Scientific Name: *Etheostoma lepidum*
Common Name: Greenthroat darter
BISON No.: 010195

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):

State NM: Threatened.

Regionally, the greenthroat darter is in no immediate danger of extinction, however, the status of some populations is precarious (Kuehne and Barbour 1983). Currently, the greenthroat darter is found mainly in Bitter Creek and gravel-bottomed ponds on Bitter Lake National Wildlife Refuge (Brooks and Wood 1988).

The distribution of greenthroat darters has become restricted as a result of depletion of surface water flows and modification of stream morphology (Sublette et. al. 1990) resulting in a decline in range and abundance (Propst 1999).

Hybridization with the orangethroat darter (*Etheostoma spectabile*) in nature is most likely if one parental species is rare and the other abundant (Hubbs 1961).

Greenthroat darters face threats such as pollution of surface water flows from industrial, agricultural, and domestic sources has restricted otherwise habitable waters (Sublette et. al. 1990). Greenthroat darters are preyed upon by introduced green sunfish (Propst 1999).

Distribution (narrative)**:**

The greenthroat darter occurs in two disjunct areas; the Edwards plateau of south-central Texas and the lower Pecos River drainage of New Mexico (Lee et. al. 1981, Propst 1999). The greenthroat darter is native to the Pecos drainage of Chaves and Eddy counties of New Mexico. Areas of occurrence are: Blue Spring and its outflow stream, the Pecos River between Brantley and Avalon reservoirs, the Rio Peñasco, Cottonwood Creek, and Bitter Lake National Wildlife Refuge (Sublette et. al. 1990).

Key Distribution/Abundance/Management Areas:

Panel key distribution/abundance/management areas:

Breeding (narrative)**:**

The stenothremal habitats inhabited by greenthroat darters contribute to their extended spawning season. The greenthroat darter spawns from October or November through May, with most activity occurring between Nov. and April (**Hubbs 1985**). The period of spawning varies with water temperature (Sublette et. al. 1990). The optimum spawning temperature for greenthroat darter is 20-23º C (**Hubbs and Strawn 1957**). In New Mexico, ripe females occur during most months of the year, but breeding activity is depressed during the summer (**Echelle et. al. 1983**). Female greenthroat darters deposit their demersal, adhesive eggs on vegetation or other objects within the water column (Hubbs and Strawn 1957). Greenthroat darters are avid egg eaters and may eat their entire clutch of eggs (Hubbs and Martin 1965). Optimal water temperatures for egg production appears to be 20-23º C (Hubbs and Strawn 1957) although eggs and larvae survive throughout a range of 11-27º C (Hubbs 1961b). Incubation time of greenthroat darters is dependent on temperature; taking between 6 to 10 days at temperatures between 18-23º C (Hubbs 1961). Hatching of greenthroat darter eggs occurs between 3 (27º C) and 25 (12º C) days (Hubbs and Martin 1965). Hubbs and Martin (1965) reported that reduced light affected the timing of egg deposition delaying an average of 2.81 days. The eggs are larvae reach each developmental stage more quickly at warmer temperatures than at colder temperatures, and the early development of the greenthroat darter is strongly affected by the incubation temperature (Hubbs et. al. 1969). The effect of temperature is greatest at earliest stages and becomes progressively less with increasing maturity (Hubbs et. al. 1969).

Habitat (narrative)**:**

The greenthroat darter occurs in a variety of non-turbid stream habitats with substrates ranging from bedrock to silt covered (Lee et. al. 1981). The greenthroat darter is also found in heavily vegetated springs and sinkholes (Lee et. al. 1981). The greenthroat darter is most common in riffle areas with rocky, plant-covered substrates (Hubbs and Strawn 1957, Hubbs and Echelle 1972, Sublette et. al. 1990). Greenthroat darters occur in habitats with water velocities ranging from zero to 20 cm/sec. Where water velocity is high, darters are found among aquatic vegetation along stream margins***, presumably where water velocity is less (Propst 1999). The greenthroat darter also inhabits several types of clear ponded-water habitats including sinkholes and littoral areas of other lentic habitats that are subject to significant wave action and where there is aquatic vegetation rooted in a gravel substrate (Sublette et. al. 1990). The greenthroat darter will live in waters were the temperatures are as low as 7º C and as high as 33º C, it prefers temperatures of 14-24º C (Hubbs and Strawn 1957).

Key Habitat Components: Low velocity (< 20 cm/sc) and clean sand-gravel-cobble substrate.

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 greenthroat darter feeds on small crustaceans, aquatic insects, algae which live on solid substrate in riffles and on aquatic vegetation (Sublette et. al. 1990).

Diet category (list):
- Planktivore
- Herbivore
- Insectivore
- Piscivore (Fish)
- Omnivore
- Detritivore

Grazing Effects (narrative):
Grazing could have a negative impact on springs and spring runs, however, is probably not an impact in the Bitter Lake National Wildlife Area. Since greenthroat darters inhabit non-turbid waters increased production of fines potentially could negatively impact the species in small spring run habitats. Grazing livestock may also negatively impact greenthroat darters inhabiting stream margins.

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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