

Scientific Name: *Semotilus atromaculatus*

Common Name: Creek chub

BISON No.: 010125

Legal Status:

- | | | |
|---------------------------------------|------------------------------|------------------------------|
| ➤ Arizona, Species of Special Concern | ➤ ESA, Proposed Threatened | ➤ New Mexico-WCA, Threatened |
| ➤ ESA, Endangered | ➤ ESA, Threatened | ➤ USFS-Region 3, Sensitive |
| ➤ ESA, Proposed Endangered | ➤ New Mexico-WCA, Endangered | ➤ None |

Distribution:

- | | |
|---|---------------------------|
| ➤ Endemic to Arizona | ➤ Southern Limit of Range |
| ➤ Endemic to Arizona and New Mexico | ➤ Western Limit of Range |
| ➤ Endemic to New Mexico | ➤ Eastern Limit of Range |
| ➤ Not Restricted to Arizona or New Mexico | ➤ Very Local |
| ➤ Northern Limit of Range | |

Major River Drainages:

- | | |
|------------------------|-----------------------------|
| ➤ Dry Cimmaron River | ➤ Rio Yaqui Basin |
| ➤ Canadian River | ➤ Wilcox Playa |
| ➤ Southern High Plains | ➤ Rio Magdalena Basin |
| ➤ Pecos River | ➤ Rio Sonoita Basin |
| ➤ Estancia Basin | ➤ Little Colorado River |
| ➤ Tularosa Basin | ➤ Mainstream Colorado River |
| ➤ Salt Basin | ➤ Virgin River Basin |
| ➤ Rio Grande | ➤ Hualapai Lake |
| ➤ Rio Mimbres | ➤ Bill Williams Basin |
| ➤ Zuni River | |
| ➤ Gila River | |

Status/Trends/Threats (narrative):

State NM: Provides limited protection.

The creek chub is known to hybridize with the southern redbelly dace and central stoneroller (Sublette et al 1990). The adult creek chub may be cannibalistic, often feeding on its own young (Sublette et al 1990). Another threat is that the male creek chub that continues nest building may unintentionally bury eggs previously oviposited (Sublette et al 1990).

Distribution (narrative):

The creek chub is found throughout most of eastern North America, from Manitoba, Canada, Montana, and northern New Mexico east to Atlantic slope (Lee et al 1981, Sublette et al 1990).

The creek chub is native to the upper Arkansas and middle elevation streams of the Pecos and Canadian drainages where it is stable (Koster 1957, Sublette et al 1990).

Key Distribution/Abundance/Management Areas:

Panel key distribution/abundance/management areas:

Breeding (narrative):

Spawning of the creek chub occurs from late spring to midsummer in water temperatures of 13-18°C (Sublette et al 1990). The male creek chub builds a nest in gravel at the head of a riffle by transporting stones in its mouth, or occasionally it will appropriate nests of stonerollers minnows, driving the males of that species away (Koster 1957, Becker 1983). After oviposition, the male usually guards the nest until the demersal, nonadhesive eggs are hatched (Sublette et al 1990). Incubation time is about six days at 18°C (Buynak and Mohr 1979).

Habitat (narrative):

The creek chub is a schooling species inhabiting small to medium streams, rivers, and occasionally lakes, preferring streams of less than 12 m width and with a gravel-sand-silt substrate (Becker 1983). The creek chub is abundant in small streams and clear creeks and brooks, and occasionally in shallows of small, clear lakes (Koster 1957, Lee et al 1981).

Key habitat components: small streams, silt/sand/gravel substrates.

Breeding Season:

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

Panel breeding season comments:

Aquatic Habitats:

Large Scale:

- Rivers
- Streams
- Springs
- Spring runs
- Lakes
- Ponds
- Sinkholes
- Cienegas
- Unknown
- Variable

Small Scale:

- Runs
- Riffles
- Pools
- Open Water
- Shorelines

Panel comments on aquatic habitats:

Important Habitat Features (Water characteristics):

Current

- Fast (> 75 cm/sec)
- Intermediate (10-75 cm/sec)
- Slow (< 10 cm/sec)
- None
- Unknown
- Variable

Gradient

- High gradient (>1%)
- Intermediate Gradient (0.25-1%)
- Low Gradient (<0.25%)
- None
- Unknown
- Variable

Water Depth

- Very Deep (> 1 m)
- Deep (0.25-1 m)
- Intermediate (0.1-0.25 m)
- Shallow (< 0.1 m)
- Unknown
- Variable

Panel comments on water characteristics:

Important Habitat Features (Water Chemistry)

Temperature (general)

- Cold Water (4-15°C)
- Cool Water (10-21°C)
- Warm Water (15-27°C)
- Unknown
- Variable

Turbidity

- High
- Intermediate
- Low
- Unknown
- Variable

Conductivity

- Very High (> 2000 $\mu\text{S/cm}$)
- High (750-2000 $\mu\text{S/cm}$)
- Intermediate (250-750 $\mu\text{S/cm}$)
- Low (< 250 $\mu\text{S/cm}$)
- Unknown
- Variable

Panel comments on water chemistry:

Important Habitat Features (Structural elements):

Substrate

- Bedrock
- Silt/Clay
- Detritus
- Sand
- Gravel
- Cobble
- Boulders
- Unknown
- Variable

Cover

- Rocks, boulders
- Undercut banks
- Woody debris
- Aquatic vegetation
- Rootwads
- Not important
- Overhanging vegetation
- Unknown
- Variable

Panel comments on structural elements:

Diet (narrative):

The creek chub is an omnivorous sight feeder; insects, cladocerans, algae, and higher plant tissues constitute significant part of diet (Lee et al 1981). The diet of the creek chub is diverse and includes many insects, crustaceans, and other invertebrates as well as a few fish (Koster 1957). For young creek chubs 20-40 mm long, the most important food items are chironomids larvae, as well as ceratopogonids, simuliids, and cecidomyids and ephemeropteran naiads (Sublette et al 1990). Individuals reach maturity at 61-80 mm in length, mollusks and fish constitute the bulk of the total volume, with fish over 81 mm long being primarily piscivorous (Sublette et al 1990).

Diet category (list):

- Planktivore
- Herbivore
- Insectivore
- Piscivore (Fish)
- Omnivore
- Detritivore

Grazing Effects (narrative):

No information of the effects of grazing on the species. This species inhabits small, clear streams, and cattle grazing may negatively impact favorable habitats.

Panel limiting habitat component relative to grazing and comments:

Panel assessment: Is this species a priority for selecting a grazing strategy?
 Throughout the species' distribution in New Mexico and Arizona
 YES NO UNKNOWN
 In key management area(s)
 YES NO UNKNOWN

Principle Mechanisms Through Which Grazing Impacts This Species (list):

May be Revised

- | | | |
|--|-------------------------------------|-------------------------------------|
| ➤ Alteration of bank structures | ➤ Altered bank vegetation structure | ➤ Increased turbidity |
| ➤ Alteration of substrate | ➤ Change in food availability | ➤ Other biotic factors |
| ➤ Alteration of water regimes | ➤ Change in water temperature | ➤ Parasites or pathogens |
| ➤ Altered stream channel characteristics | ➤ Change in water quality | ➤ Population genetic structure loss |
| ➤ Altered aquatic vegetation composition | ➤ Habitat fragmentation | ➤ Range improvements |
| | | ➤ Trampling, scratching |
| | | ➤ Unknown |

Panel causal mechanisms comments:

Authors

- **Draft:** Magaña, H.A. and Rinne, J.N.
- **GP 2001:**
- **GP 2002:**
- **Revision:**

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- Buynak, G.L. and Mohr, W.H., jr. 1979. Larval development of rock bass from the Susquehanna River. Progressive fish culturalist. 41(1):39-42.
- Koster, W. J. 1957. Guide to the fishes of New Mexico. University of New Mexico Press, Albuquerque, New Mexico.
- Lee, D. S., Gilbert C. R., Hocutt C. H., Jenkins R. E., Callister D. E., and Stauffer J. R. 1981. Atlas of North American Freshwater Fishes: North Carolina, North Carolina State Museum of Natural History, 1981, c1980.

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