

Scientific Name: *Moxostoma congestum*

Common Name: Gray redbhorse

BISON No.: 010365

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):

Federal (USFS): Sensitive Region 3, State NM: Threatened.

The gray redbhorse species are on the State of New Mexico Endangered Species List (Cowley and Sublette 1987).

Although this species remains comparatively common in portions of its range in Texas, it is rare or uncommon in all portions of New Mexico range (NMGF files) (Propst 1999). Populations of the gray redbhorse are diminishing in the Pecos River drainage of New Mexico (Sublette et al 1990). Presently, the depletion of surface water is the major cause of the decline of gray redbhorse in New Mexico (Sublette et al 1990).

The introduction of grass carp for aquatic vegetation control to habitats occupied by gray redbhorse may pose another threat to the species. Depletion of surface flows may inhibit reproductive success

in some portions of its range, and water quality degradation may diminish its abundance (Propst 1999).

Distribution (narrative):

The gray redhorse is found in the United States, Brazos drainage west to Pecos system of Rio Grande drainage, TX and southeastern New Mexico, and Rio Grande in vicinity of El Paso, TX. The gray redhorse is also found in Mexico, Rio Grande tributaries below Big Bend region, and south of Atlantic slope to Rio Sota la Mariana drainage, Tamaulipas (Lee et al 1981).

The historic range of gray redhorse included Gulf Coastal drainages of central and west Texas, the Pecos River of New Mexico and Texas, the Rio Grande in New Mexico, and Mexican tributaries to the Rio Grande downstream of the Big Bend region (Jenkins, 1980). In New Mexico, it was historically present in the Rio Grande downstream of Socorro and in the Pecos River from about Roswell downstream to the Texas/New Mexico border. In New Mexico, it no longer occurs in the Rio Grande, and in the Pecos River it is limited to the reach from Carlsbad downstream to the Texas/New Mexico border. (Cowley and Sublette, 1987a).

The gray redhorse are presently restricted in New Mexico to the Pecos and Black rivers of Eddy Co (Cowley and Sublette 1987a).

Key Distribution/Abundance/Management Areas:

Panel key distribution/abundance/management areas:

Breeding (narrative):

The gray redhorse spawns in late March and early April when water temperatures are 18 to 21°C (Lee et al 1981, Martin 1986). Spawning activity occurred at tails of pools above areas of relatively clean gravel/pebble/cobble (Martin 1986). Spawning occurs when several ripe individuals aggregate at the downstream end of pools over gravel and small cobble substrates (Martin, 1986, Sublette et al 1990). Eggs presumably are demersal and develop among the interstices of the gravel and cobble spawning bars (Propst 1999). No information is available on age, growth, and survival of gray redhorse (Propst 1999).

Habitat (narrative):

The gray redhorse inhabits clear moderately turbid, warm, sluggish, low-gradient streams, and adults are usually found in pools or in deep runs over a variety of substances (Lee et al 1981, Sublette et al 1990). Adults are typically found in pools over rock, gravel, sand, and silt; sometimes in deep runs (Lee et al 1981). In the Pecos and Black rivers in New Mexico, gray redhorse are most commonly found in deep (up to 3.0 m), slow-velocity (<0.01 cm/sec) water over a variety of substrates most commonly silt or limestone bedrock (Propst 1999). The young and juveniles seek riffles and gravelly runs (Jenkins 1980), and usually avoid densely vegetated areas (Cowley and Sublette 1987).

Key Habitat Components: Slow velocity deep waters, silt-bedrock 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 $\mu\text{S}/\text{cm}$)
- High (750-2000 $\mu\text{S}/\text{cm}$)
- Intermediate (250-750 $\mu\text{S}/\text{cm}$)
- Low (< 250 $\mu\text{S}/\text{cm}$)
- 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 food habits of the gray redhorse are poorly known. The gray redhorse is a firm substrate feeder, and part of the time feeds in riffles, since the caddisfly assemblages are restricted to riffles (Cowley and Sublette 1987b). The gray redhorse consumes a variety of benthic aquatic invertebrates (Propst 1999). Food items found in gray redhorse stomachs led Cowley and Sublette (1987b) to suggest that the species sometimes feeds in cobble riffles. In New Mexico, this species feeds largely in immature aquatic insects, taking relatively little vegetation (Sublette and Cowley 1987b).

Diet category (list):

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

Grazing Effects (narrative):

No specific information on the effects of grazing on the gray redbhorse, however, little direct impacts are likely based on current distribution and habitat preferences (ie. Turbid, deep pools).

Panel limiting habitat component relative to grazing and comments:
<p>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</p>

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

May be Revised

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> ➤ Alteration of bank structures ➤ Alteration of substrate ➤ Alteration of water regimes ➤ Altered stream channel characteristics ➤ Altered aquatic vegetation composition | <ul style="list-style-type: none"> ➤ Altered bank vegetation structure ➤ Change in food availability ➤ Change in water temperature ➤ Change in water quality ➤ Habitat fragmentation | <ul style="list-style-type: none"> ➤ Increased turbidity ➤ Other biotic factors ➤ Parasites or pathogens ➤ Population genetic structure loss ➤ Range improvements ➤ Trampling, scratching ➤ Unknown |
|---|---|--|

Panel causal mechanisms comments:
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Authors

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

Bibliography:

- Cowley, D.E. and Sublette, E.J. 1987a. Distribution of fishes in the Black River drainage, Eddy County, New Mexico. *Southwest naturalist*. 32: 411-413
- Cowley, D.E. and Sublette, E.J. 1987b. Food Habitats of *Moxostoma Congestum* and *Cycleptus Elongatus* (Catostomidae: Cypriniformes) In Black River, Eddy County, New Mexico. *The southwest naturalist* 32(3): 411-413.
- Jenkins, R.E. 1980. *Moxostoma congestum* (Baird and Girard), gray redhorse, p. 418. In: Lee et al (Eds.), *Atlas of North American freshwater fishes*. North Carolina State Museum of Natural History, Raleigh.
- 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.
- Martin, F.R. 1986. Spawning Behavior of the Grey Redhorse, *Moxostoma Congestum* (Pisces: Catostomidae) in Central Texas. *The southwest naturalist* 31(3): 399-401.
- Propst, D. L. 1999. Threatened and endangered fishes of New Mexico. *New Mexico Game and Fish Tech Report* 1. 84 pp.
- Sublette, J. E., M. D. Hatch, and M. Sublette. 1990. *The Fishes of New Mexico*. University of New Mexico Press. Albuquerque. 393 pp.