



Memorandum

To: Cole Brittain, US Fish and Wildlife Service

CC: Therese Thompson, Western Native Trout Initiative

From: Luke Laurita, Trout Unlimited

Re: Final Report – Clear Fork of East Muddy Creek Cutthroat
Restoration Barrier Project, Grant F23AC01498-00

Date: December 28, 2023

Project Description:

In the early 2000's brook trout (*Salvelinus fontinalis*) were inadvertently stocked into the Clear Fork of Muddy Creek. The presence of brook trout in the system has severely impacted the distribution and survival of the native cutthroat. Currently, Colorado River Cutthroat Trout (CRCT) only persist in the upper reaches of the watershed, protected by natural barriers. To restore the once robust meta-population of native green lineage CRCT in the Paonia Ranger District of the Grand Mesa, Uncompahgre and Gunnison National Forest (GMUG NF), Trout Unlimited (TU) constructed an artificial stream migration barrier. The barrier will facilitate the restoration and future protection of green lineage CRCT in approximately 13 miles of the Clear Fork of Muddy Creek in SW Colorado.

Project Goals and Objectives:

Phase 1: Construction

The first phase of the Clear Fork Cutthroat Trout Restoration Project consisted of constructing an in-stream velocity barrier that will prevent upwards migration of non-native fishes in the stream reach. Construction was completed in December 2023 and preliminary inspections have yielded the project a success.

Phase 2: Evaluation of Barrier Function

In 2024, project partners including Colorado Parks and Wildlife, USFS and others will conduct evaluations of the barrier function to ensure project success. Reclamation of disturbance at the site will be evaluated and remedied if necessary.

Phase 3: Reclamation of native fish Community

Following barrier construction, the reclamation component of the project will remove brook trout from approximately 13 miles of the Clear Fork Muddy drainage via the application of rotenone, leaving only the tributary CRCT populations that are isolated by natural barriers. The reclamation phase is planned the year after the barrier is installed, pending summer of 2024 or 2025. Following the reclamation, juvenile CRCT will be relocated from the isolated headwaters to recolonize the mainstem. This approach should lead to the establishment of a genetically pure and diverse population of CRCT that can be used as a stocking source for CRCT restoration project in the nearby geographical area. In addition to CRCT, mottled sculpin (*Cottus bairdi*) will be restocked from downstream sources to restore the native aquatic community above the barrier after the removal phase.

Project Budget and Matching Contributions: Construction

Expenditures

Cash Expenses	Total
Construction and Materials Expense: Fish Barrier	\$507,950
Construction and Materials Expense: Upstream Road Stabilization	\$217,012
Total	\$724,962

Partner Contributions - \$821,667 Total Cash

Partner	Cash	In-Kind
USFS / TU Partnership Agreements	\$411,650	
Fresh Water Life	\$55,000	
Colorado Parks and Wildlife	\$118,000	
Running Rivers	\$30,000	
Trout and Salmon Foundation	\$5,000	
Gunnison Gorge Anglers	\$15,031	
Grand Valley Anglers	\$5,000	
Colorado River District	\$50,000	
Trout Unlimited	\$95,346	
Ross Reels	\$12,000	
WNTI	\$24,640	
Total	\$821,667	

Funds from the Western Native Trout Initiative were used for construction of the fish migration barrier and TU indirect.

Project Outcomes:

Construction of the fish migration barrier and upstream road stabilization were completed in December 2023. Engineer inspection of the structure yielded only minor issues with cracks and small holes in the concrete and will be evaluated again in spring 2024.

Milestones:

Upstream Gabion basket removal and installation of integrated concrete mattresses to protect an administrative USFS road and natural gas pipeline. This road stabilization is crucial to the barriers function to not allow high flows to erode the road and bypass the fish barrier.





Concrete forms and pour for fish barrier









Future Project Work

The reclamation component of the project will remove brook trout from approximately 13 miles of the Clear Fork Muddy drainage via the application of rotenone, leaving only the tributary CRCT populations that are isolated by natural barriers. The reclamation phase is planned the year after the barrier is installed, pending summer of 2024 or 2025. Following the reclamation, juvenile CRCT will be relocated from the isolated headwaters to recolonize the mainstem. This approach should lead to the establishment of a genetically pure and diverse population of CRCT that can be used as a stocking source for CRCT restoration project in the nearby geographical area. In addition to CRCT, mottled sculpin (*Cottus bairdi*) will be restocked from downstream sources to restore the native aquatic community above the barrier after the removal phase. Downstream reaches of Clear Fork Muddy Creek contain native populations of bluehead sucker (*Catostomus discobolus*) and flannelmouth sucker (*Catostomus latipinnis*). By collaborating with a broad stakeholder group and outreach to neighboring landowners, this project may create the opportunity to enhance populations of all these species in a future reclamation project by restoring the native transition zone aquatic community.

The performance of the barrier will be monitored by TU and partners through a variety of flow conditions to ensure that it is performing properly and will successfully prevent fish from passing the barrier. Once the barrier monitoring is completed, Colorado Parks and Wildlife will proceed with the chemical treatment and removal on Clear Fork and tributaries above the barrier. In months and years following the barrier construction and removal of non-native fish, TU volunteers and staff along with Forest Service staff will assess the barrier and the surrounding areas. Photos of the site will be taken at varying flow levels and damage to the structure or to the surrounding area. CPW and partners will continue to monitor the

population of green lineage trout for project success and continue surveys to make sure non-native brook trout have not reentered the system. This will include monitoring and surveying the entire 13 miles of restored habitat. TU and the Forest Service will work together to organize volunteers to work on the project and we will document all volunteer activities. After project completion, the Forest Service will put out a news release highlighting project success and partner and volunteer contributions.

Partnerships for this Project

The partnership web and collaborative nature of this project is substantial. The project was spearheaded by GMUG Forest Service staff who created initial design and selected preliminary location for the barrier. Colorado Parks and Wildlife were brought on to develop a plan for removal of non-native trout and to bring real funding to the project. Trout Unlimited staff has contributed funding, fund raising support, prepared conceptual designs, assisted in selection of alternative sites for the barrier, contacted landowners and water users and evaluating water rights issues. Local TU chapters are involved by providing funding for construction pledging future assistance as needed. The Forest Service has provided much needed support by surveying barrier location and raising funding. Running Rivers has generously pledged cash match and volunteered to assist with restoration efforts. Freshwater Life has been a great partner in securing funding and can help with public outreach for the project. Ross Reels will contribute proceeds from their native reel project. The construction and restoration phases will certainly include a wide array of partners working together on the ground. Neighboring landowners and recreationalists and other public land users will be informed about the project and its need during and after the project.