ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AFCJB22010
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Meda fulgida*
COMMON NAME: Spikedace
SYNONYMS:
FAMILY: Cyprinidae

AUTHOR, PLACE OF PUBLICATION: Girard, C. 1856, Proc. Acad. Nat. Sci. Philadelphia 8: 165-213.

TYPE LOCALITY: The specimens originally described were collected from the San Pedro River near Charleston Pass, Arizona.

TYPE SPECIMEN: There were 21 type specimens originally described by Girard 1856. They were collected by John H. Clark prior to 1856 and are currently being held in the Smithsonian National Museum of Natural History in Washington D.C., Catalog #USNM-154.

TAXONOMIC UNIQUENESS: Monotypic genus, one of six species endemic to the Colorado River basin, *Meda fulgida* being endemic more specifically to the Gila River basin in Arizona and New Mexico (and most likely in Sonora, Mexico as well).

DESCRIPTION: Maximum length rarely exceeds 75.0 mm (2.95 in.) (Rinne and Minckley 1991). Slender body, somewhat compressed at front, strongly compressed at caudal peduncle; fairly pointed snout with no barbels; slightly subterminal mouth; large eye. Dorsal fin origin behind pelvic fin origin. Scales are present only as small deeply embedded plates. The first spinous ray of the dorsal fin is the strongest and most sharp-pointed. There are seven dorsal fin-rays and typically nine anal fin-rays. Pharyngeal teeth are typically 1, 4-4, 1. Olive-gray to light brown above; brilliant silver side, often with blue reflections; black specks and blotches on back and upper side. Breeding male has spectacular, bright, brassy yellow head and fins. (Minckley 1973, Page and Burr 1991).

AIDS TO IDENTIFICATION: Spikedace are distinguishable from other similar species by comparing morphology and coloration. Spikedace bodies are slender, more strongly compressed at the caudal peduncle, and when compared to similar species other than the woundfin, appear to have more brilliant silver coloration on the sides. The Spikedace most closely resembles the woundfin in morphology, however it is easily distinguishable from the Woundfin by noting the lack of barbels on the Spikedace which are small but present on the Woundfin.

ILLUSTRATIONS:
B&W photo (Minckley 1973:113)
Color drawing (Page and Burr 1991)
Color photo (Rinne and Minckley 1991:15)
Line drawing (Sublette et al. 1990:136)
B&W photos (Sublette et al. 1990:78, 79)

TOTAL RANGE: Historically, Spikedace were common and locally abundant throughout the upper Gila River basin of Arizona and New Mexico. In Arizona this included the Agua Fria, San Pedro, and San Francisco River systems, and the Gila, Salt and Verde Rivers and major tributaries upstream of present-day Phoenix. In New Mexico it included San Francisco River, Gila River, and the East, Middle and West Fork of the Gila.

The critical habitat designated by the USFWS (2012) is comprised of 8 units: (1) the upper Verde River and such eastern tributaries as Oak Creek and West Clear Creek down to Fossil Creek (which has a restocked population); (2) portions of the Salt River sub-basin feeding into Lake Roosevelt including Tonto Creek and its tributaries Greenback, Rye and Spring Creeks; (3) Aravaipa Creek, Redfield and Hot Springs Canyons (all with populations); (4) Bonita Creek (with a restocked population since 2007); (5) Eagle Creek; (6) San Francisco River; (7) the Blue River (restocked in 2012); and (8) the upper Gila River in New Mexico.

RANGE WITHIN ARIZONA: Presently, the only extant natural population known in Arizona is a 24 km (15 mile) reach of Aravaipa Creek in Graham and Pinal counties. Fish have been stocked in 5 other locations: Fossil Creek, Redfield Canyon, Hot Springs Canyon, Bonita Creek and the Blue River, but these are not yet considered to be established populations.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Spikedace average 1.6 in (4 cm) in length at the end of their first year, and 2.5 in (6.4 cm) by the end of the second. Fish generally live one to two years although some may reach three to even four years.

REPRODUCTION: Spawning occurs in spring and summer. Males come into breeding condition as early as April; spawning may continue through June. Breeding males have bright brassy yellow heads and fin bases, yellow bellies and fins. During courtship, males patrol over shallow, sand-bottomed areas, where speed of flow is moderate. "No territoriality between males is evident, but they seem to remain evenly spaced throughout a patrolled area. Females generally enter the area from downstream, where they are immediately accosted by two or more males. A "chase" occurs, with the males a little behind and in close contact with the female. The chase terminates when the female either strikes the bottom, or halts, in a flurry of males. All participants then float slowly with the current, then resume their previous activities, or, the female moves downstream, into a pool most of the time, and the males return to patrol" (Minckley 1973). Females lay approximately 100-300 eggs or more

depending on size. Yearling females generally lay one brood per season, whereas two-year old and older females may produce two (Minckley 1973).

FOOD HABITS: Generally aquatic and terrestrial insects, will feed on fry of other fish during certain seasons. Diet composition is largely determined by, type of habitat and time of year (Minckley 1973).

HABITAT: "The Spikedace occupies mid-water habitats of runs, pools, and swirling eddies..." (Rinne and Minckley 1991). Prefers moving in water less than 1.0 m (3.3 ft.) deep and 0.3-0.6m/sec (1-2ft/sec). They concentrate in the downstream ends of riffles and eddies although many have been collected in the upstream portions of shear zones less than 0.33 m (1.1 ft.) deep. "In larger streams, found only at the mouth of creeks" (Minckley 1973). Young in-habitat backwaters over silt and sand.

ELEVATION: Current listings for elevations at points of capture range from 494 to 1,373 m (1,620 to 4,500 ft.). However, their previous range was believed to have been much more extensive.

PLANT COMMUNITY:

POPULATION TRENDS: "The Spikedace was formerly widespread in the (Gila) basin, but has suffered marked reductions in range in the last few decades,...in areas where the Spikedace still persists, it seems far less abundant now than formerly" (Minckley 1973). According to Minckley, this species declines and explodes in numbers often (AGFD Native Fish Diversity Review 1995). According to the 2012 uplisting package, Spikedace in Arizona are restricted to Aravaipa Creek, Eagle Creek, and the Verde River, but have not been collected in the latter two locations for over a decade. As of this abstract revision in 2013, the only extant natural population known in Arizona is a 24 km (15 mile) reach of Aravaipa Creek in Graham and Pinal counties. Fish have been restocked in 5 other historic locations: Fossil Creek, Redfield Canyon, Hot Springs Canyon, Bonita Creek and the Blue River, but these are not yet considered to be established populations.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:

LE with CH (USDI, FWS, 2012)
[PE with Proposed CH (USDI, FWS 2010)]
[Critical Habitat Designated (USDI, FWS 2007)]
[CH proposed (USDI, FWS 2005)]
[CH revoked (Court Order No. CIV 02-0199 JB/LCS, 08-31-2004)]
[CH designated (USDI, FWS 2000)
[CH proposed (USDI, FWS 1999)
[CH revoked (USDI, FWS 1998)]

[CH designated (USDI, FWS 1994)]
[LT (USDI, FWS 1986)]
[PT (USDI, FWS 1985)]
[C1 (USDI, FWS 1982)]

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

OTHER STATUS: Not Forest Service Sensitive (USDA, FS Region 3 2007, 2013)
[Forest Service Sensitive (USDA, A-S National Forests 2000)]
[Forest Service Sensitive (USDA, FS Region 3 1988)]
Bureau of Land Management Sensitive (USDI, BLM AZ 2017)

MANAGEMENT FACTORS:

Threats: stream flow depletion; diversion; habitat alteration and competition with nonnative crayfishes; predation by and competition with nonnative fishes, especially red shiner.

Management needs: conserve, protect, and monitor existing populations; delineate spikedace priority waters; ameliorate impacts from nonnative predatory and competitory species from spikedace waters; develop captive propagation techniques; enhance or restore select habitats within historical range; reintroduce into select historical habitats.

PROTECTIVE MEASURES TAKEN: Listed as Endangered (Endangered Species Act), with Critical Habitat Designated as of February 23, 2012.

SUGGESTED PROJECTS: Protect and monitor the status of existing populations of Spikedace. Identify nature and significance of interaction with non-native fishes. Quantify, through research, spikedace habitat needs and the effects of physical habitat modification on life cycle completion. Enhance or restore habitats occupied by depleted populations. Reintroduce populations to selected streams within historic range. Determine quantitative criteria for describing a self-sustaining population. Consider contingency planning and preliminary investigations for captive holding, propagation and rearing.

LAND MANAGEMENT/OWNERSHIP: BIA - San Carlos Reservation; BLM - Safford Field Office; NPS - Montezuma Castle National Monument; USFS - Apache-Sitgreaves, Coconino and Prescott National Forests; TNC - Aravaipa Canyon Preserve; Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

Revised: 1994-07-22 (MFK)
1994-08-22 (MHH)
1995-01-29 (KLY)
2001-10-15 (SMS)

2002-12-04 (RHB)
2013-02-06 (BDT)
2023-02-22 (MBL)

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