

## Rock Creek Greenback Recovery Program Phases 3&4

**State(s):** Colorado

**Managing Agency/Organization:** Trout Unlimited

**Type of Organization:** Nonprofit

**Project Status:** Underway

**Project type:** WNTI Project

**Project action(s):** Construction of temporary and permanent fish passage barriers; Establishment of metapopulation and reconnection of 7 miles of stream

**Trout species benefitted:** Greenback Cutthroat Trout

**Population:** Rock Creek, tributary to Tarryall Creek - South Platte Watershed

**Project summary:** The Rock Creek watershed offers an important opportunity to restore the Greenback Cutthroat Trout to a portion of their native range in the upper South Platte basin. This project will create a connected population across Rock Creek and its tributary Black Canyon, eliminate whirling disease from a portion of the drainage where it is established, and provide 7 stream miles for a metapopulation of native trout on a combination of private land and National Forest. The project includes an innovative approach to intermediate barriers - featuring two temporary barriers that can be removed and replaced as needed, along with one permanent barrier at the downstream end of the project reach. The intermediate barriers can isolate, when needed, portions of the watershed to prevent the spread of both non-native trout and whirling disease, while being removable when such risks are eliminated to restore fish movement within the watershed. The project also represents a unique opportunity to work with a highly committed landowner with specific fisheries interest and expertise.

**Problem the Project Addresses:** The Greenback Cutthroat Trout (GBCT) is federally listed as a threatened species under the Endangered Species Act. The U.S. Fish and Wildlife Service is reviewing its listing decision based on newer genetic information, which revealed that many populations once thought to be GBCT were actually Colorado basin origin. GBCT had been reduced to one wild, self-sustaining population in Bear Creek near Colorado Springs - outside of its native range. The Rock Creek project is part of an ongoing effort to replicate this unique native trout in multiple suitable habitats across its historic range so that the species becomes less vulnerable to localized extirpation that could result from wildfire or similar disturbances. Historically, GBCT occupied coldwater habitats across the South Platte basin in Colorado and possibly into a small portion of Wyoming; within that range it is now limited to a wild broodstock in Zimmerman Lake and two reintroduction sites in the Clear Creek drainage.

Historically, the GBCT lost its foothold within its native range due to habitat loss and fragmentation and hybridization with and competition from non-native salmonids. Restoration within its range is also hampered by the prevalence of whirling disease, an introduced parasitic infection to which young GBCT are highly vulnerable - limiting or preventing successful recruitment within habitats where whirling disease occurs. Habitat in Rock Creek and Black Canyon is generally in good condition, including sections well-protected within the Lost Creek Wilderness. A cherry-stem road by the wilderness and associated dispersed campsites have created some impacts along portions of Rock Creek, and the U.S. Forest Service is in the process of decommissioning that road and rehabilitating the impacted area. Unfortunately, the lower portions of Rock Creek (including the Triple Creek Ranch) now harbor the whirling disease parasite.

Whirling disease is a two stage host parasite that affects the survival of juvenile trout by deforming their cartilage before it hardens to bone. The parasite develops spores within fish, which in turn infect the alternate host, the tubifex worm. Within the worm, the parasite develops a buoyant spore form which is released into the water where it can then infect trout. To eradicate whirling disease from an environment, one must remove one of its required hosts - fish or worm - for a period of time in which the parasite completes its life cycle without being able to re-infect the absent host. Colorado Parks and Wildlife biologists completed a successful research project to eradicate the disease by removing fish for a multi-year period. We propose to apply that approach to the Rock Creek drainage in order to both secure a valuable seven miles of habitat for GBCT and to demonstrate the viability of disease eradication in opening up new habitats for future GBCT restoration elsewhere within the South Platte basin.

**Objectives:** This project will directly increase habitat availability for recovery population(s) of GBCT located in the Rock Creek/Black Canyon drainage, securing approximately seven miles of total habitat. Just as significantly, the project will provide for connectivity across the watershed, thereby improving the resiliency of the population. Finally, it will serve as a model for the use of combination fish barriers/passage structures that can facilitate restoration and long-term protection of watersheds in the face of ongoing risk from downstream introduction of whirling disease and/or non-native fish. The Rock Creek program has been

broken down into four phases, of which this project supports the final two phases. Phase I entailed reclamation and reintroduction above a natural barrier, while Phase II included installation of a combination barrier/fish passage structure on Rock Creek on the Triple Creek Ranch. Phase III is installation of a second combination barrier/fish passage structure on Black Canyon, and Phase IV is installation of the large, permanent barrier at the downstream end of the project area.

While barrier construction is straightforward, long-term implementation is complicated by the presence of whirling disease in the lower reaches of Rock Creek. Project proponents plan to eradicate the parasite from the stream by keeping these reaches fishless until the parasite dies off for lack of a suitable (fish) host by which to continue its life cycle. To verify the absence of the parasite, Colorado Parks and Wildlife will use sentinel fish cages to expose fish and then test them to determine if they have become infected. Once sentinel fish testing confirms the stream to be free of whirling disease, GBCT will be reintroduced.

The Phase III Black Canyon barrier and Phase II Rock Creek barrier (already completed) are both intended to serve as combination barriers and fish passage structures. Originally they will function as barriers as manageably sized reclamation projects are completed above them, whirling disease is eradicated, and GBCT are reintroduced. When the full area is restored with GBCT, the barriers can be removed to enable fish passage and reconnect the system. However, the basic structures will be retained in place - enabling managers to reinsert the barriers should downstream areas be compromised by non-native fish or reintroduction of disease thus protecting the upstream reaches while recovery actions are taken in the bottom-most reach. The flexibility of this approach helps provide the benefits of a reconnected watershed while maintaining the ability if needed to re-isolate and protect headwaters reaches.

**Partners:**

- Colorado Trout Unlimited
- U.S. Forest Service – Pike and San Isabel National Forests
- U.S. Fish and Wildlife Service
- Colorado Parks and Wildlife
- Private landowner

**Project Monitoring:** Success for this project will be measured through multiple phases: (1) the temporary and permanent fish barriers are installed and functioning as a fully successful block to upstream migration by non-native fish; (2) all non-native fish species are successfully removed from the waters above the barrier; (3) whirling disease is eradicated from the lower reaches of Rock Creek; and (4) GBCT are successfully established throughout the project area, enabling conversion of the temporary barriers to re-open fish passage.

After barrier construction and subsequent removal of non-native fish species, the stream reaches will be surveyed to ensure the successful removal of the non-native fish species (and that no upstream migration has occurred). If non-native fish are found during this monitoring period, additional reclamation treatments will be completed until all non-native fish are removed from the stream. As previously described, sentinel fish monitoring will be used to determine the successful eradication of whirling disease from the project area. Finally, following reintroduction of GBCT throughout the project area, regular fish population monitoring will be used to evaluate the populations and verify successful recruitment and persistence of the GBCT. Colorado Parks and Wildlife will lead monitoring efforts, working in partnership with the U.S. Forest Service. Colorado Trout Unlimited volunteers will assist with these efforts where and as needed. Through this ongoing monitoring, the partners will track long- term success for the project - and if needed, identify any problems that emerge and must be addressed through further conservation actions including, if necessary, temporary reinstallation of the intermediate fish barriers on Rock Creek and/or Black Canyon.

**Funding Source(s):** National Fish Habitat Action Plan

**Project cost:** \$25,000

**Start Date:** 09/01/2018 **Completion Date:** 12/31/2019

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