Scientific Name: *Astyanax mexicanus*
Common Name: Mexican tetra
BISON No.: 010555

Legal Status:

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

Distribution:

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

Major River Drainages:

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

Status/Trends/Threats (narrative):

USFS Sensitive: Region 3 (NM, AZ). State NM: Threatened.
The Mexican tetra remains common in much of its historic range (**Birkhead 1980**), it has expanded its range in TX (Edwards 1977), and it has been introduced to AZ (Minckley 1973). Threats to the Mexican tetra includes groundwater pumping in the vicinity of Roswell, New Mexico and consequent drying of springs and brooks caused the general demise of Mexican tetras in this area (Propst 1999). The Mexican tetra is suspected by some biologists of being a hazard to fisheries (Koster 1957). The spread of the Mexican tetra in Arizona can result in damage to more desirable fishes (Minckley 1973). Degradation of stream habitats resulting from overgrazing, siltation, channelization, and water diversions are probable reasons for the decline of the Mexican tetra (Sublette et. al. 1990).

Distribution (narrative)**:**

The native range of the Mexican tetra extends from Gulf Coastal drainages of eastern and central Mexico northward to the Nueces River, TX (**Birkhead 1980**). Originally, the Mexican tetra was restricted to the Rio Grande, Pecos and the Nueces River drainage in Texas, but the range has been extended, largely through its use as baitfish in the Southwest and South Central states (Lee et. al. 1981, Sublette et. al. 1990). Historically, the Mexican tetra was found in the Pecos River drainage downstream from Santa Rosa and in the Rio Grande downstream from Radium Springs (Koster 1973, Sublette et. al. 1990). Koster (1973) reported the Mexican tetra from the Pecos River as far north as central New Mexico and from the Rio Grande in extreme southwestern edge of the state. The Mexican tetra can be found in pools of the main streams in the lower Pecos and Rio Grande valleys (Koster 1957). **Cowley and Sublette (1987)** reported a limited distribution in the Black River system south of Carlsbad, NM. Surveys indicate that the Mexican tetra is now restricted to the Pecos River drainage downstream from Dexter, NM where it is diminishing, and appears to be extirpated from the Rio Grande drainage (Sublette et. al. 1990). The Mexican tetra occurs in the Rio Grande from its mouth upstream to the Big Bend region (Propst 1999). New Mexico constitutes the northern limits of the native distribution of this species (Sublette et. al. 1990).

Key Distribution/Abundance/Management Areas:

Panel key distribution/abundance/management areas:

Breeding (narrative)**:**

Koster (1957) reported that spawning occurs in summer. In the spring, Mexican tetras migrate upstream from the Colorado River into Waller Creek and reside and breed in its relatively warmer waters (17-30^{o}C) until water temperatures begin to decline in the fall (Edwards 1977). Spawning occurs in late spring and early summer; eggs are adhesive (Sublette et. al. 1990). The Mexican tetra has a great proclivity for eating its own eggs (Breder 1943).

Habitat (narrative)**:**

The Mexican tetra tends to congregate below swift areas, in eddies, and flowing pools (Minckley 1973). The Mexican tetra most often inhabits thermally consistent springs and their outflows, where water temperatures are buffered from cold, extreme winters. Young of the year are often found in shallow water, near overhanging bank vegetation (Edwards 1977). The Mexican tetra is a schooling species occupying a variety of habitats, including swift flowing rapids, eddies, and pools (Minckley 1973). In New Mexico, the Mexican tetra is found primarily in habitats with stenothermal flows (springs) (Sublette et. al. 1990). Although the Mexican tetra occupies a variety of habitats, they tend to be more common in low velocity pool habitats in small streams and spring systems (Propst 1999). The Mexican tetra inhabits rocky and sandy bottoms of pools and backwaters of creeks and small to large rivers, and springs (Fishbase 2002).

Key Habitat Components: Low velocity water and springs.

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 µS/cm)
- High (750-2000 µS/cm)
- Intermediate (250-750 µS/cm)
- Low (< 250 µS/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 Mexican tetra is highly carnivorous (Minckley 1973). The Mexican tetra feeds on insects, crustaceans, and worms (Fishbase 2002). Koster (1957) reported that the Mexican tetra is an active fish that travels in schools feeding on small animals (Koster 1957). Young of the year are often found feeding voraciously on insects (Edwards 1977). Populations of Mexican tetra in northeastern Mexico are omnivorous, with higher plant remains, filamentous algae, and aquatic insects comprising the bulk of its diet (Lee et. al. 1981). The Mexican tetra is usually highly carnivorous, feeding on smaller fish, although in northeast Mexico it is reported to be omnivorous, with plants, filamentous algae, and aquatic insects comprising the bulk of its diet (**Birkhead 1980**).

Diet category (list):

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

Grazing Effects (narrative):

Livestock could have conceivable negative effects on the habitat of this species in springs by removal of vegetation and trampling of banks, exposing young to predation. Although grazing has been suggested as one of the threats to the species there is no specific information.

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

Panel causal mechanisms comments:

Authors

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

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