ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AFCJB13160
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Gila intermedia*
COMMON NAME: Gila Chub
SYNONYMS: *Gila gibbosa, Tigoma intermedia, Tigoma gibbosa, Gila nigra, Squalius intermedius, Squalius niger, Squalius lemmoni, Leuciscus intermedius, Leuciscus niger, Richardsonius gibbosus, Gila robusta intermedia*
FAMILY: Cyprinidae

AUTHOR, PLACE OF PUBLICATION: Baird, S.F. and C. Girard. 1854. Descriptions of new species of fishes collected in Texas, New Mexico and Sonora, by Mr. John H. Clark, on the U.S. and Mexican Boundary Survey, and in Texas by Capt. Stewart van Vliet, U.S.A. Procedures of the Society of Natural Sciences, Philadelphia, 7:24-29.

TYPE LOCALITY: Unknown

TYPE SPECIMEN: Unknown

TAXONOMIC UNIQUENESS: The *Gila* genus is a complex association of Cyprinid fishes inhabiting the Western U.S. and Mexico. Eight species known from Arizona (Minckley 1973). *G. intermedia* most closely related to *Gila robusta robusta* and *Gila robusta grahami* (Rinne 1969).

DESCRIPTION: Female Gila chubs may grow to 25.0 cm (9.8 in.) while males seldom reach 15.0 cm (5.9 in.) in total length (Rinne and Minckley 1991).

Minckley in 1973 described the following, *G. intermedia*: "Body chunky. Scales large, thick, and broadly imbricated, basal radii usually present. Lateral-line scales almost always fewer than 80. Dorsal fin-rays usually eight or fewer (rarely nine). Anal fin-rays eight or fewer. Pelvic fin-rays 8 or 9. Length of head divided by depth of caudal peduncle usually 3.0 or less. An abrupt, soft and fatty, nuchal hump rarely developed in large females of some populations. Total vertebrae 38-45, usually fewer than 42. Pharyngeal arch similar to that of G. robusta, teeth 2, 5-4, 2.

Color dark, over-all sometimes lighter on belly. Diffuse lateral bands rarely present. No basicaudal spot. Breeding males with red or orange on lower cheek, posterior parts of lips, paired fin bases, and on ventro-lateral surfaces (including caudal peduncle)."

AIDS TO IDENTIFICATION: May be distinguished from roundtail chub, *Gila robusta*, by chunkier body type. Length of head measured from terminus to posterior edge of operculum divided by the minimum depth of caudal peduncle is usually less than 3.0.

ILLUSTRATIONS: B&W photo (Minckley 1973:104)
Color photo (Rinne and Minckley 1991:24)

TOTAL RANGE: Historically found in headwater streams of Gila River drainage in Arizona, New Mexico and likely in Santa Cruz River system in Sonora, Mexico. It has recently been rediscovered in the San Pedro drainage in Sonora Mexico, where it had been absent in collections since 1857. Currently considered extirpated from New Mexico.

RANGE WITHIN ARIZONA: Currently known from the following drainages; Santa Cruz River (Cienega Creek, Sabino Canyon, Sheehy Spring), Middle Gila River (Eagle, Bonita and Harden Cienega Creeks and San Carlos and Blue Rivers), San Pedro River (Bass, O'Donnell and Redfield Canyons, Babocomari River and Turkey Creek), Agua Fria River (Silver and Sycamore [rare] Creeks), Verde River (Spring and Walker Creeks). Extirpated from Monkey Spring (Santa Cruz River), and Fish and Cave Creeks (Salt River).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Gila chub were commonly found in association with Gila topminnow, desert and sonora sucker and longfin and speckled dace. Females achieve lengths of 10 in (25 cm), whereas males rarely grow longer than 6 in (15 cm). It is highly secretive, seeking out deeper waters near cover.

REPRODUCTION: Gila chub probably mature in their second to third year. Reproduction occurs primarily from late spring into summer in streams, but can extend into late winter in constant temperature springs. Spawning occurs over beds of submerged aquatic vegetation (Minckley 1973). Actively breeding fish become fire-red along ventro-lateral surfaces and the eyes become yellow to yellow-orange (Minckley 1973).

FOOD HABITS: Gila chub are omnivorous, preferring terrestrial and aquatic insects. At larger sizes they become pisciverous and have been found to consume speckled dace, *Rhinichthys osculus*, and probably other small cyprinids as available. Larger adults feed during evening and early morning hours. Juveniles will feed throughout the day on insects and algae, filamentous and diatomaceous.

HABITAT: Gila chub are normally found in the smaller headwater streams, cienegas and springs or marshes of the Gila River basin. They utilize diverse habitat types based on season and age. Adults have been collected from deep pools with heavily vegetated margins and undercut banks. Juveniles have been collected from riffles, pools and undercut banks of runs. In larger stream systems they utilize heavily vegetated backwaters for cover and feeding. According to Minckley (AGFD Native Fish Diversity Review 1995), they occur in marginal sites (refuges), and likes permanent sites such as seeps etc.

ELEVATION: Arizona records range in elevation from 2,720 - 5,420 ft. (830 - 1,653 m).

PLANT COMMUNITY: Broadleaf riparian vegetation consisting of cottonwood, willow, ash, alder, sycamore, walnut, and *Baccharis* spp. in association with submerged aquatic vegetation typical of cienega/marsh habitats.

POPULATION TRENDS: Populations are expected to expand and contract both seasonally and over time as climactic events affect aquatic habitat. Populations of Gila chub have slowly been disappearing. It was once found in Apache Creek, Duck Creek and San Simon Cienega in New Mexico but is now considered extirpated. They are also extirpated from three waterways in Arizona (Cave Creek, Fish Creek and Monkey Spring). Little is known about distribution of populations in Mexico. Population in Williamson Valley has been extirpated due to 1992 flood event. A population was introduced into Garden Canyon in the Fort Huachuca Mountains in 1992 by Henderson (AGFD Native Fish Diversity Review 1995).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: LE (USDI, FWS 2005)
[LE USDI, FWS 2006]

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

OTHER STATUS: State Endangered, Group 1 (NMGFD 1975)
Forest Service Sensitive (USDA, FS Region 3 1999)
[Forest Service Sensitive USDA, FS Region 3 1988]
Listed Endangered (Secretaría de Desarrollo Social 1994, and Secretaría de Medio Ambiente 2000)

MANAGEMENT FACTORS: Controlling the introduction of exotic fish to streams containing Gila chub is vital to their survival. Gila chub are currently co-existing with green sunfish, *Lepomis cyanellus*, in several streams; however, they have been extirpated from one location by largemouth bass, *Micropterus salmoides*. Land management activities that affect watersheds, alter stream flow characteristics or affect the amount of perennial water in streams may affect populations of Gila chub, especially management activities that increase erosion and destroy stream banks.

Threats: aquifer pumping; stream diversion; reduction in stream flows; habitat alteration and competition by nonnative crayfishes; predation by and competition with nonnative fishes. **Management needs:** identify and priority-rank management areas; protect watershed and stream flow and restore stream habitats for chub management areas; ameliorate effects of predatory and competitory nonnative fishes and crayfishes in chub waters.

PROTECTIVE MEASURES TAKEN: Portions of O'Donnell Creek, Redfield Canyon and Bass Canyon are included in the Canelo Hills and Muleshoe Preserves, managed by the Nature Conservancy (TNC). A portion of Cienega Creek at the Empire Ranch is managed by the Bureau of Land Management (BLM) as a natural area. BLM Phoenix District is currently proposing translocations from Silver Creek to nearby perennial streams in the Agua Fria headwaters.

SUGGESTED PROJECTS: The Arizona Game and Fish Department is currently conducting a status review of Gila chub under contract to TNC to enable the U.S. Fish and Wildlife Service to determine whether it warrants listing under the Endangered Species Act. Basic life history and ecological research is necessary to better understand this species. Annual or bi-annual monitoring of Gila chub populations should be conducted to identify population trends and factors contributing to population declines.

LAND MANAGEMENT/OWNERSHIP: Streams containing Gila chub are owned and managed by a diverse assemblage of organizations including: BIA - San Carlos Reservation; BLM - Phoenix, Safford and Tucson Field Offices; FWS - San Bernardino National Wildlife Refuge; USFS - Apache-Sitgreaves, Coconino, Coronado, Prescott and Tonto National Forests; State Land Department; TNC - Canelo Hills Cienega and Muleshoe Ranch Preserve; and Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

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