Middle Fork Rock Creek Fish Passage Reconnection Project

State(s): Montana
Managing Agency/Organization: Trout Unlimited
Type of Organization: Conservation organization (Non-Profit)
Project Status: Ongoing
Project type: WNTI Project
Project action(s): Riparian or In-Stream Habitat Restoration, Barrier Removal, Monitoring, and Education/Outreach**.** This project will restore 0.1 miles of stream, reconnect 25 miles of stream, and remove 2 barriers.
Trout Species Benefitted: Bull Trout, Westslope Cutthroat Trout
Population: Rock Creek, Upper Clark Fork Watershed

Project summary: The Rock Creek watershed is a 600,000-acre drainage area located 20 miles east of Missoula, MT. According to the US Fish and Wildlife Service (USFWS), Rock Creek is a core area for Bull Trout, containing some of the best remaining spawning and rearing habitat and where recovery efforts should be targeted. Rock Creek also supports populations of genetically non-hybridized Westslope Cutthroat Trout. Trout Unlimited (TU) has been working together with Montana Fish, Wildlife, and Parks (FWP), Montana Natural Resource Damage Program (NRDP), USFWS regional staff, the Lolo National Forest, and the Beaverhead-Deerlodge National Forest for over five years in Rock Creek to prioritize and implement fisheries restoration projects. In 2018, TU staff completed the Montana-approved "Rock Creek Watershed Restoration Plan" and "Inventory and Prioritization of Irrigation Diversions in the Rock Creek Watershed" report. In recent years, restoration activities led by TU staff have focused on reconnecting fish passage and restoring habitat in priority stream reaches for Bull Trout and Westslope Cutthroat Trout. The Middle Fork Rock Creek Fish Passage Reconnection Project will reconnect 25 miles of priority native fish spawning habitat in Middle Fork Rock Creek, one of four headwater streams to mainstem Rock Creek and designated critical Bull Trout spawning and rearing habitat. It will also improve fish passage in upper Rock Creek, which is a designated foraging, migratory, and overwintering habitat. The project will remove two fish passage barriers associated with fish entrainment in irrigation ditches by consolidating two major irrigation diversions and screening the combined diversion. Both irrigation diversions have been documented to block downstream fish migration and cause significant entrainment of native fish in the irrigation ditches. In addition, these diversions impact sediment loads, and outdated irrigation delivery infrastructure and inefficient water withdrawals from the diversions reduce streamflows. Project objectives are to enhance streamflows, reconnect fish passage for all life stages of fish in Middle Fork Rock Creek, and improve fish passage in upper mainstem Rock Creek.

Problem the Project Addresses: Rock Creek is renowned as one of Montana's Blue-Ribbon Trout Streams and an important source of cold water and fish recruitment to the Clark Fork River. Radio-telemetry studies have documented the recruitment of Rock Creek Bull Trout and Westslope Cutthroat Trout to a reach of the Clark Fork River, which has been severely impaired from past mining activities. Native Bull Trout and Westslope Cutthroat Trout utilize Rock Creek for overwintering, foraging, and thermal refugia habitat and as migration corridor to access upstream tributary spawning habitat. Evidence of relatively high genetic diversity and gene flow in Rock Creek Bull Trout indicates that this metapopulation is more resilient to climate change and other disruptions in the watershed than other localized populations across the region. Additionally, regional US Forest Service temperature models predict portions of Rock Creek will maintain the coldwater temperatures needed to sustain Bull Trout into the future. Despite this, Bull Trout redd count trends are in decline regionally. The US Fish and Wildlife Service Bull Trout recovery plan for this area lists objectives to minimize demographic threats to Bull Trout by restoring connectivity and streamflows to promote diverse life history strategies and conserve genetic diversity. Connectivity impairments caused by irrigation diversions in Rock Creek limit migratory movements and result in fish entrainment in irrigation ditches. Addressing these passage barriers and reducing fish entrainment in Rock Creek is a priority. Project activities will improve 25 miles of habitat connectivity for Bull Trout. The project activities include upgrading outdated infrastructure and removing existing irrigation infrastructure for two diversions on Rock Creek and Middle Fork Rock Creek, one of four headwater tributaries to Rock Creek and designated critical Bull Trout spawning and rearing habitat. These diversions consist of outdated infrastructure in need of improvement to reduce ditch seepage and eliminate fish entrainment from the lack of fish screen technology on the diversion. Irrigation water withdrawals from the two diversions will be consolidated and diverted into the "Brown ditch" on Rock Creek. Infrastructure for the Brown ditch will be upgraded to improve efficiency of irrigation water management and a fish screen will be installed in the ditch to provide safe passage for all age classes of fish. The Middle Fork "Legrow ditch" diversion will be decommissioned, and the headgate removed, eliminating 2-miles of ditch leakage and evaporation. There are no other known barriers to fish passage on the Middle Fork upstream of the proposed project area. By decommissioning the Legrow ditch diversion and restoring fish passage past the Brown ditch diversion structure, fish migrating from Rock Creek to spawn in the Middle Fork will have

unimpeded access from Rock Creek upstream into Middle Fork headwaters and back downstream again. By improving fish passage connectivity between mainstem Rock Creek and the major spawning tributary of the Middle Fork, this project restored migratory fish passage for Westslope Cutthroat Trout and supports USFWS recovery plan objectives to protect long-term species resiliency by preserving gene flow and genetic diversity for Bull Trout in Rock Creek.

Objectives:

- Remove two fish passage barriers associated with entrainment in irrigation diversions and reconnect 25 miles of habitat connectivity for Bull Trout and Westslope Cutthroat Trout in Middle Fork Rock Creek.
- Consolidate two irrigation diversions into one by upgrading existing infrastructure for the Rock Creek Brown ditch and removing the headgate for the Middle Fork Legrow ditch.
- Install a Farmers Conservation Alliance screen on the combined Rock Creek Brown ditch to provide safe fish passage for all age class fish past the diversion.
- Enhance streamflows in the Middle Fork Rock Creek by improving water delivery efficiency up to 50% through the elimination of two miles of ditch evaporation and seepage from the Middle Fork Legrow Ditch.
- Protect the water savings for 30 years through a Montana Department of Natural Resources and Conservation (DNRC) water right change. Water rights would be changed to instream flow to benefit the Middle Fork Rock Creek fishery.
- Reduce sediment loads and improve riparian vegetation by removing irrigation infrastructure for the Middle Fork Legrow ditch. These actions will restore habitat connectivity for WNTI NFHP priority species populations of native Bull Trout and Westslope Cutthroat Trout.
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Partners:

- Trout Unlimited, WestSlope Chapter
- US Fish and Wildlife Service
- Montana NRDP
- Private Donors and Landowner
- Western Native Trout Initiative

Project Monitoring: TU will enter into a 20-year long-term maintenance and operation agreement with the landowner that will outline responsibilities to be addressed by TU and/or the landowner. An evaluation and monitoring plan for the project has been completed. Progress on restoring Bull Trout and Westslope Cutthroat Trout habitat connectivity will be measured through both individual project monitoring and basin-wide efforts. TU works with FWP and the US Forest Service to track Bull Trout and Westslope Cutthroat Trout populations on a larger scale. The State of Montana coordinates annual Bull Trout redd count surveys throughout the Rock Creek watershed and develops population estimates based on annual electrofishing on mainstem Rock Creek. FWP fisheries biologists utilize this data to assess population trends in the watershed. These data collection efforts provide a baseline for measuring the success of future fisheries restoration efforts. Continual monitoring will allow for adaptive management measures to be identified, and a new strategy and practices implemented, if ongoing fisheries and fish screen monitoring indicate the approaches applied in this project are not benefitting Bull Trout and Westslope Cutthroat Trout populations in the watershed.

Funding Source(s): National Fish Habitat Action Plan
Project cost: WNTI $50,000, Total $395,577
Start Date: 05/01/2023 **Completion Date:** 12/31/2024
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