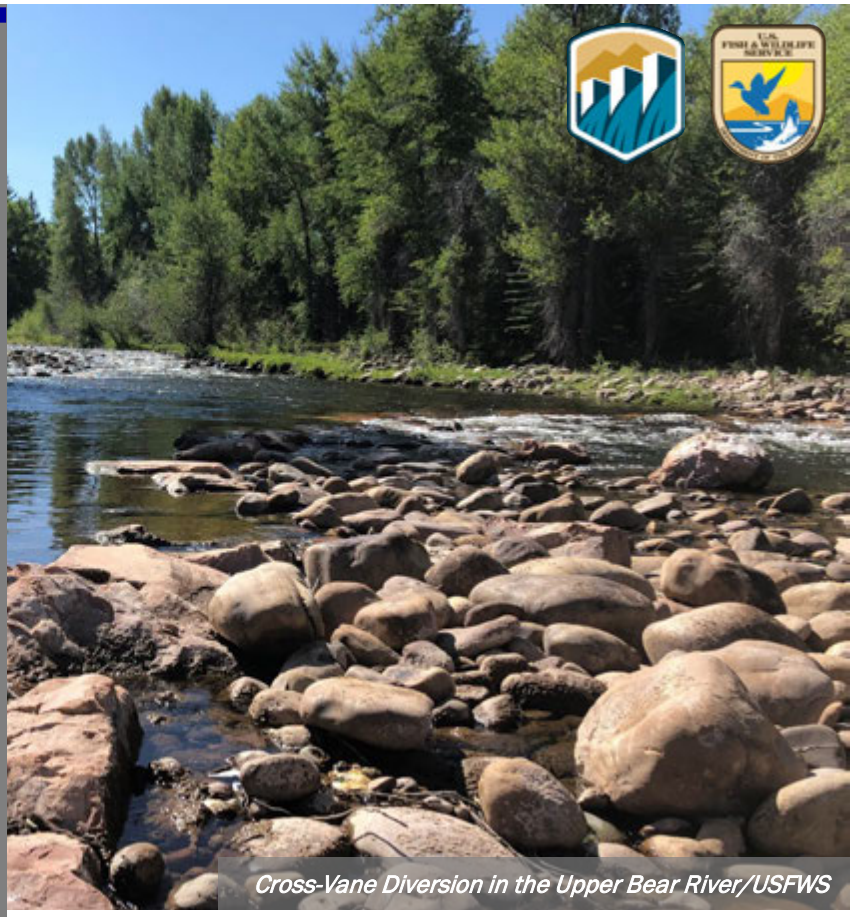
RESTORATION

Watershed-Level Restoration for Landowners and Native Fish in the Bear River

Numerous gravel push-up dams (river substrate berms) are used as irrigation diversions on the Upper Bear River from the Uinta Mountains in Utah, downstream to Woodruff Narrows Reservoir in Wyoming. The river is home to several native fishes, but the distribution and abundance of these species have declined. In the last decade, landowners and conservation partners have teamed up to increase restoration efforts along the Upper Bear River by rebuilding irrigation diversions to improve fish passage conditions and habitat. The team has completed several restoration projects that provide a template for continued collaborative efforts to benefit fish, wildlife, and the local ranching community.



Cross-Vane Diversion in the Upper Bear River/USFWS

KEY ISSUES ADDRESSED

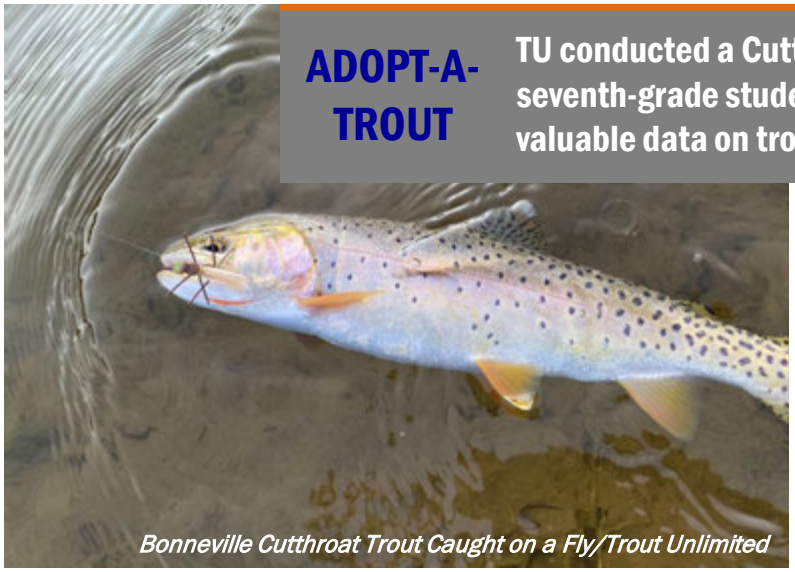
Push-up dams are time and resource intensive for landowners to build and cause several ecological consequences that are difficult to address. Dam construction and maintenance directly degrade fish habitat and dams block passage to critical spawning areas. Push-up dams also increase river instability and erosion, reducing water quality and further degrading habitat conditions for fish and other wildlife. Furthermore, fish that end up in the irrigation canals with the diverted water often perish. Addressing these ecological issues will require collaboration between Utah and Wyoming due to shared jurisdiction over the Upper Bear River that has historically hindered restoration efforts.

PROJECT GOALS

- Improve fish passage by removing barriers
- Assess Cutthroat Trout (*Oncorhynchus clarkii Utah*) movement and migration patterns relative to fish passage barriers
- Engage conservation organizations and the local community in river restoration efforts to benefit landowners and improve habitat conditions for native fish and wildlife

ADOPT-A-TROUT

TU conducted a Cutthroat Trout radio-telemetry study involving local, seventh-grade students who named tagged trout that provided valuable data on trout migration and habitat use.



Bonneville Cutthroat Trout Caught on a Fly/Trout Unlimited

PROJECT HIGHLIGHTS

Stream Restoration and Passage: To enable fish passage, project partners completed several projects using rock cross-vane structures and rock riffles to replace push-up dams and installed fish screens to prevent fish from entering irrigation ditches. These improvements reduced or eliminated the annual use of heavy equipment to construct push-up dams, leading to improved water quality.

Data Collection and Education: From 2011 to 2014, Trout Unlimited (TU) conducted a radio-telemetry study of Cutthroat Trout in the mainstem Bear River. The study provided middle school students with demonstrations on how to radio-tag Cutthroat Trout, sample macroinvertebrates, conduct riparian sampling, and bring data into the classroom to plot fish movement.

Benefits to Wildlife and Landowners: Conservation organizations collaborated with landowners to improve their water diversion structures to meet their water needs and reduce their annual workload. They also improved riparian areas by planting trees and reconnecting to floodplain water flows. These riparian areas provide valuable wildlife habitat.

Collaborators

- Trout Unlimited
- U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program
- See online for additional collaborators

LESSONS LEARNED

Communication among water rights holders and conservation organizations was a crucial element in the restoration of Bear River. TU and the Partners for Fish and Wildlife Program found that one-on-one communications with landowners and water users works better than broader communication venues such as large meetings or the internet. Building long-term relationships with individual landowners was necessary to gain their trust and cooperation.

Landowners responded to conservation partners taking action within 1-3 years rather than large planning efforts requiring 5+ years. Early on-the-ground restoration showed progress and led to landowners and other partners supporting the project, which allowed it to gain momentum.

Understanding Cutthroat Trout movement informed partners on where to focus their restoration efforts. The movement study confirmed that fish moved across private and public lands. Also, trout that migrated had a high probability of being captured in irrigation canals. These findings helped demonstrate the potential for improvement in the river.

NEXT STEPS

- Continue to rebuild irrigation diversions
- Conduct an irrigation canal study to assess fish screen installation priorities
- Identify water-limited sections of Bear River for future flow restoration efforts
- Identify what additional factors influence Cutthroat Trout populations
- Evaluate opportunities to improve Cutthroat Trout passage and spawning habitat in tributaries

For more information on this project, contact Dave Kimble: david_kimble@fws.gov or Jim DeRito: jderito@tu.org

Bear River Partners Discuss Restoration Plans/M. Tesoro

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