Bonytail

ASSESSING HABITAT QUALITY FOR PRIORITY WILDLIFE SPECIES IN COLORADO WETLANDS

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The bonytail (*Gila elegans*, Family *Cyprinidae*) formerly known as bonytail chub, is a critically endangered species that can be found in Mesa and Moffat Counties in Colorado.

continued existence of the MVP. Three additional years of monitoring and sustainability of the MVP will be required for delisting.

Species Distribution

Range

Bonytails formerly ranged throughout the Colorado River Basin but are currently restricted to Mesa and Moffat Counties. They also occur in parts of Arizona, California, Nevada, and Utah. They are extirpated from their historic range in New Mexico and Wyoming.

— Major Rivers
■ Current Native Distribution
■ Extirpated Populations

Known occurrence

Distribution of bonytail in North America and in Colorado. Map of entire range based on data provided by NatureServe. Colorado map based on CPW (2019) and represents the most current information on distribution by 12-digit hydrologic unit codes (HUCs), shown in orange with grey outline. Solid black lines indicate larger 8-digit HUCs.

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Species Description

Identification

Bonytails grow to an average of 14 inches in length and to a maximum of 22 inches. With nuchal humps (behind concave skulls), which develop with maturity, and long thin caudal peduncles, bonytails look highly streamlined. They have a typical countershading pattern of dark above and light below, a presumed anti-predator adaptation. However, they may look dark in clear water and pale in murky water. In general, their coloration is dusky with yellow to red on the fins.

Preferred Habitats

Bonytails are restricted to warm-water reaches of main-stem streams, but they have been found in reservoirs and backwaters of the Colorado and Green Rivers. They are also captive-reared in ponds.

Diet

Bonytails are omnivorous, consuming insects, other aquatic invertebrates, plant material (e.g., leaves, stems, debris, and wood fragments), and small vertebrates, such as fish and amphibians. They feed mostly at night.

Conservation Status

<u>Federal</u>: Listed as Endangered in 1980.
<u>Colorado</u>: Listed as Endangered and designated Tier 1 Species of Greatest Conservation Need.
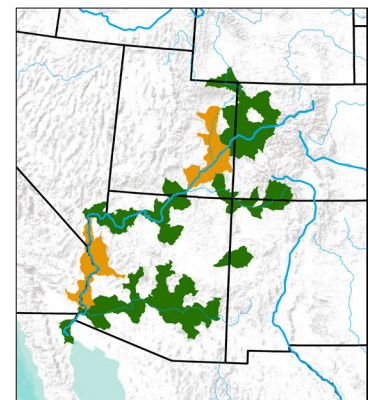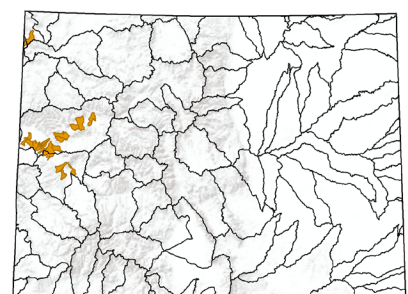
Once widespread, bonytail populations declined sharply after construction of dams that resulted in temperature and flow changes and with introduction of non-native fish that compete with and/or prey upon bonytail. USFWS determined that at least 4,400 individuals are needed for a minimum viable population (MVP). If and when a MVP becomes self-sustaining, a five-year monitoring effort must confirm

Preferred Habitat Conditions

All fish must have connectivity among habitats, suitable for all life cycles, including spawning, rearing, feeding, and refuge. Dams and other barriers to fish movement can have both positive and negative effects for fishes of conservation concern. Barriers can block contact with non-native predatory fish or non-native fish that alter the gene pool of native fish, but they can also prevent desirable gene flow among populations. Additionally, barriers can prevent migration and repatriation by fish that drifted downstream as larvae and young fish. Due to the difficulty of generalizing effects of barriers, they are not included in the scorecard. Relatively little is known about bonytail habitat because major surveys had not been conducted prior to extirpation from most of their historic range. The following is based on the little information available.

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Cover	provided by numerous biotic and abiotic features: submergent or emergent vegetation, overhanging riparian vegetation, spaces between rocks, and water turbidity
Features within streams	mostly eddies and pools, backwaters, and flooded bottomlands for nurseries; to lesser degree in swifter riffles and runs
Stream type	main-stem
Substrate	rocky, silty, or muddy
Spawning substrate	cobble surfaces
Water depth	up to 6.5–10 feet
Water temperature during summer for best growth	71.6–78.8°F

Suggested Reading and Citations

Bestgen, K. R., K. Z. Zelasko, R. I. Compton, and T. E. Chart. 2008. Survival, condition, habitat use, and predation on stocked bonytails (*Gila elegans*) in the Green River, Colorado and Utah. Southwestern Naturalist 53:488-494.

CPW (Colorado Parks and Wildlife). 2015. State Wildlife Action Plan. Colorado Parks and Wildlife, Denver, CO.

CPW. 2019. Species Activity Mapping: CPW Fish Shapefile Download. https://www.arcgis.com/home/item.html?id=c1aa2ab573e34dbb86a1a1b6190abeb1.

Minckley W. L., P. C. Marsh, J. E. Deacon, T. E. Dowling, P. W. Hadrick, W. J. Matthews, and G. Mueller. 2003. A conservation plan for native fishes of the Lower Colorado River. BioScience 53:219-234.

U.S. Fish and Wildlife Service. 2002. Bonytail (*Gila elegans*) Recovery Goals: amendment and supplement to the Bonytail Chub Recovery Plan. U.S. Fish and Wildlife Service, Mountain Prairie Region (6), Denver, Colorado.

Woodling, J. 1985. Colorado's little fish: A guide to the minnows and other lesser known fishes in the state of Colorado. Colorado Division of Wildlife, Denver, Colorado.

Management Recommendations

This fact sheet contains easy-to-use guidelines for understanding habitat needs of Colorado Parks and Wildlife priority wetland-dependent wildlife. Biologists with expertise in bonytails have suggested numerous practical steps that can be taken to improve habitat quality for this species.

Hydrology
- Reestablish seasonal peak flows and evaluate responses of fish.
- Manage thermal regimes to mimic natural conditions.
- Excavate or reconnect new habitat areas simulating oxbows or backwaters with:
  - bottom below water table.
  - barriers designed to prevent entrance of non-native predatory fish.
  - passage over barriers.
  - multiple complexes.

Vegetation
- Provide adequate vegetation for cover.

Contamination
- Remediate contamination.
- Reduce risks of toxic spills.

Conservation
- Provide and protect habitat.
- Consider all opportunities to control non-native fishes.

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DISCLAIMER: This scorecard is designed specifically for the Colorado Parks and Wildlife Wetland Wildlife Conservation Program. It does not replace protocols required by U. S. Fish and Wildlife Service. Please contact the U. S. Fish and Wildlife Service regarding questions about their required protocols for species listed under the Endangered Species Act.

Habitat Scorecard for Bonytail (v. Nov 2020)

Assessment of habitat before and after restoration or management actions

Project Name: _____ Project Area (acres): _____ Habitat Area (acres): _____

Size of Contiguous Habitat outside Project Area (acres): _____ Ownership (circle): Same / Different / Conservation Easement

Scorecard Instructions: Enter <u>one</u> value that best describes early to mid-summer conditions of each habitat variable, using the numbers in the value column. Habitat variables are in shaded boxes; ranges of condition are directly below each variable. **If condition is outside range or is not described, enter a zero.**

Project Area and Habitat Area: The project area includes the entire area affected by the project. The habitat is the area that will provide (in case of pre-project) or does provide (post-project) habitat for each potential target species within the project area. The habitat area may be the same size as the project area or it might be smaller and it may be defined differently for different target species. If there is contiguous habitat area outside the project area, note the size and whether the ownership of the contiguous areas is the same or different and whether it is under conservation easement or other habitat protection. If the habitat area within your project area is noncontiguous and/or if sections are in very different conditions, consider using multiple scorecards so that each scorecard represents the general conditions. If you use multiple scorecards, identify each habitat area on a map.

Key habitat variable and conditions	Value	Pre-Project	Expected Post-Project	Actual Post-Project
Date of assessment				
Stream features				
All of the following features: deep pools, eddies, backwaters, riffles, flooded bottomland	18.9			
Deep pools, eddies, and periodic flooded bottomlands	12.6			
One or none of the following features: deep pools, eddies, backwaters, riffles, flooded bottomland	6.3			
Connectivity for all life cycles				
Complete connectivity among habitats (pools, eddies, backwaters, riffles, runs)	18.9			
Connected throughout runoff but, as hydrograph descends, disconnected at base flow	12.6			
Connected only during high flows	6.3			
Water depth				
Diversity of depths that includes 6.5–10 feet	17.0			
Diversity of depths that includes up to 6.5 feet	11.3			
Does not meet any conditions above	5.7			
Non-native predatory fish				
None	16.0			
Present at low level	10.7			
Conspicuously present	5.3			
Cover				
Cover provided by submergent or emergent vegetation, overhanging riparian vegetation, spaces between rocks, or turbidity	15.1			
Cover spotty or only in riffles	10.1			
Little to no cover available	5.0			
Water quality				
No visual evidence of pollutants and no known pollutants	14.2			
Localized areas of pollution	9.4			
Water is known to be polluted throughout project area or has oily sheen	4.7			
Total (of 100 possible): add all numbers in before or after columns				