

Tincup Creek Stream Restoration

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 sucker. These are all native species with special management emphasis. Because of the assemblage of these native species, and the degraded yet recoverable nature of this system, Trout Unlimited (TU) and the Caribou-Targhee National Forest (CTNF) have chosen to focus our 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. We believe this stream is poised to be successfully restored to pre-spraying conditions. We propose to accomplish this long-term vision of restoration for YCT and other native species by focusing on restoring channel and floodplain function and processes. Primary restoration methods will include: restoring eroding meander bends using bioengineering techniques, reconnecting old meanders, and raising riffle elevations.

Problem the Project Addresses: 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. Photos from 1976 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 being 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 (Figure 2) 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 trout >100mm per unit. Mainly larger trout were sampled, indicating poor rearing habitat and recruitment due to a lack of habitat complexity that likely also affects smaller native non-game fishes. 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 objectives are to restore floodplain and channel processes and function, so that all parts of this aquatic system will be able to interact with each other. By setting the system up to function properly, habitat complexity will increase through time and will promote all life stages of YCT and a diverse native species assemblage.

The primary objective will be to re-elevate the stream so it is reconnected to the floodplain. This will be accomplished by elevating riffles, narrowing the channel, and decreasing slope by reconnecting meander cutoffs. The secondary objective will be to restore eroding banks by re-sloping them and planting whole

willow clumps and sod mats. The third objective is to improve habitat complexity. Beyond the two previous objectives, this will be done by incorporating large woody debris into meander cutoff plugs, leaving connected backwater channels as part of meander restoration, creating or connecting off-channel ponds, and encouraging beaver dams to once again cause more frequent overland flow during runoff. Increased complexity will benefit all native fish species found in the project area.

This project is also complementary to the goals of the Conservation Agreement for Yellowstone Cutthroat Trout (2009) as signed by state and federal agencies. Mainly, this project will maintain and enhance a population of pure YCT. It will also secure and enhance watershed conditions by restoring aquatic and riparian habitat.

Partners:

- Trout Unlimited
- Agrium
- Snake River Cutthroats TU Chapter
- Jackson Hole TU Chapter
- Idaho Department Fish and Game
- Jackson Hole Onefly
- Caribou-Targhee National Forest
- Desert Fish Habitat Partnership

Project Monitoring: The monitoring plan contains the following: baseline population surveys for Yellowstone cutthroat trout, 3 sites with multiple-pass depletion (2016); northern leatherside chub mark-recapture study (2015); and western pearl shell mussel surveys (2016). Repetition of these surveys post-project completion will be used to determine species' response. As part of project design and planning, aerial photography comparisons were used. Aerial photography comparisons will be used 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. The Idaho Fish and Game Department (IDFG) has expressed interest in assisting with the monitoring.

Funding Source(s): National Fish Habitat Action Plan (co-funded by WNTI and Desert Fish Habitat Partnership)

Project cost: \$40,000.00

Start Date: 08/01/2017 **Completion Date:** 9/30/2019

Project Contacts: Leslie Steen, Snake River Headwaters Project Manager, Trout Unlimited 307.699.1022