

Scientific Name: *Phoxinus erythrogaster*

Common Name: Southern redbelly dace

BISON No.: 010180

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 (NM, AZ). State NM: endangered.

This unusual fish is rare in New Mexico (Koster 1957). The limited range of the southern redbelly dace in New Mexico imposes vulnerability on the species (Propst 1999). Security of New Mexico populations of southern redbelly dace depends upon maintenance of spring and small stream habitats free of sedimentation and nonnative predators (Propst 1999).

Threats facing the southern redbelly dace are hybridization with creek chubs and central stonerollers (Sublette et. al. 1990). Excessive groundwater pumping may lower spring levels to the detriment of the species and sedimentation of spring and creek habitats may reduce food availability and destroys spawning habitat (Propst 1999). Nonnative predators (e.g. brown trout) may reduce southern redbelly dace abundance in small habitats it currently occupies (Propst 1999).

Distribution (narrative):

The southern redbelly dace naturally occurs in the upper Mississippi drainage, Great Lakes drainages, Ohio River drainage, and middle Mississippi River drainages, south to the Tennessee River drainage and White-Arkansas River drainage (Fishbase 2002) and New Mexico (Sublette et. al. 1990). The southern redbelly dace is found in small upland streams from Minnesota and western Pennsylvania south to Arkansas and Alabama. Extremely isolated populations of undetermined origin in headwaters of Arkansas River drainage in northeastern New Mexico (Koster 1957). The southern redbelly dace is locally common in a few small tributaries of the Canadian River (Koster 1957). The southern redbelly dace is limited to the headwaters in the Mora River drainage upstream from Mora, New Mexico notably in Coyote Creek and tributaries feeding Black Lake (Sublette et. al. 1990). The southern redbelly dace is comparatively common in spring and spring-run habitats, but rare in stream habitats within the limited New Mexico range of the species (Propst 1999). This species is widespread in the Mississippi River drainage. It is found only in the Mora River in north, central New Mexico (Propst 1999). Isolated populations have been found in the Former Mississippi Embayment, in Kansas River system, and in the Arkansas River drainage (Fishbase 2002).

Key Distribution/Abundance/Management Areas:

Panel key distribution/abundance/management areas:

Breeding (narrative):

Becker (1983) reported that spawning begins at various times of the year depending on location. The southern redbelly dace spawns from May-June in northern portions of range (**Eddy and Underhill 1973**) southern populations spawn April-June (**Settles and Hoyt 1978**). Spawning occurs from spring to early summer, taking place in schools at water temperatures of 10-16° C (Sublette et. al. 1990). The southern redbelly dace spawns by scattering its eggs over gravel in the spring and early summer (Koster 1957). Eggs are deposited in shallow water near riffles among gravel, including abandoned nests of other minnows (Sublette et. al. 1990, Propst 1999). While the life span may be as long as three years, individuals become sexually mature during the first year of life (Sublette et. al. 1990).

Habitat (narrative):

The southern redbelly dace inhabits permanent streams with clear, cool water and gravel substrates (Sublette et. al. 1990). The southern redbelly dace inhabits rocky, usually spring-fed pools of headwaters and creeks (Fishbase 2002). The southern redbelly dace is primarily a spring, spring-run, and small stream dwelling fish (Propst 1999). The southern redbelly dace is most common in low gradient habitats where water is cool and clear, and aquatic vegetation is abundant (**Becker 1983**). Although southern redbelly dace prefer pools with low velocity to still water, they are occasionally found in aggregations in more rapidly flowing water (Propst 1999).

Undercut banks provide cover for the southern redbelly dace; if undercut banks are not present, the species congregates in the middle of pools when frightened (Becker 1983).

Key Habitat Components: pools, low gradient habitats, aquatic vegetation

Breeding Season:

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

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 southern redbelly dace is mostly herbivorous, and feeding largely upon algae and small insects (Koster 1957). Phillips (1969; McNeely 1987, Propst 1999) reported that the southern redbelly dace primarily feeds on detritus and surface slime, with associated algae, small invertebrates, and small aquatic insects, particularly chironomids.

Diet category (list):

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

Grazing Effects (narrative):

No specific information available. Grazing could potentially impact this species through removal of aquatic vegetation, trampling of undercut banks, and deposition of silt in substrates in small streams. Since southern redbelly dace deposit their eggs over gravel in shallow water near riffles livestock grazing can potentially affect reproductive success.

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:
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Authors

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

Bibliography:

Fishbase.org. 2002. Cite properly.

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