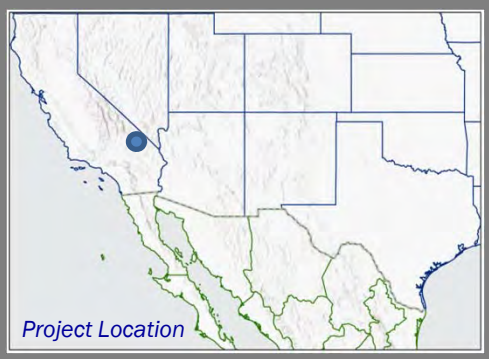
RESTORATION

Creating Refuge for Mohave Tui Chub at Mojave National Preserve

The Mohave tui chub (*Siphateles bicolor mohavensis*) is a federally listed endangered species and the only fish native to the Mojave River. The tui chub no longer occurs in the river, but exists in man-made habitats outside the river's course. At Zzyx on Mojave National Preserve (the Preserve), the Mohave Chub Spring (MC Spring) and Lake Tuendae both contain populations of genetically-pure Mohave tui chub. All transplanted fish populations descend from individuals removed from Lake Tuendae. The Preserve and partners are working to establish and maintain refuges for translocated fish to promote the species' recovery. Translocations to Morning Star Mine pond and restoration of West Pond at the Preserve represent recent efforts to establish populations of Mohave tui chub.



Restored Mohave Tui Chub Habitat at Mojave National Preserve

KEY ISSUES ADDRESSED

When the Mohave tui chub was listed as endangered in 1970, it was near extinction with just four small populations, three of which were introduced populations. Mohave tui chub were historically associated with deep perennial pools with low flow, aquatic plants, and high water quality. Several threats led to their extirpation from the river channel, including predation, competition, and diseases from introduced non-native fish and dewatering of the river due to dams, diversions, and groundwater pumping. Currently approximately 18,500 fish exist at Zzyx and four man-made refuge habitats. The recovery criteria established by the U.S. Fish and Wildlife Service in 1984 require a minimum of six populations of at least 500 fish be established for at least five years and survive one significant flooding event.

PROJECT GOALS

- Identify, restore, and maintain habitat for Mohave tui chub translocations to establish additional populations to promote the species' recovery
- Obtain downlisting from endangered to threatened status

Mohave Tui Chub

STAKEHOLDER WORKSHOP

The Preserve hosted a workshop in 2003 in which representatives from government agencies, academia, and the original recovery team came together to review the current status of Mohave the tui chub and to coordinate recovery management.

PROJECT HIGHLIGHTS

Repurposing a Mine Pit: NPS staff surveyed every perennial water source in the Preserve and identified the pond at Morning Star Mine as a potential translocation site for Mohave tui chub based on its size, water permanence, connection to groundwater, and excellent water quality. Translocations occurred in 2011 with 500+ tui chub each from China Lake and Lake Tuendae populations.

Restoring West Pond: In 2015, project partners undertook an effort to restore the water quality of West Pond on the Preserve to make it suitable for Mohave tui chub translocations. Restoration involved pumping brackish water from the pond and installing a connection from the water supply well to periodically pump fresh water into the pond to maintain low salinity. Native vegetation was also planted along the banks to promote habitat characteristics beneficial for the tui chub.

Youth-Engaged Conservation: In fall 2008, a population of Mohave tui chub was introduced at the Lewis Center for Education Research (the Center) in Apple Valley, California. High school-aged students at the Center have been involved with hands on monitoring activities including trapping, measuring, and populatio studies.

Collaborators and Funding Partners

- California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Naval Air Weapons Station China Lake, California State University-Fullerton, Lewis Center for Education Research, North Dakota State University, Desert Fish Habitat Partnership, Arizona Cooperative Fish and Wildlife Research Unit

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Photos courtesy of Debra Hughson/National Park Service

LESSONS LEARNED

Translocation is working. As of July 2018, all five populations have been in existence for more than 5 years.

Delisting the Mojave tui chub is not currently feasible, but down-listing the fish from endangered to threatened status may be obtainable. One additional population of at least 500 individuals must be successfully established for more than 5 years for downlisting to be considered.

The water quality restoration at West Pond was successful. Dissolved solids decreased after the pumps were installed, indicating increased water quality needed to support translocated fish.

Because of its proximity to MC Spring and Lake Tuendae, West Pond is considered to be the same population as these sites. Therefore, stocking West Pond would not increase the number of total populations according to recovery criteria. However, by increasing genetic diversity and numbers of fish, stocking West Pond would increase resiliency of the overall population and provide a buffer in the case of unforeseen events.

NEXT STEPS

- Continue to monitor existing populations and maintain their habitats while locating and restoring potential translocation sites
- Pending approval, translocate fish to West Pond

PROJECT RESOURCES

For more information on this project, contact Debra Hughson: debra_hughson@nps.gov

For additional project resources and case studies, visit the Collaborative Conservation and Adaptation Strategy Toolbox: WWW.DESERTLCC.ORG/RESOURCE/CCAST

Youth Helping Restore Mohave Tui Chub Habitat