

**ARIZONA GAME AND FISH DEPARTMENT  
HERITAGE DATA MANAGEMENT SYSTEM**

**Animal Abstract**

**Element Code:** AFCJB13150  
**Data Sensitivity:** No

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Gila robusta*  
**COMMON NAME:** Roundtail Chub  
**SYNONYMS:** *Gila robusta robusta*, *Gila robusta grahami*, *Gila robusta seminuda*,  
*Gila robusta jordani*, *Gila gracilis*, *Ptychocheilus vorax*, *Gila nacre*  
**FAMILY:** Cyprinidae

**AUTHOR, PLACE OF PUBLICATION:** Baird and Girard 1853a. Proceedings Academy Natural Sciences Philadelphia, 6: 368-369.

**TYPE LOCALITY:** The specimens originally described by Baird and Girard 1853a were collected by a person with the last name Woodhouse prior to 1853 from the Zuni River in either Arizona or New Mexico, no further data is on record at the Smithsonian National Museum of Natural History in Washington D.C. [but likely Little Colorado R., below Grand Falls, Cocoino Co., Arizona].

**TYPE SPECIMEN:** There were originally three type specimens collected and described of which two have been lost and only a bone from the third remains (Smithsonian National Museum of Natural History Washington D. C., Catalog #USNM-246). Numerous other specimens exist within the Smithsonian collections however, these were not the specimens originally described by Baird and Girard 1853a.

**TAXONOMIC UNIQUENESS:** There are currently 14 species under the genus *Gila*. This species is represented by four nominal subspecies in the Colorado River System (including Pluvial White River, Nevada; Hubbs and Miller 1948), three of which occur in Arizona waters.

*Gila robusta robusta*, *G.r. grahami*, and *G.r. seminuda* have been discussed as the three subspecies making up the "robusta complex." DeMarais et al. (undated) recognize the Virgin River chub as a full species, *Gila seminuda*. Research looking into the subspecies *G.r. robusta* vs. *G.r. grahami* is ongoing.

**DESCRIPTION:** Deep compressed body; flat head; slender caudal peduncle; large forked caudal fin; angle along anal fin base continues into middle of caudal fin. Terminal mouth extends to front of eye. Dark olive-gray above; silver side. Breeding male may develop red orange on lower half of cheek and paired fin bases. 80-99 lateral scales, usually 9 dorsal rays, 9 anal rays; pharyngeal teeth 2,5-4,2. Individuals may reach 49 cm (19 in.) and frequently attain 25-30cm (10-12 in.). *G.r. grahami* of Arizona and New Mexico generally have 80- 85

lateral scales while *G.r. robusta* in the rest of the U.S. tend to have greater than 85 (Page and Burr 1991).

**AIDS TO IDENTIFICATION:** Similar species include the humpback chub and bonytail chub, however, these fish have extremely slender caudal peduncles, smaller eyes, angle along anal fin base continuing above caudal fin; large individuals have hump on nape, and a depressed head which is absent on roundtail chub. Other characteristics include a large mouth, with lower lip outlined in black. They are somewhat trout-like in appearance, except they lack an adipose fin.

**ILLUSTRATIONS:** B&W photo (Minckley 1973:100)  
Color drawing (Page and Burr 1991)  
Color photo (Rinne and Minckley 1991:23)  
Line drawing (Sublette et al. 1990:126)  
B&W photos (Sublette et al. 1990:127)

**TOTAL RANGE:** Roundtail chubs are known from larger tributaries of the Colorado Basin from Wyoming south to Arizona and New Mexico, as well as, the Rio Yaqui south to Rio Piaxtla, northwestern Mexico (Sublette et al. 1990). The Zuni and San Francisco Rivers, New Mexico, represent waterways where *G. robusta* has been extirpated (Sublette et al. 1990).

**RANGE WITHIN ARIZONA:** Occurs in the mainstem and tributaries of the Verde and Salt Rivers, as well as canals in metropolitan Phoenix. In Gila, Mohave, and Yavapai counties specifically Fossil Creek, Oak Creek, Burro Creek, Francis Creek, Big Sandy River, Santa Maria River, Boulder Creek, Trout Creek, Sycamore Creek, Beaverhead Springs on Dry Beaver Creek, and throughout the Verde River. Also in creeks of the Tonto Basin Watershed: Gun, Gordon, Haigler, Rock, and Spring.

## **SPECIES BIOLOGY AND POPULATION TRENDS**

### **BIOLOGY:**

**REPRODUCTION:** Roundtail chub breed in spring and early summer (Minckley 1973, Sublette et al. 1990) as spring runoff is subsiding, often in association with submerged cover such as fallen trees and brush. Fertilized eggs are randomly scattered over gravel substrate with no parental care.

**FOOD HABITS:** Primarily carnivorous. Adults feed on aquatic and terrestrial insects, filamentous algae, and other fishes. Young feed on small insects, crustaceans, and algae in quiet backwaters until they reach 25 to 50 mm (1 to 2 in.) in length.

**HABITAT:** Roundtail chub occupy cool to warm water, mid-elevation streams and rivers where typical adult microhabitat consists of pools up to 2.0 meters (6.6 feet) deep adjacent to swifter riffles and runs. Cover is usually present and consists of large boulders, tree rootwads,

submerged large trees and branches, undercut cliff walls, or deep water. Smaller chubs generally occupy shallower, low velocity water adjacent to overhead bank cover. Sublette et al. (1990) state that roundtails also inhabit large reservoirs.

**ELEVATION:** Current range includes areas varying in elevation from approximately 1,210 to 7,220 ft. (369 - 2202 m), although more commonly found between 2,000 - 5,000 ft. (610 - 1525 m).

**PLANT COMMUNITY:** Riparian vegetation which often provides cover for Roundtail chubs generally consists of *Populus fremontii* (Fremont cottonwood), *Baccharis* sp. (seep willow), *Fraxinus velutina* (velvet ash), and *Tamarix* sp. (tamarisk). Aquatic vegetation is generally sparse in their current range, however, roundtail frequently forage on available algae, *Cladophora* sp. and pondweed, *Potamogeton* sp.

**POPULATION TRENDS:** As with many native fish, reductions in range and numbers are likely the result of habitat loss, as well as competition with, and predation by, non-native fish species. Minckley (1973) adds hope by describing the roundtail as "one fish that appears capable of maintaining its populations fairly well despite the numbers of introduced fishes that now infest Arizona waters", although he state that populations that were doing well in the Salt and Verde Rivers ten years ago, have decreased since. He also feels that the middle breeding populations are being knocked out due to predation by Flathead Catfish (AGFD Native Fish Diversity Review 1995).

## **SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** None (USDI, FWS 1996)  
[C2 USDI, FWS 1994]  
[C2 USDI, FWS 1991]

**STATE STATUS:** WSC (AGFD, WSCA in prep)  
[State Threatened AGFD, TNW 1988]

**OTHER STATUS:** Forest Service Sensitive (USDA, FS Region 3 1999)  
[Forest Service Sensitive USDA, FS Region 3 1988]  
Group 2 (NNDFW, NESL 2001)  
[Group 2 NNDFW, NESL 2000]  
Determined Subject to Special Protection in Mexico (Secretaría De Medio Ambiente, 2000)  
[Listed Rare, Secretaría de Desarrollo Social 1994]

**MANAGEMENT FACTORS:** **Threats:** aquifer pumping; stream diversion; reduction in stream flows; predation by and competition with nonnative fishes. **Management needs:**

watershed and stream flow protection; research to determine mechanisms of disappearance; ameliorate effects of deleterious nonnative fishes.

**PROTECTIVE MEASURES TAKEN:** Currently being considered for T & E listing by the US Fish and Wildlife Service. Arizona Game and Fish and US Forest Service are planning on statewide population surveys for this species and has one survey in progress (as of 8/94) in central Arizona, Roundtail Chub Study, Lower Salt/Verde Rivers (FY 1994-1995).

**SUGGESTED PROJECTS:** Monitor populations. Maintain, improve, and augment habitat. Reintroductions to historic range. Further investigation of the "robusta complex."

**LAND MANAGEMENT/OWNERSHIP:** BIA - Fort Apache, Salt River Pima, and San Carlos Reservations; BLM - Kingman and Safford Field Offices; BOR - Phoenix Area; NPS - Montezuma Castle National Monument; USFS - Apache-Sitgreaves, Coconino, Prescott, and Tonto National Forests; State Land Department; Dead Horse Ranch State Park; AGFD Page Springs Fish Hatchery; TNC - Aravaipa Canyon Preserve; Private.

## **SOURCES OF FURTHER INFORMATION**

### **REFERENCES:**

- Arizona Game and Fish Department. 1988. Threatened Native Wildlife in Arizona. Arizona Game and Fish Department Publication. Phoenix, Arizona. p. 27.
- Arizona Game and Fish Department. In prep. Wildlife of special concern in Arizona. Arizona Game and Fish Department Publication. Phoenix, Arizona. 32 pp.
- Arizona Game and Fish Department Native Fish Diversity Review. 1995. Tempe, Arizona.
- DeMarais, B.D., T.E. Dowling, M.E. Douglas, W.L. Minckley, and P.C. Marsh. Undated. Hybrid origin of *Gila seminuda* (Pisces: Cyprinidae): Implications for evolution and conservation (speciation/morphological variation/genetic variation/mtDNA). Department of Zoology and Center for Environmental Studies, Arizona State University, Tempe. pp. 27.
- Girmendonk, A.L. et. al. 1997. Status review of the Roundtail Chub (*Gila robusta*) in the Verde River Basin. AGFD Non-Game Technical Report #114. pp.94.  
<http://www.fishbase.org/Eschmeyer/EschPiscesSummary.cfm?ID=2769>.
- Navajo Nation Department of Fish and Wildlife. 2001. Navajo Endangered Species List. p. 2
- Navajo Nation Department of Fish and Wildlife. 2000. Navajo Endangered Species List. p. 2
- Minckley, W.L. 1973. Fishes of Arizona. Arizona Game and Fish Department, Phoenix. pp. 100-103.
- Page, L.M. and B.M. Burr. 1991. A field guide to freshwater fishes: North America, north of Mexico. Houghton Mifflin Co., Boston. pp. 72-74.
- Rinne, J.N. and W.L. Minckley. 1991. Native fishes of arid lands: a dwindling resource of the desert southwest. U.S. Department of Agriculture, Forest Service, General Technical Report RM-206. Fort Collins, Colorado. pp. 22-23.
- Secretaría de Desarrollo Social. 1994. Diario Oficial de la Federación. p. 52.

Secretaría de Medio Ambiente. 2000. Diario Oficial de la Federación, PROY-NOM-059-ECOL-2000. p. 46.

Sublette, J.E., M.D. Hatch, and M. Sublette. 1990. The fishes of New Mexico. University of New Mexico Press, Albuquerque. pp. 17, 18, 126-129.

USDA, Forest Service Region 3. 1988. Regional Forester's Sensitive Species List.

USDA, Forest Service Region 3. 1999. Regional Forester's Sensitive Species List.

USDI, Fish and Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule. Federal Register 56(225):58815.

USDI, Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule. Federal Register 59(219):58998.

USDI, Fish and Wildlife Service. 1996. Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species. Federal Register 61(40):7596-7613.

Voltz, J.B. 2002. Roundtail Chub (*Gila robusta*) status survey of the Lower Colorado River Basin. AGFD Non-Game Technical Report #186. pp. 221.

#### MAJOR KNOWLEDGEABLE INDIVIDUALS:

Kirk L. Young - Arizona Game and Fish Department, Phoenix

#### ADDITIONAL INFORMATION:

**Revised:** 1994-07-24 (MFK)  
 1994-08-01 (MHH)  
 1994-08-26 (JJW)  
 1995-01-31 (KLY)  
 1997-03-05 (SMS)  
 2001-10-12 (SMS)  
 2002-12-04 (RHB)

To the user of this abstract: you may use this entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX (= **year of last revision as indicated at end of abstract**). X...X (= **taxon of animal or plant**). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. X pp.