5-YEAR REVIEW

Mohave Tui Chub
(*Gila bicolor mohavensis*)

GENERAL INFORMATION:

Species: Mohave Tui Chub (*Gila bicolor mohavensis*)

Date listed: October 13, 1970

FR citation(s): USFWS 1970 (35 FR 16047)

Classification: Endangered

BACKGROUND:

Most recent status review: USFWS [U.S. Fish and Wildlife Service]. 2009. Mohave tui chub (*Gila bicolor mohavensis = Siphateles bicolor mohavensis*); 5-year Status Review: Summary and evaluation. Ventura Fish and Wildlife Office, Department of the Interior. 29 pp.

FR Notice citation announcing this status review: USFWS 2019 (84 FR 36116); Endangered and Threatened Wildlife and Plants; Initiation of 5-year Status Reviews of 58 Species in California, Nevada, and the Klamath Basin of Oregon; July 26, 2019. Information received was incorporated in the review.

ASSESSMENT:

Information acquired since the last status review:

This 5-year Review was conducted by the USFWS' Carlsbad Fish and Wildlife Office. Data for this review were solicited from interested parties through a *Federal Register* notice announcing this review on July 26, 2019 requesting any data or information we should consider in our review. Additionally, we conducted a literature search and a review of information in our files.

Since the last 5-year review we received additional survey/monitoring reports as well as information from species experts. The results indicate the species and subsequent threats are still present at the three previously known populations at Soda Springs, Camp Cady, and Lark Seep in San Bernardino County, California. The species distribution has expanded since our 2009 5-year review to include a third subpopulation in 2018 (West Pond, formerly Three Bats Pond) at Soda Springs that was extant when the Recovery Plan was written in 1984 (Figure 1). Other refugia habitat are now occupied, including Morning Star Mine Pond (established in 2011) on the Mojave National Preserve, as well as Deppe Pond at the Lewis Center for Educational Research in Apple Valley, California (established in 2008). Currently, all populations are maintained in refugia that require extensive management to control invasive species and to maintain water quality parameters.

Land ownership and existing regulatory mechanisms that help management and recovery for the populations are as follows:

1. Lark Seep - U.S. Navy; Integrated Natural Resources Management Plan and Biological Opinions

2. Soda Springs and Morningstar Mine - National Park Service; Biological Opinions

3. Camp Cady - California Department of Fish and Wildlife; Cooperative Agreement

4. Deppe Pond - Private; 10(a)(1)(A) recovery permit

Threats for Mohave tui chub described in the 2009 5-year review, other than parasitism, have the potential to impact the species in the future, including habitat alteration and loss, predation from nonnative aquatic species, genetic drift, extirpation from stochastic events, and climate change. Although not a threat to current populations, hybridization and competition from arroyo chub (*Gila orcutti*) has been documented, and it is believed this could occur with hitch (*Lavinia exilicauda*). This could affect a number of suitable reestablishment sites, causing major obstacles for establishing new populations. Four of the five populations of Mohave tui chub are located on public lands that include general management plans and all habitat supporting the five populations are extensively managed. However, the long-term sustainability and viability of these populations remain unclear because of uncertainties related to water availability and the need for extensive management in the future. In summary, threats are ongoing at all refugia, even though recovery efforts have established two new populations since the last 5-year review. All of the populations are currently stable, but habitat could be rapidly degraded if water availability or quality diminish. All of the previous attempts at establishing new populations failed in part because of these water related factors. Water related issues for aquatic desert species can be caused by natural and human related factors and can quickly and disproportionately impact the species. This makes tui chub acutely vulnerable to water related activities including excessive groundwater pumping.

Since the last 5-year review, several documents have been completed by the Service to continue management and recovery of the species. The Service also developed an Environmental Assessment (EA), Finding of No Significant Impact (FONSI), and intra-service Biological Opinion in 2011 for establishing new populations; these documents will be used to cover and guide future population establishment.

CONCLUSION:

After reviewing the best available scientific information, we conclude Mohave tui chub remains an endangered species. The evaluation of threats affecting the species under the factors in section 4(a)(1) of the Act and analysis of the status of the species in our 2009 5-year review remains an accurate reflection of the species' current status.

RECOMMENDATIONS FOR FUTURE ACTIONS:

Since listing, efforts have been made to conserve habitat in the five populations currently believed to be extant. Habitat loss and alteration, nonnative predation, genetic drift, extirpation from

stochastic events, and climate change continue to be the major threats. Maintaining, restoring, and conserving habitat has helped conserve the species. Recovery will require stabilizing and managing the five current populations and establishing new populations as described in the Recovery Plan. The biggest hurdle in recovery is establishing new self-sustaining populations that can withstand stochastic events. To be self-sustaining, each population will need to be managed to minimize impacts from inbreeding, predation, and maintain genetic diversity within the population. We have identified these recommendations to aid recovery of the Mohave tui chub:

1. Stabilize existing habitat and potentially establish a new resilient population.

2. Conduct thorough genetic testing to determine genetic diversity at each population.

3. Conduct comprehensive surveys of all populations to obtain current population sizes, density, and trends.

4. Continue to manage existing populations of the Mohave tui chub and their habitats. Identify possible new locations for new populations; assess their likelihood for success; and establish, manage, and monitor all populations.

5. An outreach or public education plan should be developed and implemented to promote the successful establishment of the Mohave tui chub at additional locations including the Mojave River and address ongoing threats including introduction of nonnative fish species.

6. Include the Mojave River watershed in the areas for consideration for establishment of Mohave tui chub populations. This should include tributaries of the Mojave River, including Deep Creek, where the subspecies historically occurred.

7. Develop management plans for each of the existing and future introduced populations of Mohave tui chubs. Management plans would include procedures to address genetic drift; diseases; and standardized monitoring for population and habitat parameters such as population size, population distribution, reproduction, recruitment, unusual mortality, new nonnative species, habitat configuration, and water quality and availability.

8. Conduct research to determine whether the Mohave tui chub hybridizes with other fishes that occur at potential reestablishment sites (i.e. arroyo chub and hitch); if so, determine if the F1 and F2 generations are fertile or sterile.

Lead Field Supervisor, Fish and Wildlife Service

☒ Approve

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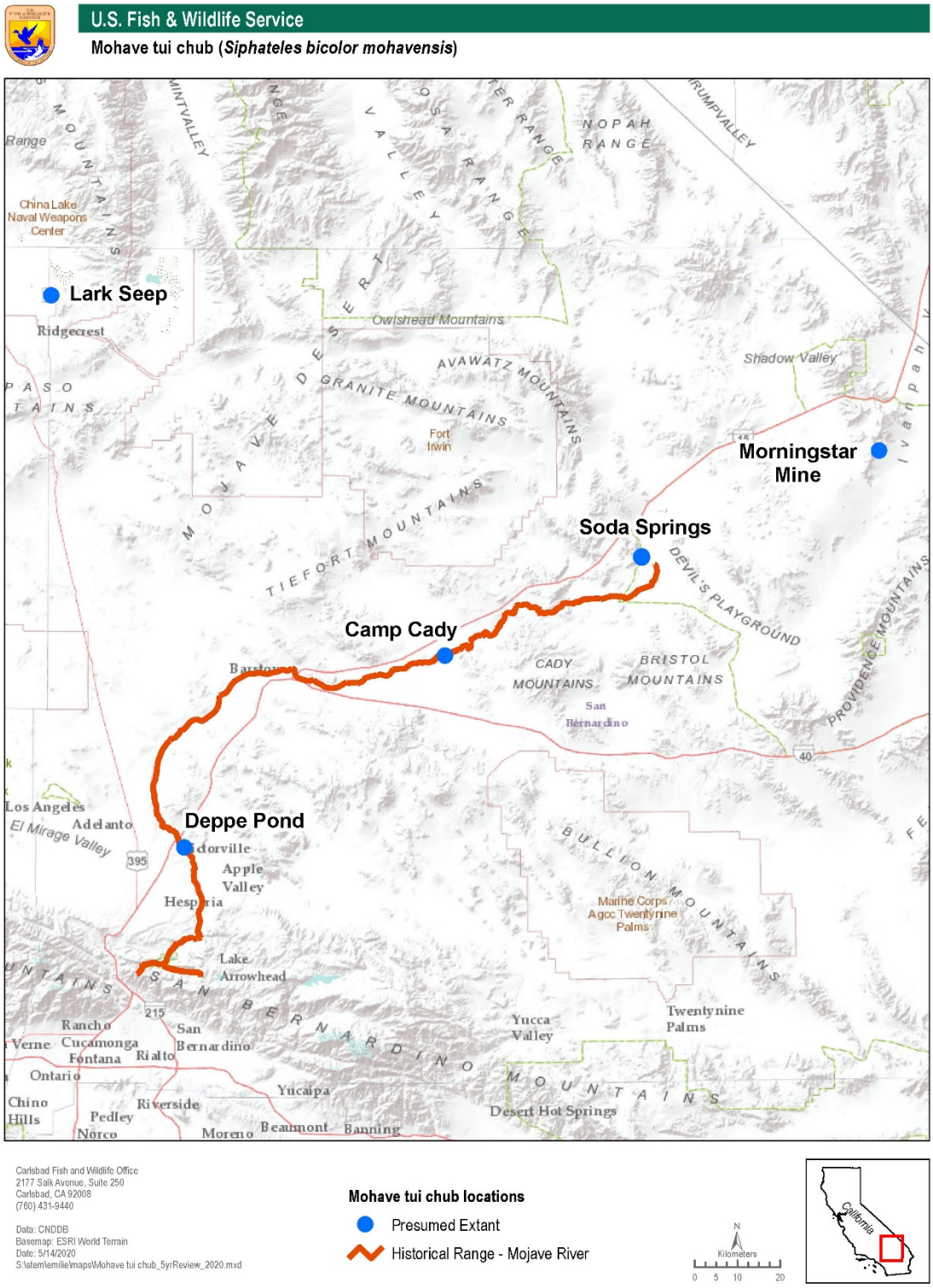

Figure 1. Current and Historical Distribution of Mohave Tui Chub.