upper Stillman Creek basin impacted by a catastrophic debris torrent caused by the December 2007 storm.