

Logging Improves Apache Trout Habitat

Apache Trout (*Oncorhynchus gilae apache*), the official state fish of Arizona, is a beautiful iridescent golden trout with rounded black spots. It was one of the first fish listed as “endangered” in 1966, prior to passage of the Endangered Species Act in 1973. Since 1975 this designation was changed to “threatened” status because an improved knowledge of the range of the species and its potential as a sport-fish. Its native, historic range is exclusively within the White Mountains of Arizona with most of that range located on the Fort Apache Indian Reservation (FAIR), home of the White Mountain Apache Tribe (WMAT). The species was reduced to only 13 populations of pure Apache trout, but as recovery efforts have moved forward, this species has been repatriated in additional streams bringing the total to 28 pure populations.

In 2008, the U.S. Fish and Wildlife Service - Arizona Fish and Wildlife Conservation Office (AZFWCO) in cooperation with the WMAT Wildlife and Outdoor Recreation Department (WORD) saw the need to improve Apache trout habitat in a 2.3 mile section of Firebox Creek located on the FAIR. Firebox Creek is one of the original relict pure-strain populations of Apache trout discovered in the 1970s. Apache trout have survived in the upper mile of headwaters where habitat conditions have remained favorable but have been lost in lower reaches due to drought and lack of pool habitat. Studies and peer-reviewed literature show that Apache trout have a preference for deeper pools with large woody debris (logs), debris piles, and undercut banks. Studies have also shown that introductions of large woody debris improve trout habitat by providing more cover and creating additional pools. Further, large woody debris improves macro-invertebrate numbers, a valuable food source for trout species.

Marty Underwood, AZFWCO Biologist, had used this technique on native brook trout streams back East and thought it would be worthwhile to try this method for Apache trout after WORD and AZFWCO biologists identified the middle reach of Firebox Creek as having insufficient natural recruitment of large woody debris. This finding was supported by the fact the Apache trout were not doing well in this reach as found by Tim Gatewood, WORD Fisheries Biologist: “Sampling studies show a decline of Apache trout in middle Firebox Creek since the early 1990s.” Utilizing Partners for Fish and Wildlife Program funds, WORD planned to cut and move dead-fallen logs nearby the stream with the intent to improve potential Apache trout habitat in this reach. “Our hope is that Apache trout will move into this reach from upstream areas,” says Gatewood.

After further investigation and coordination with BIA Supervisory Forester Ron Miller, the biologists came up with a new more feasible and effective plan. A 216-acre ponderosa pine stand, in need of thinning due to mistletoe infection and tree spacing requirements, provided an easily obtainable source of straight, uniformed sized logs for this habitat improvement project. A silvicultural prescription was written so that trees that were designated for removal were limbed and bucked leaving a 10-foot butt log on the ground for use by the fisheries biologists. Normally, in thinning operations, these

logs are bucked into smaller pieces and scattered, but for this project the butt logs were reserved to benefit Apache trout. The reserved logs were hand-loaded onto a flatbed trailer and transported to Firebox Creek where they were placed in chosen locations along the creek. Approximately 300 of these 10 to 12-inch diameter logs were used in this restoration project. Cursory sampling of this reach of Firebox Creek has already shown the presence of Apache Trout using cover created by the log introductions.

This simple but effective example of cooperation and coordination between WORD, the AZFWCO, and the BIA had many positive dividends. In-stream habitat for a species important to the Tribe, the State, and the Federal Government was greatly improved. The health and vigor of the ponderosa pine stand was enhanced and fuels were reduced with the log removals. Thinning costs were reduced since the removed logs weren't required to be lopped and scattered as is normally practiced. Tribal members were employed on the thinning and restoration efforts and the WMAT was able to demonstrate continued excellent stewardship of their lands and important wildlife species.

Ron Miller is a Supervisory Forester for the Bureau of Indian Affairs Fort Apache Agency. Tim Gatewood is a Fisheries Biologist for the White Mountain Apache Tribe Wildlife and Outdoor Recreation Division. Marty Underwood is a Partners for Wildlife Biologist for the U.S. Fish and Wildlife Service.