Whychus Canyon Restoration Project – Phase II

State(s): Oregon
Managing Agency/Organization: Upper Deschutes Watershed Council
Type of Organization: Nonprofit
Project Status: Underway
Project type: WNTI Project
Project action(s): Riparian or Instream Habitat Restoration, Watershed Connectivity, Monitoring, Education/Outreach
Trout species benefitted: Bull Trout, Redband Trout
Population: Whychus Creek (Tributary to the Deschutes River)

Project summary: As part of the effort to restore habitat for Bull Trout and Redband Trout in the Upper Deschutes, the Upper Deschutes Watershed Council (UDWC) and its partners are focusing on restoring reaches of Whychus Creek that historically meandered through low gradient meadows and provided important spawning and rearing habitat. The Whychus Canyon Restoration Project, located nine miles downstream of the City of Sisters in Central Oregon, includes approximately six miles of stream/floodplain restoration that will be completed over the next decade. This proposal seeks funding to support Phase II of project implementation, including one mile of restoration of a naturally meandering channel and floodplain in a reach that was channelized in the 1960's. The restoration will be implemented per the Whychus Canyon Restoration Plan Design Report (2014). Once all phases are complete, the benefits of the six-mile restoration project will include more than four miles of increased main stem and side channel length, a 470% increase in pool habitat, a 1,500% increase in large wood, an 85% increase in floodplain connectivity, and more than 30 acres of restored wetlands and riparian areas**.**

Problem the Project Addresses: Although Whychus Creek has provided important habitat for Bull and Redband trout, approximately 18 miles of historic channelization, water diversions and stream-side development have resulted in the loss of riparian habitat, channel complexity, floodplain connectivity and water quality over the past 100 years. Currently, approximately 80-90% of Whychus Creek's overall length functions as a sediment transport reach where the creek is either naturally confined in a canyon or artificially confined by berms. In contrast, meadow reaches functioning as sediment depositional areas comprise only eight miles of Whychus Creek's entire 41 mile length (<20%). While low-gradient meadow reaches are less than 20% of the total length of Whychus Creek, more than 50% of the six-mile Whychus Canyon reach provides opportunities to restore high quality habitat in low-gradient meadow reaches. The importance of these meadow habitats cannot be overstated because they were historically the most productive/diverse for aquatic and terrestrial species. Meadow reaches along Whychus Creek provided wet meadows, complex stream habitat, abundant vegetated channels providing cover, nutrients, cool water inputs through groundwater surface water exchange, and abundant fish spawning, rearing and refuge areas.

In its current condition, however, the six-mile reach through Whychus Canyon provides very poor habitat because historic channelization has decreased fish habitat, increased erosion, and eliminated floodplain connection that supported the meadow and wetland ecosystems once present. The site provides very few pools, limited instream woody material, and little cover or side channel habitat. Although there is riparian vegetation along portions of the creek, it is often found confined to channel margins, is generally young and has a limited species composition. Large historic riparian forests once found on the alluvial and meadow reaches have disappeared. This has resulted in the loss of the pool habitat and channel complexity necessary to provide diverse, high quality habitat for native resident Bull Trout, Redband Trout and anadromous fish populations.

Without significant stream channel restoration Whychus Creek will not reach its full potential to support and protect healthy bull and redband trout along with steelhead trout and Chinook salmon returning to the area as passage is provided at the Pelton Round Butte Dams.

Objectives: The overall goal of the long-term project is to restore six miles of Whychus Creek and its associated floodplain to provide high quality habitat for Bull Trout, Redband Trout, Chinook salmon and steelhead trout. Phase II of this project (this proposal) includes approximately one mile of stream and floodplain restoration to be completed in 2017-2018. This phase will restore and stabilize the key functions, resiliency in the face of climate change and values of the historic wet meadows and associated in-stream and riparian habitats by accomplishing the following:

1) Restoring dynamic hydrologic function including floodplain connectivity, elevated shallow groundwater table, and sediment/nutrient storage. Dynamic hydrologic function includes but is not limited to:

- Development of vertical and horizontal variability on the floodplain;
- Activation of channels and floodplains at various flows; and
- Supporting a changing channel pattern that occurs through avulsion and formation of oxbows, point bars and mid-channel bars;

2) Providing dynamic, abundant and high quality diverse habitat including slot pools, pocket pools, alcoves, mid-channel pools, backwater areas, glides, and riffles for Bull Trout, Redband Trout, Chinook salmon and steelhead trout.
3) Restoring a diversity of riparian, wetland and wet meadow habitat for wildlife.

The need for restoring these key functions and values of historic wet meadows and associated in-stream and riparian habitats in Whychus Creek has been identified in several local watershed documents, including:

- The Whychus and Metolius Watershed Action Plan (USDA Forest Service – Draft 2011) identifies work needed to restore key ecological processes and services at a watershed scale.
- Upper Whychus Creek Watershed Action Plan (USDA Forest Service 2011b)
- The Whychus Creek Restoration Strategy (UDWC 2006) identifies habitat restoration on Whychus Creek as a priority for habitat restoration actions. [Note: the Whychus Creek Restoration Strategy is a collaborative document prepared by the Watershed Council, Deschutes River Conservancy (DRC), the Land Trust, National Forest Foundation and Bonneville Environmental Foundation. It outlines a set of restoration priorities shared by all of these organizations.]
- The Squaw Creek Action Plan (UDWC 2002) identifies stream restoration in the channelized reaches as a high priority (Goal 4, p. 3).
- The Middle Columbia River steelhead Recovery Plan (NMFS 2009) identifies the restoration of habitat in the "Deschutes River – Westside" tributaries (including Whychus Creek) as an important part of the recovery effort.

Partners:

- Upper Deschutes Watershed Council
- Deschutes Land Trust
- U.S. Forest Service – Deschutes National Forest
- U.S. Fish and Wildlife Service Partners for Fish and Wildlife Program
- Oregon Watershed Enhancement Board

Project Monitoring: A complete monitoring plan was developed as part of the Whychus Canyon Restoration Plan Design Report (2014). Project monitoring will continue for at least three years post 2018 implementation.
The entire six-mile project will be considered successful when the following objectives have been met:

- Increase extent of flood accessible wetland and riparian habitat from 3.5 acres (existing) to 25 acres.
- Increase riparian and wetland plant species diversity and distribution throughout the Project area.
- Approximately 120,000 plants will be planted.
- Increase overall dominant and side channel lengths from 1 mile to greater than 3.5 miles.
- Increase large wood per mile to greater than 200 pieces/mile (currently ≈10 pieces/mile).
- Change channel habitat composition from riffles representing 95% of overall channel length to riffles representing less than 60% of overall channel length.

Funding Source(s): National Fish Habitat Action Plan
Project cost: $30,000.00
Start Date: 08/01/2017 **Completion Date:** 9/30/2019
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