

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

Animal Abstract

Element Code: AFCJB20040
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Lepidomeda vittata*
COMMON NAME: Little Colorado Spinedace
SYNONYMS: *Lepidomeda jarrovii*, *Lepidomeda jarrovi*
FAMILY: Cyprinidae

AUTHOR, PLACE OF PUBLICATION: Cope, 1874, Proc. Amer. Philosoph. Soc. 14:129-139.

TYPE LOCALITY: Little Colorado River, somewhere between the mouth of the Zuni River and Sierra Blanca, Apache County, Arizona.

TYPE SPECIMEN:

TAXONOMIC UNIQUENESS: One of six species in tribe which is endemic to lower basin of the Colorado River, one of four species in genus.

DESCRIPTION: Small, generally less than 100.0 mm (3.9 in.) in length. Scales in lateral line usually more than 90. Second spine of dorsal fin strong. Dorsal fin moderately high, acute, its depressed length is 5.2 to 5.8 cm (2.05 to 2.3 in.) predorsal length. Eight anal fin rays, rarely nine. Pharyngeal teeth in two rows, 1 or 2, 4-4, 1 or 2 (Minckley 1973). Sides usually silvery, darker above and sometimes white below, rarely with lateral blotches. Upper side and back is olivaceous, bluish or lead grey. Breeding males with bases of paired fins watery yellow to orange or red-orange, otherwise fins are clear, parts of belly watery-yellow.

AIDS TO IDENTIFICATION: Second spine of dorsal fin strong.

ILLUSTRATIONS: Photo (American Fisheries Society 1979:35).
B&W photo (Minckley 1973:109)
Color photo (Rinne and Minckley 1991:15)
B&W photo (Wildlife Habitat Management Staff Group 1975:14)

TOTAL RANGE: Endemic to the Little Colorado River and its north flowing tributaries, including the Arizona counties of Coconino, Navajo, and Apache. Historical distribution is similar to the current distribution but may have possibly occurred in the Zuni River watershed south of Gallup, New Mexico (Hill et al. 1989). Considered extirpated from Silver Creek and its tributaries.

RANGE WITHIN ARIZONA: Four populations exist in Arizona: Mainstem of Little Colorado, Nutrioso Creek, Clear Creek, Chevelon Creek (Young, AGFD Native Fish Diversity Review 1995).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY *L. vittata* appear to be quite capable of tolerating relatively harsh environments that undergo dramatic diel fluctuations in pH, dissolved gases, and water temperature. Predation occurs mainly from *Oncorhynchus mykiss* (rainbow trout) and *Lepomis cyanellus* (green sunfish).

REPRODUCTION: Spawns prolifically in early summer and then sporadically throughout summer, and early autumn. In males, bases of paired fins and parts of belly become watery-yellow during spawning season. Females lay 650 to 5000 eggs, and may spawn more than once a year. Engage in broadcast spawning over the bottom or on aquatic vegetation, and debris (Minckley 1973).

FOOD HABITS: Diet consists primarily of aquatic and terrestrial insects with adult aquatic insects eaten preferentially (Hill et al. 1989). Laboratory studies and field collections revealed this species is opportunistic, and is able to switch diets with food availability (Blinn and Runck 1990).

HABITAT: Found in water ranging from 0.16-1.3 meters (0.5-4.3 feet) in depth, but most abundant in depths of around 0.6 meters (1.9 feet). Most common in slow to moderate water currents, over fine gravel bottoms. Avoids deep, heavily-shaded pools and shallow, open areas. Prefers unshaded pools with rocks or undercut banks for cover (Hill et al. 1989; Minckley 1984). Temperatures where populations exist generally range from 58 -79 F (14 -26 C). Young of the year are most abundant on uniformly turbulent riffles 10 to 25 cm (3.9 to 9.8) in depth (Minckley and Carufel 1967).

ELEVATION: 1,000 to 3,000 m (3,300 to 9,800 ft.).

PLANT COMMUNITY: Riparian vegetation includes *Alnus* (alder), *Salix* (willow), *Quercus* (oak), and mixed conifer species.

POPULATION TRENDS: Populations fluctuate dramatically from year to year, and probably reflect cyclic periods of drought and/or increased rainfall. However, populations are thought to be declining due to alteration of habitat through reduced stream flow and interaction with introduced exotic fishes.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: LT, with Critical Habitat (USDI, FWS 1987)

**AGFD Animal Abstract
STATE STATUS:**

-3-

Lepidomeda vittata

WSC (AGFD, WSCA in prep)
[State Threatened AGFD, TNW 1988]
Forest Service Sensitive (USDA, A-S
National Forest 2000)
[Forest Service Sensitive, USDA, FS Region
3 1988]

OTHER STATUS:

MANAGEMENT FACTORS: Limiting factors include road construction, timber harvest operations, stream gravel removal and chemical treatment of streams. Additional limiting factors and concerns include decreased stream flow, impoundment of water, and interaction with and predation by, introduced exotic fishes (Minckley and Carufel 1967). Predation by rainbow trout has been strongly suggested as an important factor in the success and distribution of *L. vittata* (Blinn and Runck 1990, Blinn et al. 1993).

Threats: stream flow reduction; habitat alteration and competition with nonnative crayfishes; predation by and competition with nonnative fishes. **Management needs:** delineate spinedace management areas; conserve existing populations and their watersheds; establish refugium sites within historical habitats; ameliorate effects of nonnative fishes in spinedace habitats.

PROTECTIVE MEASURES TAKEN: The lower reach of Chevelon Creek, the White Mountain Hereford Ranch (through which Rudd Creek flows) and the Wenima property (through which the Little Colorado River flows) are currently owned and managed by the Arizona Game and Fish Department.

SUGGESTED PROJECTS: Important to continue life history studies to determine population levels, distribution, habitat and restoration needs. Maintain stream water quality standards and give the species management consideration in activities which may encroach upon and degrade its habitat.

LAND MANAGEMENT/OWNERSHIP: BIA - Hopi Reservation; BLM; USFS - Apache-Sitgreaves and Coconino National Forests; AGFD - Sipe White Mountain Wildlife Area and Wenima Riparian Corridor; Private.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- Arizona Game and Fish Department. 1988. Threatened Native Wildlife in Arizona. p.7.
- 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.
- Blinn, D.W. and C. Runck. 1990. Importance of predation, diet and habitat on the distribution of *Lepidomeda vittata*: a federally listed species of fish. Department of Biological Sciences, Northern Arizona University, Flagstaff, Arizona. p. 47.

- Blinn, D.W., C. Runck, D.A. Clark and J.N. Rinne. 1993. Effects of Rainbow Trout predation on Little Colorado Spinedace. *in* Transactions of the American Fisheries Society 122:139-143.
- Davidson, T. and J. Ward, 1997. Spinedace Stream Study. AGFD Heritage Grant # I93025.
- Denova, B.P. and F.J. Arbarca, 1992. Distribution, abundance, and habitat for the Little Colorado Spinedace (*Lepidomida vittata*) in the Coconino and Apache-Sitgreaves National Forests along East Clear Creek and its tributaries. Final Report, AGFD Non-Game and Endangered Wildlife Program. pp47.
- Dorum, D.B., and K.L. Young, 1995. Little Colorado Spinedace Project Summary Report. AGFD Non-Game Technical Report #88. 104.
- Eakle, W.L. and E.L. Smith. 1989. Draft biological assessment of threatened and endangered species for the Springerville to Alpine highway realignment, Nutrioso section. Dames and Moore Environmental Services Group. pp. 5-8.
- Hill, J., O.E. Maughan and L. Thompson. 1989. Endangered species information system: Little Colorado River spinedace (*Lepidomeda vittata*). Arizona Cooperative Fish and Wildlife Unit, University of Arizona, Tucson. p. 13.
- Minckley, C.O. 1984. Current distribution and status of *Lepidomeda vittata* (the Little Colorado spinedace) in Arizona. Department of Biological Sciences, Northern Arizona University, Flagstaff, Arizona. p. 43.
- Minckley, W.L. and L.H. Carufel. 1967. The Little Colorado River spinedace, *Lepidomeda vittata*, in Arizona. The Southwestern Naturalist 12(3):291-302.
- Minckley, W.L. 1973. Fishes of Arizona. Arizona Game and fish Department, Phoenix. pp. 109-111.
- Page, L.M., and B.M. Burr. 1991. A field guide to freshwater fishes: North America, north of Mexico. Houghton Mifflin Co., Boston. p. 81.
- 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. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. pp. 15-16.
- USDA, Forest Service Region 3. 1988. Regional Forester's Sensitive Species List.
- USDA, Forest Service. 2000. Apache-Sitgreaves National Forests Sensitive Species List.
- USDI, Fish and Wildlife Service. 1987. Endangered and Threatened Wildlife and Plants; Final Rule to Determine *Lepidomeda vittata* (Little Colorado Spinedace) To Be a Threatened Species with Critical Habitat. Federal Register 52(179):35034-35040.
- Wildlife Habitat Management Staff Group. 1975. Endangered and unique fish and wildlife of the southwestern national forests. U.S. Department of Agriculture Forest Service, Southwestern Region. pp. 14-15.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Dean Blinn, Northern Arizona University (retired), Flagstaff, Arizona

ADDITIONAL INFORMATION:

Revised: 1994-07-19 (LOC)

1994-07-22 (SMS)

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.