

## Tincup Creek Stream Restoration Project, Phase 2

**State(s):** Idaho

**Managing Agency/Organization:** Trout Unlimited

**Type of Organization:** Nonprofit

**Project Status:** Underway

**Project type:** WNTI Project

**Project action(s):** Riparian or Instream Habitat Restoration, Monitoring, Education/Outreach

**Trout species benefitted:** Yellowstone Cutthroat Trout

**Population:** Salt River

**Project summary:** The Tincup Creek Stream Restoration project will improve riparian conditions and habitat for Yellowstone Cutthroat Trout (YCT), northern leatherside chub, boreal toad, western pearl shell mussels and bluehead suckers. These are all native species with special management emphasis. Because of the assemblage of these native species, indicating a high priority area for conservation, and the degraded yet recoverable nature of this system, Trout Unlimited (TU) and the USDA Caribou-Targhee National Forest (USFS) have chosen to focus their efforts here. The primary cause for the degraded state of the stream has been linked to aerial spraying of willows in 1956, which precipitated the subsequent unraveling of the stream system. Project proponents believe this stream is poised to be successfully restored to prespraying conditions and will accomplish this long-term vision of restoration for YCT and other native species by focusing on restoring channel and floodplain function and processes through this multi-year project. Primary restoration methods will include: restoring eroding meander bends using bioengineering techniques, reconnecting old meanders, and raising riffle elevations.

**Problem the Project Addresses:** The ecosystem function and habitat in Tincup Creek within the project area has been impaired and degraded for over 60 years. A review of historical aerial photos and on-the-ground knowledge shows a system that was very much intact in 1953 as primarily a single-thread channel with a high density of willows. In 1956, aerial spraying conducted in the drainage eliminated a majority of the willows. Remnants of the historic channel indicate historic bank full widths of 15 feet, versus bank full widths of up to 30 feet found currently. The 1976 photos show a stream that became a braided, over-widened gravel bed system, while willows gradually returned. Currently, the willow community has greatly recovered. However, there are lingering effects to the system that will take decades to recover without restoration or intervention. The evidence of this degradation is the many outside meander bends that are raw, vertical and eroding, rather than stabilized by willows. Further adding to the impairment is the loss of channel length due to meander cutoffs, the resulting steepening of the gradient, and the 1 to 3 foot downcutting of the channel, leading to an unhealthy, disconnected floodplain and riparian zone. While habitat is slowly recovering since 1956, recovery is intermittent. Eroding outside meander bends, loss of meander bends due to channel instability, and resultant downcutting are all unlikely to heal within the next 100 years without intervention. At the same time, the system is not so greatly impaired that the native species populations are lost or unrecoverable. Throughout the project area, there are short sections of intact habitat that provide reference reaches and an indication of how the stream formerly functioned. Project partners believe they have identified the reason for the degradation and instability in the system, and are therefore confident that they can be successfully addressed, resulting in restored and improved habitat.

The present habitat is extremely lacking in complexity, as it is over-widened and devoid of stabilizing willow cover on many of the outside meanders, which are migrating faster than point bars can develop and vegetate. Multiple-pass electrofishing surveys of 115 meter units averaged 3.7 native YCT >100mm per unit. Mainly larger trout were sampled, indicating poor rearing habitat and recruitment due to a lack of habitat complexity that likely also disproportionately affects smaller native non-game fishes like northern leatherside chub. Fine sediment is abundant in the lower reaches of the project. Restoration treatments will address these issues.

This project is not being designed to stabilize the stream in place, but rather to re-elevate it to restore the functions and processes that make for healthy habitat, floodplains and riparian zones. By focusing on restoring floodplain connectivity, proper channel dimensions, and old meanders, using native willows and sod as well as imported wood, habitat for native species will be improved.

**Objectives:** The project's goals are to restore stream processes and function, so that all parts of the aquatic system are able to interact with each other. By setting the system up to function properly, habitat complexity will increase through time and will promote a diverse native species assemblage including all life stages of YCT, northern leatherside chub, boreal toad, western pearl shell mussels and bluehead suckers.

- Objective 1: re-elevate the stream so it is reconnected to the floodplain by elevating riffles, narrowing the channel, and decreasing slope by reconnecting meander cutoffs.
- Objective 2: restore eroding banks by re-sloping them and planting whole willow clumps and sod mats. Currently bank stability is rated at 61%; a target of 80% streambank stability has been set for sediment reduction.
- Objective 3: improve habitat complexity for the benefit of all native species in the project area through the above techniques as well as by incorporating large woody debris into meander cutoff plugs, leaving connected backwater channels when restoring meanders, creating or connecting off-channel ponds, and encouraging beaver dams for more frequent overland flow during runoff.

Phase 2 – 2018 deliverables:

- 1.1 miles of channel to be elevated and treated.
- 6 historic meanders to be reconnected, adding an additional 0.5 miles channel length.
- Upper cattle pasture to be fenced to exclude cattle use for at least 10 years.
- 175 large trees to be placed to improve stability and habitat complexity.

Phase I of this project was co-funded in 2017 by the Western Native Trout Initiative and the Desert Fish Habitat Partnership.

**Partners:**

- Trout Unlimited
- U.S. Forest Service – Caribou-Targhee National Forest
- Idaho Department of Fish and Game
- Idaho Department of Transportation
- Caribou County Road and Bridge
- Jackson Hole TU chapter Embrace-A-Stream
- Jackson Hole One Fly Foundation

**Project Monitoring:** The monitoring plan includes the following: In 2017, USFS and IDFG conducted pre-project habitat and fish monitoring, with three sampling units established within the Phase 1 reach. Three representative sampling units outside of the project area were also established – two upstream and one downstream. For Phase 2, additional sampling units will be established in 2018 before the start of the project. Repetition of these surveys 2 years after completion of the full project will be used to determine species’ response. Past population surveys for YCT (2016); northern leatherside chub (2015); and western pearl shell mussel (2016) may also be referenced. Project partners project a 4-fold increase in trout numbers and a doubling of the leatherside chub population estimate. Aerial photography comparisons were used for project design and planning, and will be used again to determine post-project changes in stream length and plan. Cross-sectional and longitudinal stream profiles used in design will also be repeated post-project to measure changes. Photo points will be established prior, during, and post-project implementation to show vegetation and channel changes, including comparison of stream recovery in fenced vs. non-fenced areas. Pre- and post- project drone monitoring will also be used to show vegetation and channel changes. Responsibility for long-term maintenance and monitoring of the project is with the U.S. Forest Service, with in-kind assistance from Idaho Department of Fish and Game and Trout Unlimited.

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

**Project cost:** \$32,932

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

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