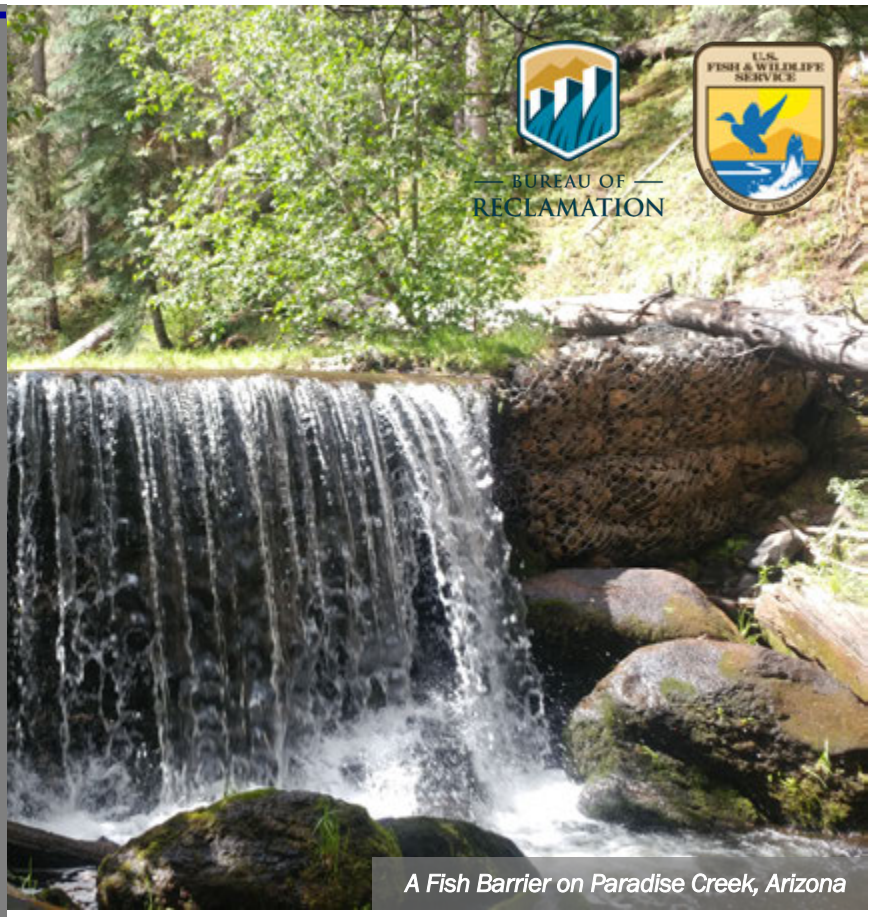
RESTORATION

Working toward Recovery of Apache Trout in the White Mountains of Arizona

The Apache trout (*Oncorhynchus apache*) is found only in the waters of the White Mountains in eastern Arizona. In 1955, the White Mountain Apache Tribe (WMAT) was the first group to implement policy and work toward Apache trout conservation by closing its habitat to fishing on their lands, among other actions. The Apache trout was federally-listed as Endangered in 1967, but downlisted to Threatened in 1975 due to restoration efforts. Currently, the US Fish and Wildlife Service is working with Arizona Department of Game and Fish, WMAT, and the US Forest Service to recover Apache trout populations through stream restoration, captive fish production, and stocking.



A Fish Barrier on Paradise Creek, Arizona

KEY ISSUES ADDRESSED

The decline of the Apache trout was caused by the introduction of non-native trout species and watershed degradation. Logging, reservoir construction, agriculture, road construction, and mining have reduced and damaged habitat. Introduced brown trout and brook trout prey on Apache trout, posing a direct threat to individuals and populations. These species also compete for resources and habitat. Introduced rainbow trout and cutthroat trout interbreed with native Apache trout, creating hybrids that are no longer representative of the natural genetic diversity of Apache trout.

PROJECT GOALS

- Delist the Apache trout after establishing 30 self-sustaining populations of genetically pure Apache trout
- Establish and maintain barriers to keep invasive fish away from recovery populations
- Sustain separate populations for recovery and recreational sport fishing
- Monitor current populations of pure Apache trout

A NATIVE SPORTFISH

A Threatened, rather than Endangered status, allows Apache trout to be managed as a sportfish. This increases stocking opportunities and public support for this highly prized trout species.

Electrofishing Survey for Apache Trout

PROJECT HIGHLIGHTS

Removal of Non-Native Trout: Chemical treatment (e.g. Rotenone) can be used to kill non-native fish in streams that are utilized for Apache trout recovery. However, some land management agencies do not allow chemical treatments on their land and waters. In these cases mechanical removal is necessary. Mechanical removal using electrofishing techniques and then netting the fish can take decades of effort and the overall effectiveness may be uncertain. This method is only used in small streams.

Fish Barriers: Barriers, including natural waterfalls and constructed drop structures are used to keep non-native trout species separate from upstream recovery habitats of Apache trout. The barriers must be able to withstand flooding.

Stocking: Fish are collected from established wild populations by electrofishing and transported to other streams to stock recovery populations. Fish raised at the Williams Creek National Fish Hatchery are stocked in selected locations for sportfishing.

Collaborators

- White Mountain Apache Tribe
- Arizona Game and Fish Department
- US Forest Service

Funding Partners

- US Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program

Lead Author: Leah Wilson, Northern Arizona University, March 2020.
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Photos courtesy of US Fish and Wildlife Service.

LESSONS LEARNED

Barriers must be built tall enough to prevent passage of nonnative fish during high flow events. Concrete barriers are preferable to gabions (wire baskets filled with rocks) because they are less likely to fail. Runoff events following catastrophic wildfires can also result in large sediment flows that compromise fish barriers. Mechanical removal is very difficult. Streams need to be small, shallow, and wadeable to allow complete removal of non-native fish. Mechanical removal must be done yearly as part of an ongoing management plan. Chemical removal is more likely to be successful.

Partnerships have been essential in the recovery of Apache trout. This collaboration has allowed for increased and shared funding for recovery efforts and has resulted in larger teams working on recovery efforts, including non-native trout removal.

NEXT STEPS

- Complete a Species Status Assessment and subsequent 5-Year Status Review to update our biological understanding of the species and forecast future trends for the populations
- Establish a long-term, multi-agency, cooperative management plan
- Eradicate non-native species from key streams, including the West Fork Black River and Bear Wallow Creek

PROJECT RESOURCES

For more information on this project, contact Zac Jackson: zachary_jackson@fws.gov

For additional project resources and case studies, scan the QR code below or visit the CCAST website: WWW.DESERTLCC.ORG/RESOURCE/CCAST

Apache Trout