

Bonytail (*Gila elegans*)

Species Status Statement.

Distribution

Bonytail is a large-bodied cyprinid that is endemic to the Colorado River Basin. Historically it was common to abundant in warm-water reaches of large desert rivers from Mexico to Wyoming (Sigler and Sigler 1996; USFWS 2002). Bonytail is now critically endangered. The last natural strongholds for this species were in the Green and Yampa rivers, in the states of Utah and Colorado (Holden and Stalnaker 1975a, 1975b).

Table 1. Utah counties currently occupied by this species.

Bonytail	
CARBON	KANE
EMERY	SAN JUAN
GARFIELD	UINTAH
GRAND	WAYNE

Abundance and Trends

Bonytail are now considered functionally extirpated; self-sustaining populations of this species no longer exist in the wild (USFWS 2012). Hatchery propagation of bonytail began in 1981 with remaining wild adults captured from Lake Mohave (Minckley et al. 1989). Currently, persistence of bonytail relies on reintroduction into the Colorado, Green, and Yampa rivers, and into Havasu and Mojave lakes through an extensive stocking program (ISPRC 2015). From 2000 to 2016, managers stocked over 500,000 bonytail into the Green and Colorado River sub-basins. Stocking efforts in the upper Colorado River basin have expanded into floodplain wetlands to enhance bonytail growth and survival, and to provide a period of acclimation before moving into riverine habitats (ISPRC 2015). Although there has been recent evidence of wild reproduction by bonytail in middle Green River floodplain habitats (Bestgen et al. 2017), recruitment to larger size classes remains to be observed.

Statement of Habitat Needs and Threats to the Species.

Habitat Needs

Because the species was extirpated from most of its historic range prior to extensive fishery surveys, managers know little about the specific habitat requirements of this fish. Bonytail have been considered well adapted to mainstem rivers but may prefer backwaters, pools, and eddies to avoid strong current (Sigler and Sigler 1996). Bonytail prefer total dissolved solid levels

between 4,100 and 4,700 ppm, avoiding conditions of excessive clarity or turbidity (Sigler and Sigler 1996). Similar to other closely related *Gila* spp., bonytail in rivers spawn in spring over rocky substrates. Spawning in reservoirs has been observed over rocky shoals and shorelines (Sigler and Sigler 1996). It is hypothesized that floodplain wetland habitats are important growth and conditioning areas for young of this species (e.g., ISPRC 2015), and there has been recent evidence of wild reproduction by stocked bonytail in these habitats (Bestgen et al. 2017). To gain adequate knowledge on habitat preferences and needs, implementation of the historic flow regimes (i.e., managed dam releases) is necessary to provide habitat connectivity (e.g., floodplain connection with riverine habitats) so that bonytail interactions with their natural environment can be further studied.

Threats to the Species

Habitat loss, fragmentation, and degradation, and the introduction of non-native fishes, are likely the most significant factors threatening bonytail persistence in the Colorado River basin (USFWS 2002). These same factors are largely responsible for the decline of other endemic Colorado River fishes. Habitat threats have likely impeded the completion of important life history traits for bonytail, limiting reproductive and recruitment success. Predation and competition from non-native fishes at all bonytail life stages induces additional stress and further prevents their recovery. Through research and monitoring of stocked fish, researchers continue to gain information to help determine this species' life-history needs and ways to improve their survival.

Table 2. Summary of a Utah threat assessment and prioritization completed in 2014. This assessment applies to the species' entire distribution within Utah. For species that also occur elsewhere, this assessment applies only to the portion of their distribution within Utah. The full threat assessment provides more information including lower-ranked threats, crucial data gaps, methods, and definitions (UDWR 2015; Salafsky et al. 2008).

Bonytail
Very High
Droughts
Invasive Wildlife Species - Non-native
High
Dam / Reservoir Operation
Inappropriate Fire Frequency and Intensity
Loss of Genetic Exchange / Inbreeding
Oil Shale
Problematic Animal Species – Native
Spills and Production Water
Tar Sands
Water Allocation Policies
Medium
Agricultural / Municipal / Industrial Water Usage
Atmospheric Deposition
Channelization / Bank Alteration (direct, intentional)
Increasing Stream Temperatures
Invasive Plant Species – Non-native
Small Isolated Populations
Pipelines / Powerlines - Energy Development
Presence of Dams
Sediment Transport Imbalance
Storms and Flooding

Rationale for Designation.

Bonytail is the rarest native fish in the Colorado River basin, and among North America's most endangered species. Due to its depleted distribution and abundance, the species was listed as endangered and given full protection under the Endangered Species Act in 1980 (USFWS 2002). Specific recovery goals (USFWS 2002, USFWS 2012) must be achieved before bonytail can be considered eligible for downlisting from Endangered to Threatened.

Especially since 2000, managers have strictly maintained Colorado River basin populations through an extensive stocking program (ISPRC 2015). However, survival of stocked fish has been extremely poor to date (e.g., Bestgen et al. 2017). Stocking of hatchery-reared bonytail must persist to allow researchers to determine limiting factors for stocked fish in the wild in order to develop future management actions. All these reasons contribute to the need to designate bonytail a Utah Sensitive Species. Measures to conserve bonytail would also benefit humpback chub, razorback sucker, Colorado pikeminnow, roundtail chub, flannelmouth sucker, and bluehead sucker.

Economic Impacts of Sensitive Species Designation.

Sensitive species designation is intended to facilitate management of this species, which is required to reverse Endangered Species Act Listing and lessen related economic impacts. Bonytail are currently listed as endangered under the Endangered Species Act. This listing has resulted in extensive costs to mitigate water development and managing water resources in the Colorado River Basin in Utah. It has also resulted in costly efforts to mitigate impacts from nonnative fish introductions and has impacted the management of recreational fisheries in the basin. There have also been increased costs of regulatory compliance for many land-use decisions including oil and gas development, especially due to habitat impacts from associated infrastructure and water use and potential contamination during production. These costs will remain as long as the species is listed under the Endangered Species Act. If the species is downlisted or delisted, continued efforts will be required to mitigate threats and maintain stronger populations.

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