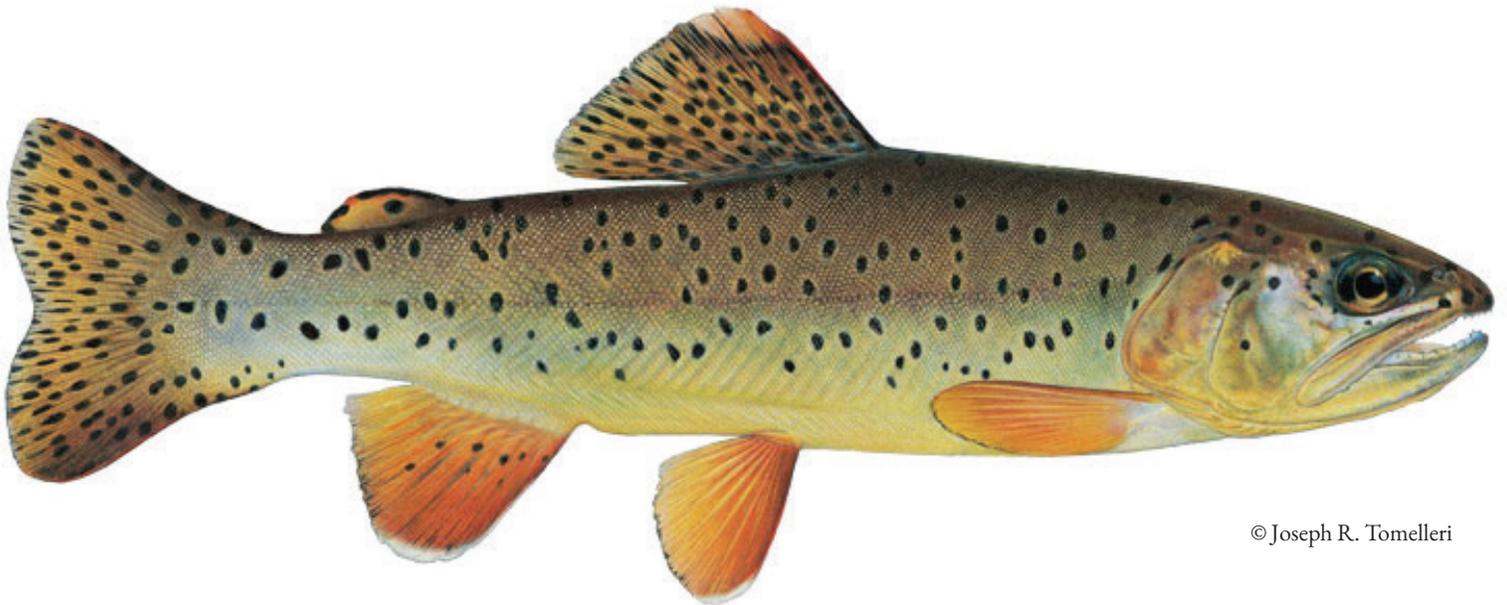


# Apache Trout

*(Oncorhynchus apache)*



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## **Data:**

Apache Trout Recovery Plan, Second Revision (2009); NFWF Apache Trout Business Plan; USFWS Species Status Assessment for the Apache Trout (2022)

## **Partners:**

Arizona Game and Fish Department, U.S. Fish and Wildlife Service, U.S. Forest Service, Trout Unlimited, White Mountain Apache Tribe, San Carlos Apache Tribe, National Fish and Wildlife Foundation

## Introduction

The Apache Trout (*Oncorhynchus apache*) is Arizona’s state fish and one of only two trout species native to Arizona.

The Apache Trout historically occupied streams and rivers in the upper White, Black, and Little Colorado River drainages in the White Mountains of east-central Arizona.

Currently, 30 pure (non-hybridized) Apache Trout populations exist within their historical range in Gila, Apache, and Greenlee counties of Arizona, on lands of the Fort Apache Indian Reservation (FAIR) and Apache-Sitgreaves National Forests (ASNF). Only one stream, North Canyon Creek on the Kaibab Plateau, contains a pure replicate population outside of their historic range.

The Apache Trout was first listed as an Endangered Species on March 11, 1967 (32 FR 4001). It was downlisted to threatened in July 1975 (40 FR 29863, Final Special Rule, 17.44(a)) based on recovery actions and a re-analysis of

data. The down-listing allowed state, tribal, and federal agencies and partners to conduct management actions under the Recovery Plan, regulate take of the species, and establish sport fishing opportunities. The Recovery Plan was completed in 1979 and revised in 1983 and 2009. In September 2024, thanks to decades of conservation efforts led by the White Mountain Apache Tribe Game and Fish Department (WMATGFD), along with partners including the U.S. Fish and Wildlife Service, Arizona Game and Fish Department (AZGFD), U.S. Forest Service, Trout Unlimited, and others, the Apache Trout was removed from the list of endangered and threatened wildlife (i.e., delisted) due to recovery (USFWS, 2024). Apache Trout was the first fish species in Arizona and the first sport fish and trout species to be delisted due to recovery. The USFWS delisting proposal in 2023 was preceded by a 5-year status review and species status assessment completed



*Apache Trout. Photo credit: Arizona Fish and Game Department*

in 2021, which analyzed the best available scientific information. The assessment evaluated the Apache Trout's needs, current condition, and threats, in addition to modeling future scenarios (USFWS 2022).

## Historic and Current Distribution

Historically, Apache Trout occupied streams and rivers in the upper White, Black, and Little Colorado River drainages in the White Mountains of east-central Arizona (Figure 1). Currently, 30 pure (non-hybridized) Apache Trout populations exist within their historical range in Gila, Apache, and Greenlee counties of Arizona, on FAIR lands and the ASNF. Eighteen of the 30 pure populations are relict populations which are lineages that have not been

re-introduced.

Of the 30 existing pure populations, 16 relict populations occur on the FAIR, 1 relict population occurs on both the FAIR and ASNF, 5 replicated populations occur on the FAIR, 5 replicated populations occur in the ASNF (1 of which also occurs on lands of the San Carlos Apache Tribe), 2 replicated populations occur in streams on both the FAIR and ASNF, and 1 replicated population occurs on the Kaibab National Forest. North Canyon Creek contains the only pure replicate population outside of historical range, established from Ord Creek stock in the early 1960s. When the original population in Ord Creek was compromised by Brook Trout, the stream was renovated and replaced with replicated Ord Creek stock from Coyote (ASNF) and North Canyon (Kaibab National Forest) creeks in 1996. Figure 2 identifies the current status of all Apache Trout streams.

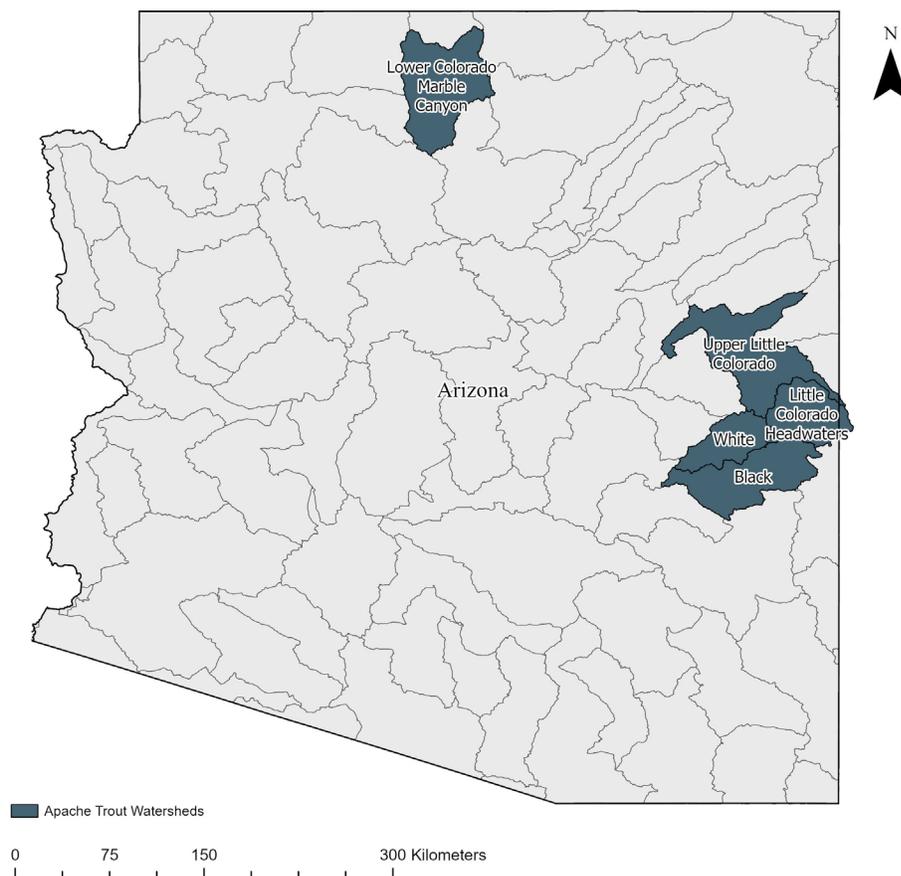


Figure 1. Apache Trout Range in Arizona

## Habitat Requirements

Information concerning specific stream habitat requirements for all life stages of Apache Trout is limited. Apache Trout evolved in streams primarily above 1,800-m elevation, within mixed conifer and ponderosa pine forests. Apache Trout generally require water temperatures below 25 degrees C (77 degrees F) with adequate stream flow and shading to minimize stream temperatures and maintain pools that provide refuge during periods of drought and temperature extremes. Apache Trout require clean coarse gravel substrates for spawning and prefer cover in the form of woody debris, pools, rocks/boulders, undercut streambanks, or overhanging vegetation at stream margins. In addition to suitable water temperatures and available cover, protected streams (or portions thereof) must be free or nearly free of populations of competitive Brown or Brook trouts and free of interbreeding Rainbow or Cutthroat trouts.

## Sportfishing

In 1975, the Apache Trout was one of the first species to be downlisted from endangered to threatened. The downlisting came with a 4(d) rule which allowed the AZGFD and the WMATGFD to selectively establish sport fishing opportunities and regulate methods of take (via angling), possession limits, seasons, and close specific areas to fishing. To prevent over-utilization, the following steps have been taken:

- Streams on FAIR that contain relict lineages of Apache Trout have been closed to fishing since 1955.
- Angling opportunities, methods of take, and harvest of Apache Trout on USFS streams have been addressed by AZGFD by imposing and enforcing restrictive regulations via Arizona Revised Statute (A.R.S.) Title 17. Similar restrictions have been developed and enforced by WMATGFD for FAIR streams. These include maintaining angling and access closures in streams with relict populations and gear/angling method restrictions along with seasonal closures for replicate populations that are open to catch-and-release angling.

- AZGFD and WMATGFD have established several Apache Trout sport fisheries in streams and reservoirs using hatchery-reared fish (from State and Federal hatcheries). These fisheries do not count toward recovery and often have less gear restrictions than recovery populations and allow harvest in concurrence with state or tribal angling regulations in some cases.

## Threats

The main factors in the decline of distribution and abundance have been habitat degradation from human activities such as grazing, agriculture, and associated water withdrawal, competition and predation from non-native trout species, hybridization with introduced Rainbow and Cutthroat trouts, population/habitat loss from rising water temperatures and dewatering due to drought and climate change, and catastrophic wildfire which destroys riparian habitat and results in sedimentation of stream beds and altered thermal and hydrologic regimes. Aquatic invasive species and disease are not currently major threats to Apache Trout but could become threats in the future.

## Habitat Concerns

Apache Trout distribution and population levels decreased primarily because of habitat alterations and negative interactions with non-native salmonids. Land use practices, including logging, livestock grazing, reservoir construction, agriculture, and road construction caused damage to Apache Trout habitat (USFWS 2009). Effects were multi-faceted and included changes to riparian corridors (vegetation) and streambank morphology, increased erosion potential and greater susceptibility of streams to damage from floods (particularly high intensity, short duration events), reduced quantity and quality of spawning and rearing areas, altered stream flow volume and temperature, and negative influences to stream productivity and food supply (e.g., stream dwelling insects). Threats vary in intensity, complexity, and damage depending on location, but ultimately reduce the ability of Apache Trout to persist at all life stages throughout its historical range.

Catastrophic wildfire and its impact to riparian habitat and water quality represents a significant threat to Apache Trout. Large wildfires destroy trees and riparian vegetation that shades streams, resulting in warmer stream temperatures after the burn has subsided. The destruction of this vegetation destabilizes the soil near the stream, causing erosion and siltation during spring runoff and monsoon rains following the fire. Furthermore, this erosion can result in the formation of destructive hydrologic feedback loops such as headcuts, which scour a stream down to underlying bedrock as they migrate up a drainage with successive flood events. Over time, this scouring turns complex stream habitat into shallow bedrock runs that are devoid of suitable fish habitat.

## Introduced Species

Non-native salmonids, such as Rainbow Trout, Cutthroat Trout, Brown Trout, and Brook Trout, were introduced throughout the range of Apache Trout for recreational fishing. Introduction of these species has resulted in competition for resources or habitats, direct predation, and hybridization (Rainbow and Cutthroat trouts). Brown Trout and Brook Trout are predators of Apache Trout as well as competitors for food and space. Such competition has been identified as a cause of the decline of Apache Trout.

## Aquatic Invasive Species

Disease has not been considered a factor in the decline of Apache Trout and was not identified as such at the time of listing. However, the closely related Gila Trout has tested positive for the antigens for Bacterial Kidney Disease (BKD) in low amounts in populations of the upper West Fork Gila River, including Whiskey Creek (USFWS 2003). Bacterial Kidney Disease and other diseases may be present within Apache Trout populations, but there is no evidence of any disease being a significant threat to Apache Trout populations.

Whirling disease is not known to be present in any wild or hatchery population of Apache Trout. However, preliminary results from controlled laboratory testing

confirmed that Apache Trout are highly vulnerable to whirling disease (Jim Thompson, former USFWS Fish Health Specialist, personal communication). Wild fish health surveys are periodically conducted on Apache Trout recovery populations, donor populations, and State and Federal hatchery facilities. To date, disease does not seem to be a significant threat to Apache Trout.

## Genetic Concerns

Continued monitoring of the pure Apache Trout populations is necessary to protect the genetic purity of restored populations in recovery waters. The inadvertent stocking or use of introgressed fish for restoration purposes would compromise the recovery effort.

## Over-utilization

Although not identified as a reason that led to listing in 1969, unregulated harvest of Apache Trout was another factor that contributed to the species decline from the late 1800s to 1950s. Angling opportunities, methods of take, and harvest of Apache Trout on USFS streams have been regulated by AZGFD. Similar restrictions have been developed and enforced by WMAT for FAIR lakes and streams in addition to total fishing and access closures associated with all recovery populations.

AGFD and USFWS monitor and manage collection permits so that damage to populations from scientific collection is prevented or minimized.

# Conservation

Though Apache Trout were removed from the protections of the Endangered Species Act in 2024, all partners recognize that Apache Trout are a conservation reliant species and will require ongoing management into the future. As a result, the Arizona Game and Fish Department, White Mountain Apache Tribe Game and Fish Department, U.S. Fish and Wildlife Service, U.S. Forest Service, and Trout Unlimited signed the Apache Trout Cooperative Management Plan (CMP) in 2021 (Apache Trout CMP Workgroup 2021). It outlines the management actions and step-down activities needed to achieve recovery and provide for long-term management now that the Apache trout is delisted.

## Opportunities and Strategies to Improve Apache Trout Status in Arizona

The management goals identified in the CMP to protect and restore the Apache Trout include:

- Ensure the long-term persistence of the Apache Trout, such that naturally viable populations become established or are maintained to reach recovery and delisting and to maintain a recovered (delisted) status
- Restore and maintain quality instream habitats to ensure spawning, rearing, and adult habitat are in sufficient abundance to allow for viable populations of Apache Trout (sufficient abundance, consistent recruitment), as well as other native non-game species with which they were historically associated

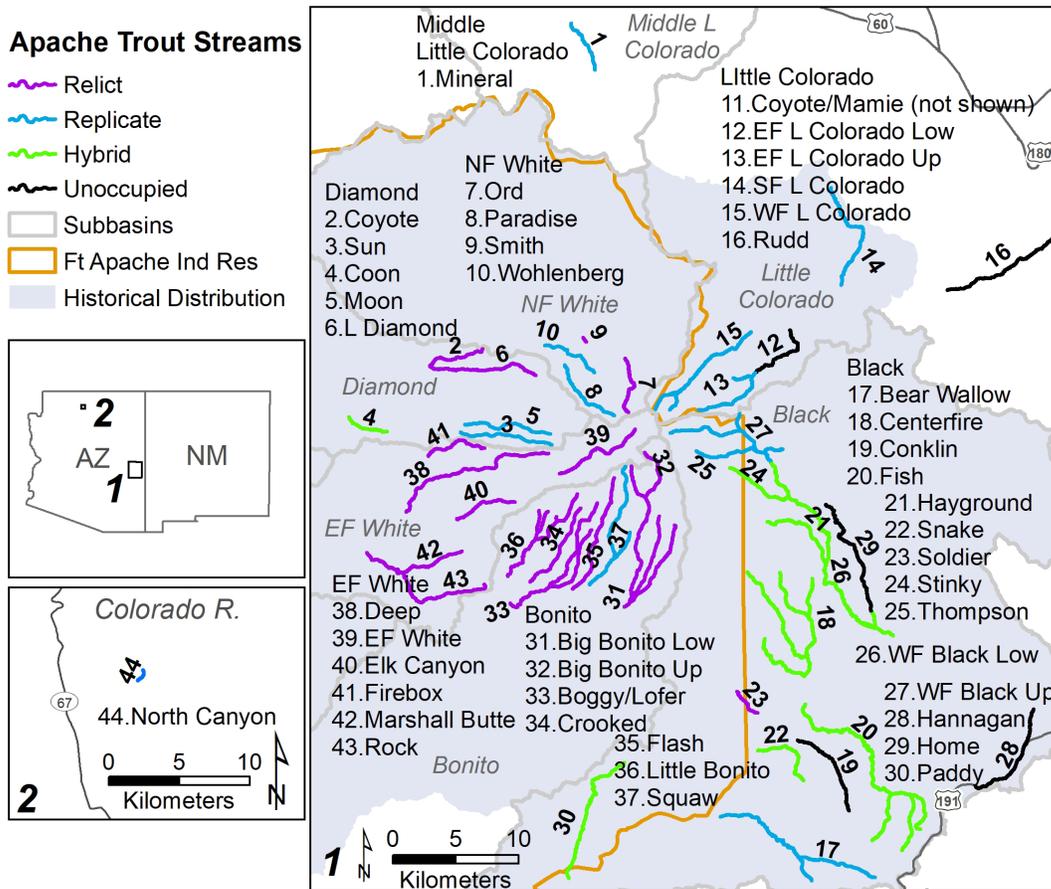


Figure 2. Status of Apache Trout Streams (USFWS 2022)

- For land under the control of the Cooperators, ensure that land management is compatible with functioning watershed conditions that support high-functioning riparian areas, instream habitats, and native fish assemblages
- Provide and enhance sportfishing opportunities for Apache Trout

**Proposed actions identified in the CMP to protect and secure long-term population viability include:**

- Assess, protect, enhance, and maintain habitats sufficient for recovery and long-term conservation of Apache Trout populations that are self-sustaining and genetically pure within the species' historical range
- Complete any required regulatory compliance for fish stocking and stream improvements
- Maintain, improve, establish, or re-establish fish barriers if natural barriers are absent
- Remove or minimize undesirable fishes using piscicides, electrofishing, or other feasible means in invaded Apache Trout populations
- Stock streams with genetically pure Apache Trout
- Salvage and provide refuges for Apache Trout populations that are affected by wildfire, drought, barrier failures, disease, or other threats
- Maintain, restore, or enhance habitat for Apache Trout populations as warranted
- Monitor Apache Trout populations and habitats
- Implement laws and regulations to protect Apache Trout populations and habitat while complying with Federal, State, and Tribal regulatory processes
- Develop, implement, enforce, and evaluate regulations as necessary to maintain self-sustaining Apache Trout populations
- Use regulatory mechanisms, laws, and policies for long-term protection of Apache Trout

## Highest Priority Strategies and Actions for Apache Trout Protection and Conservation

- Refurbish existing fish barriers to secure long-term viability of Apache Trout populations.
- Implement the actions and objectives in the Apache Trout Cooperative Management Plan
- Reestablish pure Apache Trout in recovery streams.
- Monitor populations to determine current status.
- Fish Creek – Install new fish barrier and restock after Wallow Fire effects
- Monitor and maintain effective barriers where needed.

## On-going Partnerships and Joint Ventures

**Apache Trout projects funded through the Bipartisan Infrastructure Law including:**

- 2022 Apache Trout Recovery Fish Passage Infrastructure Project
- 2023 Crooked Creek Route 55 Culvert Fish Passage Project, led by the White Mountain Apache Tribe Game and Fish Department
- The FY2025 Salt and Little Colorado River Basins Fish Passage Project

**Apache Trout Bring Back the Natives Project:**

The Apache Trout Recovery Partnership (FWS, AGFD, Trout Unlimited [TU], WMAT, and FS) worked with TU national to develop a \$271,600 National Fish and Wildlife Foundation grant to conduct Apache Trout restoration, research and education activities. Matching funds from the Arizona Heritage Foundation have added to the effort to restore depleted and extirpated populations and develop robust recreational fisheries (This project has been completed).

## NFWF/TU/USFWS Apache Trout Keystone

### Initiative:

Four key strategies were developed for this Keystone Initiative to address threats to the sustainability of Apache Trout.

- **Metapopulation creation.** The creation of three metapopulations will expand and connect isolated recovery streams, making populations less vulnerable to climatic changes, increase population numbers, and help maintain genetic diversity in populations.
- **Habitat restoration.** Habitat restoration in meadow reaches of small recovery streams will break “invisible barriers,” encouraging use of this habitat by trout and resulting in increased population sizes.
- **Population and habitat assessment and monitoring.** A long-term monitoring plan to assess population and habitat conditions will be developed and implemented.
- **Barrier maintenance and monitoring.** A long-term barrier maintenance and monitoring plan will be developed to ensure recovery streams are protected now and after delisting.

Key Partners: Arizona Game and Fish Department, US Fish and Wildlife Service, US Forest Service, White Mountain Apache Tribe, and Trout Unlimited.

This project was completed in 2018 and cost \$3,979,000.

## WNTI Completed Projects

- Bear Wallow Creek Restoration (2007) - \$95,200
- Conklin Creek Restoration (2008) - \$75,000
- Stinky Creek Restoration (2008) - \$75,000
- Bear Wallow Creek Barrier improvement (2009) - \$27,500
- Wallow Fire Habitat Assessment (2012) - \$40,000
- Arizona’s Apache Trout - Get to Know Your Native (2016) - \$3,000

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This publication was partially funded by Federal Aid to Sportfish Restoration Funds through the U.S. Fish and Wildlife Service, and a grant from the Bureau of Land Management.