

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

**Animal Abstract**

**Element Code:** AFCJB03030

**Data Sensitivity:** No

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Campostoma ornatum*  
**COMMON NAME:** Mexican Stoneroller  
**SYNONYMS:** *Campostoma pricei*; *Campostoma ornatum pricei*  
**FAMILY:** Cyprinidae

**AUTHOR, PLACE OF PUBLICATION:** Girard, C. 1856. Proceedings of the Academy of Natural Sciences of Philadelphia 8:165-213.

**TYPE LOCALITY:** Chihuahua River and a tributary a few miles long, Mexico.

**TYPE SPECIMEN:** Lectotype and paralectotypes (USNM 214999) are deposited at the National Museum of Natural History (Brooks 1976).

**TAXONOMIC UNIQUENESS:** The genus is comprised of three morphologically similar species, *C. anomalum*, *C. oligolepis*, and *C. ornatum*. *C. ornatum* is the only species known from Arizona. According to NatureServe, "Set off from other *Campostoma* by numerous morphological and biochemical characteristics (Buth and Burr 1978. Morphologically variable in confounding geographic patterns."

**DESCRIPTION:** Moderate-sized minnow with stout body that is not much compressed. Large head, with snout projecting and somewhat acute. Mouth is small with cartilaginous sheaths within jaws. Length rarely exceeds 12.7 cm (5.0 inches), however, large adults may obtain lengths of 15.0 cm (5.9 inches) or more (Minckley 1991). Scales relatively small, 62 to 76 in the lateral line. However according to Page and Burr (1991) they have 58-77 scales in the lateral line and 47-60 scales around the body at dorsal fin origin, 15-19 rakers on 1<sup>st</sup> gill arch. Their pharyngeal teeth are 0, 4-4,0 and they may reach a length of 15.87 cm (6.25 in). Breeding males with heads and predorsal areas swollen and greatly arched. Both sexes develop tubercles, however, nuptial tubercles are large and conspicuous on males. Tubercles are above the nostril between the eyes and on the head.

Color dark above, lighter below, with a dark lateral band variously developed. Some scales on dorsum and sides darkened, giving a blotched appearance. Juveniles have a distinct black lateral stripe, easily visible in clear water. Fins usually transparent in both sexes during non-breeding seasons. Breeding males with a darkened mid-part of dorsal fin, accompanied by an orange basal patch.

**AIDS TO IDENTIFICATION:** Male ornate minnows, *Codoma ornata*, are almost as spectacular in that their heads become swollen and covered by coarse tubercles. The species is, however, much smaller in size than *Campostoma ornatum*, rarely achieving more than 7.5 cm (2.95 in) in length. It also develops dark bluish black coloration on the body when in breeding condition (Rinne and Minckley 1991).

**ILLUSTRATIONS:** B&W photo (Minckley 1973:141)  
Color drawing (Page and Burr 1991)  
Color photo (Rinne and Minckley 1991:19)  
B&W photo (Wildlife Habitat Management Staff Group 1975:25)  
Color photo (Rinne 1990)  
Color photo (Nature's Image Inc. *in*  
<http://www.tmm.utexas.edu/tnhc/fish/na/cyprinid/camposto/cornatum/cornatu2.jpg>)  
Color photo (J. Rinne *in*  
<http://www.tmm.utexas.edu/tnhc/fish/na/cyprinid/caposto/cornatum/cornatu1.jpg>)  
Color photo (S. Contreras-Bladeras *in*  
<http://www.nativefish.org/Gallery/Campostoma-ornatum-1.jpg>.)

**TOTAL RANGE:** Presently known throughout the Rio Yaqui drainage of Mexico, eastward to tributaries of the Rio Grande River, near the Big Bend region of Texas, and south through Sonora, Chihuahua and Durango in Mexico. In Arizona, it occurs only in Rucker Canyon in the Chiricahua Mountains. Previously known in Arizona from Whitewater Creek near Douglas (Lowe 1964), Black Draw on the San Bernardino National Wildlife Refuge (Sheldon 1989) and Leslie Creek (Wildlife Habitat Management Staff Group 1975). Occurred at Cajon Bonita just south of Douglas in 1978.

**RANGE WITHIN ARIZONA:** Currently known only from Rucker Canyon in the Chiricahua Mountains (Francisco J. Abarca, pers. comm. 1994) and San Bernadino Creek (Arizona Game and Fish Department 1996).

## **SPECIES BIOLOGY AND POPULATION TRENDS**

**BIOLOGY:** Cartilaginous sheaths on the jaws are used for scraping encrusting algae from stones and other solid substrates.

**REPRODUCTION:** Little is known of the reproduction of this species. Breeding brings on Head tuberculation and changes in fin coloration, for both males and females. Both of these changes are more dramatic in males. Burr (1976) cites several sources, which document breeding activities of *C. ornatum* in winter, spring and late spring in various parts of its range. Tubercles are used by males to combat other males, to stimulate and guide females, and for digging. Males excavate nests by pushing gravel with their heads "stone rolling", and by carrying gravel in their mouths. The nests are elongate depressions that are defended against

other males. Females enter the depression and spawn (Rinne and Minckley 1991). Eggs are non-adhesive and must lodge in crevices of the gravel, and are defended by the male until hatching (Sheldon 1989).

**FOOD HABITS:** Primarily detritus, algae and some aquatic insects.

**HABITAT:** Shallow riffles and runs over gravel/cobble substrates. Large adults can be found in pools over sand or gravelly bottoms in small streams; they are also often in flowing segments of pools or along undercut banks or other cover.

**ELEVATION:** 800 to 2,000 m (2,625 to 6,560 ft.).

**PLANT COMMUNITY:** Petran Montane Conifer Forest, Chiricahua Mountains.

**POPULATION TRENDS:** The species has declined drastically in Rucker Canyon, Arizona, persisting in small numbers despite extreme habitat modification. Populations of *C. ornatum* are variable in size and occurrence in Texas (Hubbs and Warner 1973 in Hendrickson et al. 1980). Populations in Mexico still inhabit most of range. Populations in Rio Yaqui were in pretty good shape as of summer 1978. Surveys conducted by the Arizona Game and Fish Department in the summer of 1989 indicated the species was in good shape in the Rio Bavispe, a sub-basin of the Rio Yaqui, Mexico (Francisco J. Abarca pers. comm. 1994).

## **SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** SC (USDI, FWS 1996)  
[C2 USDI, FWS 1985]

**STATE STATUS:** 1A (AGFD SWAP 2012)  
[WSC, AGFD, WSCA in prep]  
[State Endangered AGFD, TNW 1988]

**OTHER STATUS:** Forest Service Sensitive (USDA, FS Region  
3 2013, 1999, 1988)  
None. NORMA Oficial Mexicana NOM-  
059-SEMARNAT-2010.  
[Determined Endangered, Secretaría de Medio  
Ambiente 2000]  
[Determined Endangered, Secretaría de  
Desarrollo Social 1994]

**MANAGEMENT FACTORS:** Maintenance and/or creation of suitable habitats, which will maintain stream water quality standards and flows. According to NatureServe (2002), current threats include aquifer pumping, reduction in stream flows, water diversion, drought and predation by non-native green sunfish.

**PROTECTIVE MEASURES TAKEN:** There are currently plans to create a habitat to reintroduce fish into waters on the San Bernardino Ranch (=wildlife refuge).

**SUGGESTED PROJECTS:** Develop management plan for species. Habitat preservation and renovation. Protect natural habitat and populations in Mexico. Perform studies to determine life history information.

**LAND MANAGEMENT/OWNERSHIP:** FWS - San Bernardino National Wildlife Refuge; USFS - Coronado National Forest. In Mexico, private, public and ejido lands.

## **SOURCES OF FURTHER INFORMATION**

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#### ADDITIONAL INFORMATION:

**Revised:** 1994-07-11 (WDH)  
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*Campostoma ornatum*

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