

Selway Creek Watershed Westslope Cutthroat Trout Restoration

State(s): Montana

Managing Agency/Organization: U.S. Forest Service, Beaverhead-Deerlodge National Forest

Type of Organization: Government

Project Status: Ongoing

Project type: WNTI Project

Project action(s): Barrier Removal or Construction, Riparian or Instream Habitat Restoration, Watershed Connectivity, Monitoring, Education/Outreach. 48 miles of stream and 10 acres of wetlands restored.

Trout species benefitted: Westslope Cutthroat Trout, Arctic Grayling

Population: Selway Creek and tributaries

Project summary: The Beaverhead-Deerlodge National Forest (BDNF), in partnership with Montana Fish, Wildlife & Parks (FWP), have been working towards creating a population of Westslope Cutthroat Trout (WCT) in the Selway Creek watershed (Dillon District, Beaverhead-Deerlodge National Forest, Beaverhead County, MT) where they have been extirpated for decades because of non-native trout introduction and subsequent invasion. The process to reestablish this population within the Selway watershed started in 2007 with the acquisition of 1,200 acres of private land known as Selway Meadows. The addition of Selway Meadows into Forest Service management was the cornerstone of this project because it connected nine tributaries and about 48 miles of high-quality habitat with Selway Creek. Since 2007, the Selway Creek Watershed WCT Restoration Project has continued to take steps to prepare for reintroduction of WCT with projects that have reconnected tributary streams, improved flood-irrigation infrastructure and provided fish passage along tributaries, inventoried stream and riparian habitat conditions, surveyed fish and mussel populations, established enclosure fences and improved grazing management, and in 2020, with the financial help of WNTI, constructed a concrete fish barrier. The newly constructed barrier secured 48 miles of high-quality, interconnected habitat capable of supporting up to 30,000 native trout. Once completed, this project will significantly exceed the minimum conservation requirements for habitat and population size (>2500 fish in >5 miles of stream) to ensure the long-term self-sustaining persistence of WCT in the Selway watershed.

This proposal will fund the next step of the Selway Creek Watershed WCT Restoration Project. During this phase of the project, non-native fish species will be removed from the Selway Creek watershed using the piscicide rotenone. This phase of the project is a critical prerequisite to the re-establishment of a robust genetically diverse and unaltered aboriginal WCT population. Re-establishment of WCT will also benefit a relict conservation population of sensitive Western Pearlshell Mussel, and a new population of Arctic Grayling will be established within the Selway Creek Watershed, resulting in an intact native aquatic assemblage in a publicly accessible drainage that will be featured as an educational example showcasing desired management by the U.S. Forest Service. This project was developed as part of a formal collaborative working group and there will be workshops, tours, interpretive signs, newspaper articles, and technical presentations highlighting this project. This project was recently included in the US Forest Service Show and Shine initiative that showcases important projects by region.

Problem the Project Addresses: Large-scale native fish restoration projects are needed to improve diminished populations and to preserve remaining genetic lineages. Distribution of genetically unaltered Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*; WCT) has declined by 97 percent in the Beaverhead and Red Rock sub-basins, which has resulted in petitions requesting the species be listed under the Endangered Species Act (ESA). To date, listing under ESA has not been warranted because of on-the-ground conservation projects like the one being implemented in Selway Creek. Non-native trout have been identified as the primary factor limiting WCT persistence and our ability to reach conservation goals. Long-term viability is further constrained because most WCT populations are confined to short reaches of headwater streams; on average extant populations are isolated in less than 4 stream miles and lack a migratory life history. Resultantly, reestablishment of meta-populations founded with genetically unaltered aboriginal sources is among the highest interagency conservation priorities. To expand the range and genetic integrity of WCT populations, projects need to recover high-quality habitat for species reintroductions. Western Pearlshell Mussel is an S2 species in Montana that has notably declined statewide, including in Selway Meadows. Because WCT is the preferred intermediate host in pearlshell's reproductive cycle, cutthroat reestablishment is key to expanding and securing its viability in this watershed.

Selway Creek watershed is an opportunity to establish a self-sustaining population of WCT that would address the top conservation concerns outlined above. Since acquiring Selway Meadows in 2007, projects have been completed incrementally to prepare the watershed for reintroduction of WCT. Those projects have improved flood-irrigation infrastructure along tributaries, inventoried stream and riparian habitat conditions, surveyed

fish and mussel populations, established enclosure fences and improved grazing management, and recently, the construction of a fish barrier in 2020, which secured 48 miles of native fish habitat. Once completed, this project, which boasts 48 miles of interconnected habitat and an estimated target population of 30,000 individuals, will significantly exceed the minimum requirements habitat and population requirements to ensure the long-term persistence of WCT in the Selway watershed.

Selway Creek supports one of the few remaining relic populations of Western Pearlshell Mussel (WPM) in SW Montana. Surveys for WPM in Selway Creek indicate that most individuals of the population are more than 50 years old. WPM rely on WCT as its primary host to complete the glochidial life stage of their offspring. The rare occurrence of young WPM is an indication that reproduction has been nominal to non-existent in recent decades and likely caused by the absence of WCT. Western Pearlshell populations have been declining across their range in concert with WCT populations. This project will make the primary host fish available to WPM in the Selway Creek for the first time in decades, ultimately improving the reproductive success of this population.

Additionally, this project will establish a population of Arctic Grayling within the Selway Creek watershed. Though once widespread, indigenous populations of Arctic Grayling in the contiguous 48 states only occur in the Centennial Valley of southwest Montana near Upper Red Rock Lake. This project presents an opportunity to establish a new population of Arctic Grayling outside of the Centennial Valley. Arctic Grayling will be stocked into Selway Lake and the low-gradient segments of Selway Creek while WCT are distributed throughout the watershed.

Objectives: This phase of the project will remove existing population of non-native fish that currently occupy the Selway Creek watershed using the piscicide rotenone. The entire watershed will be treated twice, once in August of 2021 and again in August 2022. Treating twice will ensure that very small individuals and fertilized eggs that do not succumb to the first treatment will be removed.

Hydrologic surveys for discharge and travel time were completed in summer of 2020 concurrent with fish barrier construction. These measurements were used to accurately calculate the amount of rotenone, supplies, and personnel that will be required to successfully complete these treatments. FWP has completed all required Montana Environmental Policy Act (MEPA) analysis and permitting. Staff from the Beaverhead-Deerlodge National Forest and FWP will work in partnership to complete all aspects of the project. Removal of non-natives will follow FWP piscicide policy and American Fisheries Society SOPs for piscicide treatments. The watershed will be broken up by tributary or sets of tributaries and each will be assigned to a qualified treatment manager who is responsible for developing and implementing the rotenone treatment plan for that tributary. Treatments will occur during baseflow periods and prior to spawning periods for brook and brown trout.

Application of rotenone will be done under Montana FWP Certified Pesticide Applicator's Licenses. All required environmental compliance has been completed for the application of rotenone in the Selway Creek watershed. Montana FWP lead to effort to complete an Environmental Assessment as required by the Montana Environmental Policy Act (MEPA) in 2019. All permits required for compliance with the Federal Clean Water Act (404 and 401), Montana Natural Streambed and Land Preservation Act, and the Montana Stream Protection Act (318 and 124) have been obtained.

Partners: This project has been collaboratively developed by a formal Forest Service Collaborative comprised of diverse user groups and will be implemented by a State and Federal partnership with FWP that has already resulted in cost-sharing benefits that make this financially challenging project feasible. The Beaverhead-Deerlodge Forest Working Group is a citizen-based committee of people who represent key interests, geographic balance, and knowledge of the Beaverhead-Deerlodge National Forest. Members represent timber, county commissioners, agriculture/ranching, quiet and motorized recreation, conservation, hunting and fishing, outfitters/guides, and citizen interests. This group identified Selway Meadows as a priority project, with WCT restoration being an integral component.

A regional interagency working group comprised of FWP, U.S. Forest Service, BLM, Montana Trout Unlimited, and The Nature Conservancy prioritized Selway Meadows as its highest priority restoration project in 2016 based on its drainage area and cumulative stream length, anticipated barrier cost, potential restored population size based on contemporary fish abundances, and resiliency to climate change. Since that time, member agencies have been raising funds for barrier design and construction and further developing the project. The Selway Creek fish barrier was constructed during the fall of 2020 at a cost of approximately \$500,000. Additional funding was used to improve or replace irrigation infrastructure, improve channel and

riparian conditions, remove unwanted barriers to fish movement, improve road sediment issues, inventory flow regimes and assess flow timing.

- U.S. Forest Service, Beaverhead-Deerlodge National Forest
- Montana Fish Wildlife and Parks
- Bring Back the Natives program
- Western Native Trout Initiative

Project Monitoring: Re-establishment of a genetically unaltered WCT population in the Selway Creek watershed that is isolated from non-native fishes will define project success. Ultimately, FWP will be responsible for all aspects of population restoration and maintenance and the U.S. Forest Service will be responsible for habitat management; however, the agencies will work in partnership to ensure a viable WCT population persists in high-quality habitat in perpetuity. Similarly, the agencies will collaborate on monitoring. Evaluation of the rotenone treatment effectiveness will be determined using environmental DNA (eDNA) analysis. eDNA samples will be collected at 250-meter intervals throughout the 48 miles of habitat (approximately 310 samples) following the second rotenone treatment. Treatments will continue until all non-native fish are successfully eradicated from the drainage upstream of the barrier. All transferred WCT will be individually genotyped prior to being moved to ensure they are genetically unaltered. Final evaluation of the transferred population will occur by electrofishing to assess distribution and abundance and by analysis of genetic diversity of the re-established population. The population will be considered restored when deemed to be self-sustaining as indicated by evidence of natural reproduction, expanded distribution, increasing abundances, and composition genetically diverse individuals.

Funding Source(s): National Fish Habitat Action Plan

Project cost: \$30,000

Start Date: 08/2021 **Completion Date:** 8/31/2022

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