Effects of the Fall Creek reservoir drawdowns on downstream off-channel habitats.

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Since 2011 the U. S. Army Corps of Engineers (Corps) has implemented an annual complete reservoir drawdown of Fall Creek Reservoir on the Middle Fork Willamette River in response to requirements in the National Marine Fisheries 2008 Biological Opinion for the continued operations of the Willamette project (BiOp). The objectives of the reservoir drawdown are to improve passage efficiency and survival of juvenile Chinook salmon migrating out of Fall Creek Reservoir and to reduce the abundance of nonnative fish populations inhabiting the Fall Creek Reservoir. However, the effect of the drawdowns on downstream habitats and fish populations is unclear. During the drawdowns, the lake elevation is lowered from the minimum conservation pool elevation of 728 feet to approximately 680 feet, allowing inflowing water to pass freely through the regulating outlet. As a result, a massive volume of silt, sand, and debris is scoured from the reservoir bed and flushed, causing sediment deposition to occur in off-channel habitats located downstream of the dam. To determine whether the drawdowns had a negative effect on fish and habitats downstream of the dam, the Oregon Department of Fish and Wildlife (ODFW) began monitoring four slough habitats on Fall Creek downstream of the reservoir in 2012. In 2012, we mapped the bathymetry, installed water depth and temperature data loggers, and completed surveys to determine the fish assemblage at each of these four sites. We monitored sedimentation during the drawdown of Fall Creek reservoir, remapped the bathymetry of each slough, and surveyed the fish assemblage in 2013 and 2014. We will discuss our analysis of data the collected in 2012-2014, and how these results relate to management of Fall Creek reservoir and applicability to other Willamette Project reservoirs.