Scientific Name: *Cyprinella lutrensis*
Common Name: Red Shiner
BISON No.: 010430

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):

Not a threatened or endangered species. State AZ: Demonstrably Secure. State NM: An exotic established in the state. Although the red shiner is not threatened it is a real threat to the Colorado pikeminnow and razorback sucker larvae as well as other native fish species. The red shiner threatens to displace many native fish species because it is highly adaptable to varying environmental conditions.

Distribution (narrative):

The red shiner is found in the Mississippi and Gulf drainages from SD and IL thru northern Mexico (Lee 1981). The red shiner is one of the most widespread and ubiquitous fishes of the western part of the Mississippi River basin, thriving under conditions of intermittency, high turbidities, and high temperatures (Minckley 1973). The red shiner is native to the Rio Grande,

Pecos, and Canadian drainages. It was introduced into the San Juan and San Francisco drainages during the 1970's and into the Gila drainage in the 1950's. Occurs in Hurrah Creek, a tributary of Rio Pecos [Esteros Creek, Pecos River, Guadalupe county, NM] Rio Grande, San Ildefonso, Santa Fe county, NM. Widely introduced throughout the U.S. Also native to northeastern Mexico (Sublette et. Al. 1990).

Key Distribution/Abundance/Management Areas:

Panel key distribution/abundance/management areas:

Breeding (narrative)**:**

Reproduction usually occurs in calm water, and less often in riffles over boulders or fine gravel bottoms. Spawning activities have been noted adjacent to or over logs, boulders, submerged roots, aquatic plants and brush, and even on open gravel bottoms of aquaria and over the nests of sunfishes. In large reservoirs of central AZ, spawning aggregations are active along open shorelines of sand-gravel beaches in the period of March – June (Minckley 1973). Spawning occurs in both lakes and streams from April through September at water temps of 15.5-29.5 C, primarily during morning daylight hours (Gale 1986) on clean gravel of riffles, sunfish nests, submerged roots, and aquatic plants (Pflieger 1975); in riffles over a bottom of fine sand (Saksena 1962, Cross 1967); or on rocky shoreline crevices (Taber 1969, Gale 1986). Several clutches (up to 19) of eggs may be produced each year with an average of 585 eggs per clutch (Gale 1986). High temps may be lethal to incubating eggs. After fertilization the eggs are abandoned and hatch in about 105 hrs, at 24.5 C. Evidence found in the study of scale annuli suggests that at least some individuals live through two winters, thus spawning twice.

Habitat (narrative)**:**

The red shiner makes wide use of available habitat during mild environmental conditions and constricted habitat use when physio-chemical conditions were potentially stressful. Species showed adaptability in habitat use, changing microhabitats as environmental conditions changed (Matthews and Hill 1980). Red shiners inhabit low gradient habitats (2.5m/km), especially backwaters, creek mouths and medium sized streams with predominately shifting sand or sand-silt bottoms. They are uncommon or absent in clear, high-gradient streams (Lee 1981, Greger and Deacon 1988, Ruppert et. al. 1993). The red shiner inhabits perennial rivers, lakes and ponds as well as ephemeral habitats with high turbidity and few competing species. Temperature, current speed, and water depth has the greatest impact on habitat selection by red shiners and that they avoided temperature extremes in winter and summer, consistently selecting water deeper than 20 cm with negligible flow and a pH of 7.1-7.4. They are found throughout the Guadalupe drainage in pools and slowing flowing riffles (Sublette et. al. 1990).

Seasonal Activity (narrative)**:**

In May red shiners are found most common where low water temperatures, O2, pH and current speed, in Aug. red shiners moved to areas of higher temperature, pH, and O2 while avoiding

shallow water, in Oct. red shiners are confined almost totally to backwater pools (Matthews and Hill 1980). The highest peak of sexual activity occurs in late spring and early summer (Sublette et. al. 1990).

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:

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)**:**

Red shiners are omnivorous. In lakes they feed upon plankton and aquatic insect larvae, in streams, algae, invertebrates (aquatic and terrestrial), and young of other fishes have been found in their stomachs (Minckley 1973). The red shiners near Mesquite fed primarily on ceratopogonid larvae (biting midges) and simuliid adults (blackflies) in Feb, a diversity of foods between June and Aug., chironomid larvae (midges) in Sept., and simuliid adults and chironomid larvae in Dec. The red shiner has affected the distribution and abundance of native fishes of the southwest. Speckled dace and red shiner showed relatively high dietary overlap (Greger and Deacon 1988). The red shiner is omnivorous, feeding on insects, algae, crustaceans, and a variety of microorganisms and plant material (Sublette et. al. 1990). The red shiner is an opportunistic drift feeder, it feeds on insects, including adult or immature caddiesflies, mayflies, beetles, and water striders. The red shiner is piscivourous on Colorado pikeminnow and razorback sucker larvae (Ruppert et al 1993).

Diet category (list):

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

Grazing Effects (narrative):

There is no information on the potential or real impact to the species. Impacts on small pools and stream riffle habitats are a possible influence to the species given that red shiners are sensitive to water temperature and water depth. Grazing by livestock or wild ungulates can affect both temperature and water depth. Spawning on clean gravel of riffles, submerged roots, or aquatic plants in shallow waters present a possible threat to direct, hoof impact to the species.

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:** Magaña, H.A.
- **GP 2001:**
- **GP 2002:**
- **Revision:**

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