ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AFCJB13170
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Gila seminuda*
COMMON NAME: Virgin River Chub, Virgin Chub
SYNONYMS: *Gila robusta seminuda*
FAMILY: Cyprinidae

AUTHOR, PLACE OF PUBLICATION: Cope and Yarrow, U.S. Geol. Surv. West 100. Meridian v. 5 (Zool.) Chapter 6: 666, Pl. 31 (figs. 1-1a), 1875.

TYPE LOCALITY: Virgen [Virgin] R., and affluent of Colorado R., a little south of Washington, Washington Co., s. Utah, U.S.A.

TYPE SPECIMEN: Syntypes: USNM 16975 (orig. 6, now 5)

TAXONOMIC UNIQUENESS: There are 19 species in the genus, all of which occur in Western North America. 9 species of Gila occur in Arizona. *Gila seminuda* was formerly considered a subspecies of *Gila robusta*, though taxonomy was debated for much of the twentieth century. DeMarais et al (1992) raised *G. seminuda* to species status. This action was accepted by the American Fisheries Society and the United States Fish and Wildlife Service (USFWS 2000, Nelson et al. 2004).

Hybridization between *G. elegans* and *G. robusta* may have contributed to the origin of *G. seminuda* (DeMarais et al. 1992, Gerber et al. 2001).

DESCRIPTION: Medium-sized, silvery minnow, generally less than 15 cm (6 in) long, reaching lengths of 25 cm (10 in). Dorsal, anal, and pelvic fin-rays 9 or 10. Back, breast, and part of belly with small, deeply embedded scales, which may be difficult to see, and are absent in some individuals. Length of head divided by depth of caudal peduncle typically results in a ratio of 4.0 to 5.0 (rarely exceeding 5.0, which approximates *G. elegans*). Scales typically lacking basal radii or with extremely faint lines.

AIDS TO IDENTIFICATION: Distinguished by presence of 9-10 rays in the dorsal, anal, and pelvic fins, and 24-32 gill rakers.

ILLUSTRATIONS: B&W photo (Minckley 1973:103)
Color drawing (Page and Burr 1991)
Color photo (Rinne and Minckley 1991:23)

TOTAL RANGE: *Gila seminuda* is endemic to 134 miles (214 km) of the Virgin River in Arizona, Nevada, and Utah. A closely related undescribed subspecies of Gila robusta which is not listed occurs in the Moapa River (also called Muddy River) in Nevada (USFWS 1989).

RANGE WITHIN ARIZONA: Virgin River, Mohave County.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Lifespan of 8 to 10 years. This longer lifespan may contribute to the chub's ability to persist, albeit at low abundances, where red shiner are sympatric.

REPRODUCTION: Spawns during late spring and early summer over gravel or rock substrate. Eggs hatch in 4-7 days, no parental care is provided.

FOOD HABITS: Opportunistic feeders, consuming zooplankton, aquatic insect larvae, invertebrates, debris and algae. The diet of most adults is comprised primarily of algae and debris, whereas younger fish consume almost exclusively macroinvertebrates.

HABITAT: Habitat includes rocky runs, rapids, pools, and undercut banks of headwaters, creeks, and small rivers (Page and Burr 2011). Commonly associated with areas of deeper waters, where waters are swift, but not turbulent, as is generally associated with boulders, root snags, or other cover. Occurs over sand and gravel substrates in water less than 30° C (86° F), and is very tolerant of high salinity and turbidity.

ELEVATION: Found in habitats below 4,500 ft (1,370 m).

PLANT COMMUNITY:

POPULATION TRENDS: Area of occupancy and abundance have declined greatly from historical situation. Apparently still declining through much or range. Below Hurricane Bridge and below Washington Diversion numbers are stable, but population sizes are low. Most transient populations below the Mesquite Diversion and downstream from the Johnson Diversion have been lost or reduced.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:

LE (USDI, FWS 1989)
Designated Critical Habitat (CH) (USDI, FWS 2000)
[P-CH (USDI, USFS 1995)]
[PE (USDI, USFS 1986), with Critical Habitat]
[C1 (USDI, FWS 1982, 1985)]

STATE STATUS: 1 (AZGFD, AWCS 2022)
[1A (AGFD SWAP 2012)]
[WSC (AGFD, WSCA 1996 in prep)]
[Endangered (AGFD, TNW 1988)]

OTHER STATUS: Bureau of Land Management Sensitive, (USDI, BLM AZ 2017)
Not Forest Service Sensitive (USDA FS Region 3 2007, 2013)
[Forest Service Sensitive, USDA, FS Region 3 1988, 1999]
Sensitive, Nevada
Protected, Utah
E, American Fisheries Society

MANAGEMENT FACTORS:

Threats include: widespread modification and reduction of habitat; dewatering by agricultural diversion; increased temperature, salinity, and turbidity of the Virgin River; increasing human population in surrounding area; introduction of non-native fish and parasite species, particularly *C. lutrensis*.

Management needs: monitor existing populations; protect and enhance habitat, including water quantity and quality; ameliorate effects of nonnative fish species in chub waters, especially eliminate red shiners from the system; re-establish additional populations; develop operating protocol for regulated flows affected by extant and proposed systems.

PROTECTIVE MEASURES TAKEN: Critical Habitat listed; Downlisting critera established; monitoring of fish populations has been conducted since 1976; three large scale nonnative fish barriers have been constructed on the Virgin River, along with several smaller scale barriers; red shiner (*Cyprinella lutrensis*) treatment activities including mechanical and chemical removal have been implemented since 1988; mimimum flows have been secured in portions of the river, but much of the river is still subject to diminished flow from dewatering; brood stock of Virgin River chub held at Dexter National Fish Hatchery and Wahweap Hatchery; habitat improvement projects; public outreach; establishment of Virgin River Program cooperative in the upper river. (USFWS 2008).

SUGGESTED PROJECTS: Characterize genetic diversity of captive brood stock, secure tracts of Virgin River 100-year floodplain; continue to secure minimum flow agreements; enact floodplain and erosion zone ordinances; experiment with releases of water and increased turbidity in stressful summer months; develop consistently funded partnerships and implement habitat conservation and recovery programs throughout the Virgin River; construction of further fish barriers and red shiner control efforts; conduct research on life history; conduct research on potential for habitat improvements; conduct status review for Moapa River population.

LAND MANAGEMENT/OWNERSHIP: BLM - Arizona Strip Field Office; Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

Revised: 1994-07-22 (WRP)
1994-08-01 (MHH)
2000-01-28 (SMS)
2001-10-12 (SMS)
2020-08-07 (KSL)
2023-01-09 (MBL)