

Deer Creek Floodplain Enhancement Project

State(s): Oregon

Managing Agency/Organization: McKenzie Watershed Alliance (McKenzie Watershed Council)

Type of Organization: Nonprofit

Project Status: Underway

Project type: WNTI Project

Project action(s): Riparian or Instream Habitat Restoration, Monitoring, Education/Outreach

Trout species benefitted: Bull Trout, Coastal Cutthroat Trout, resident Rainbow trout

Population: McKenzie River Sub-basin/Deer Creek

Project summary:

The Deer Creek Floodplain Enhancement Project is designed to improve ecological function and biological productivity for ESA-Threatened Bull Trout and spring Chinook salmon, Coastal Cutthroat Trout, rainbow trout, and other native species in the lower 1.6 miles and adjacent 42 acres of floodplain on Deer Creek - a tributary to the McKenzie River within the Willamette River Basin in western Oregon. The Project is designed to enhance instream habitat and floodplain connectivity through the addition of large wood and removal of berms, and will proceed in two phases. Phase I is completed and involved the harvest and transport of 450 pieces of large wood from off-site locations, placement of large wood within the floodplain and channel, and redistribution of berm material within the floodplain. Phase II will involve the pulling of 25 large stream-side trees, with rootwad attached, into the stream and floodplain. Phase I was completed during the summer of 2016, and Phase II is scheduled to be completed in the fall of 2017.

Problem the Project Addresses:

Due to natural events and land use impacts, lower Deer Creek was in poor condition. A flood in 1964 scoured the entire floodplain, clearing all vegetation. Following the flood, and for years to come, the U.S. Forest Service salvaged most of the remaining in-stream wood. Several berms were later built to straighten the channel and prevent channel migration (a common practice at the time). These impacts severely reduced channel and floodplain roughness and increased the transport capacity of the channel, meaning that much of the wood, gravel, and fine sediment in Deer Creek were frequently transported out of this high energy system. As a result, the recovery of large wood has been slow (less than 20 pieces of large wood per mile), the substrate is too large for spawning, and the stream was no longer connected to its floodplain. These conditions were impacting habitat for native species, including ESA-Threatened spring Chinook salmon and Bull Trout, Oregon Sensitive Coastal Cutthroat Trout, and rainbow trout. Major limiting factors for all fish species include: lack of spawning gravel, lack of off-channel habitat and high flow refuge, lack of deep pools, lack of cover, lack of large wood, and high summer stream temperatures.

The Project addresses root causes of habitat degradation by implementing actions that restore natural river and floodplain processes. The addition of appropriate levels of large wood and removal of berms will help restore impaired natural processes such as wood supply and storage; sediment transport and storage; channel, floodplain dynamics; and organic matter transport and storage. Restoring these processes will allow for the natural formation of limiting habitat factors cited above, rather than relying upon artificial construction of habitat without the means to maintain them over time. The Project area is connected to high quality in-stream and riparian habitat immediately upstream, so improving the lower Deer Creek would restore the final piece to a fully functioning sub-watershed.

The McKenzie River is located within the Upper Willamette River, one of 21 core areas of the Coastal Recovery Unit cited in the Revised Draft Recovery Plan for the Coterminous United States Population of Bull Trout. Based on redd counts in 2015 (USFS), the McKenzie River accounts for approximately 65% of the Bull Trout production in the Willamette River Basin, and has served as the donor population for reintroduction efforts elsewhere (Middle Fork Willamette River) in the core area. Deer Creek is ideal Bull Trout foraging habitat within 2 miles of the core spawning tributaries. Snorkel surveys and fish salvage efforts associated with Phase I of the Project have documented the presence of Bull Trout in Deer Creek. Despite the lack of spawning gravel, Deer Creek is a relatively productive stream for rainbow and cutthroat trout (about 60 redds per mile in 2015) and therefore plays a vital role in providing forage fish for predatory Bull Trout, especially considering the decline of spring Chinook salmon, which is cited as a limiting factor for bull trout (USFWS, 2014). There is potential for spring Chinook salmon to spawn in Deer Creek again (not documented since 1993), following completion of the Project. Increasing forage production in Deer Creek is integral to the long-term persistence of Bull Trout in the McKenzie River, which as a stronghold is in turn important to the persistence of the species as a whole.

Objectives: The Project seeks to achieve two goals: 1) improved ecological function and biological productivity for native fish, and 2) enhanced public awareness and support for watershed restoration. Progress toward meeting these goals will be measured through quantifiable objectives.

- Increase large wood frequency in channels and across the floodplain to at least 300 pieces per mile of all size classes, upon project completion.
- Increase length of secondary channel habitat during spring flow (March-June) by at least 25% within 5 years of project completion.
- Increase frequency of pools (with a residual depth greater than three feet) by at least 50% within 5 years of project completion.
- Decrease the mean particle size of tailouts of pools greater than 3 ft residual depth to 50-100 mm within 5 years of project completion.
- Restore Chinook spawning in Deer Creek within 5 years of project completion.
- Increase Bull Trout abundance within Deer Creek by 10% within 5 years of project completion.
- Increase rainbow/cutthroat trout redd abundance by at least 25% within 5 years
- Increase public awareness and support for watershed restoration by engaging 30 students in education projects.

Partners:

- McKenzie Watershed Alliance
- U.S. Forest Service – Willamette National Forest, McKenzie River Ranger District
- McKenzie high school
- University of Oregon Environmental Leadership Program
- Oregon Department of Fish and Wildlife

Project Monitoring: Progress toward meeting the stated objectives will be measured through an established monitoring plan tied to each objective. Ecological function monitoring focuses on physical stream habitat within the project area. Biological monitoring focuses on four species: spring Chinook salmon, Bull Trout, Coastal Cutthroat Trout, and rainbow trout. Education and outreach efforts will be assessed by the number of individuals reached and a knowledge assessment completed by participating students. Project monitoring, outreach and education has already begun and will occur throughout the project period.

Funding Source(s): National Fish Habitat Action Plan

Project cost: \$17,500.00

Start Date: 09/01/2017 **Completion Date:** 9/30/2018

Project Contacts: Jared Weybright, Restoration and Education Director, McKenzie Watershed Council, 458.201.8150