Scientific Name: *Catostomus insignis*
Common Name: Sonora sucker
BISON No.: 010520

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 AZ: threatened.
The status of the Sonora sucker is stable in the San Francisco and Gila River drainages (Sublette et. al. 1990).
Hydrologic changes such as dams, diversions, groundwater mining as well as alteration of habitat by humans has had a negative impact on native fish species (Rinne 1992, 1995). Irrigation diversions have resulted in periodic loss of surface water, primarily in summer when quantity and quality of streamflow is critical to survival of fishes (Rinne 1995). The Sonora sucker is common but decreasing in southern half of range (Fishbase 2002). Extensive livestock grazing in the late 1800's initiated the decline of fish habitat (**Hendrickson and Minckley 1984**). Escalation of agricultural development of floodplain areas in the 1950's and placed further demand on surface water resources through water diversion and on aquifers through groundwater

mining (**Hendrickson and Minckley 1984**). Threats facing the Sonora sucker are hybridization with the desert sucker (Barber and Minckley 1966, Sublette et. al. 1990), introduction and invasion by nonnative fishes either from domestic livestock watering tanks upstream or the Gila River downstream (Rinne 1992). Arroyo cutting has been attributed to excessive livestock grazing and irrigation diversions (Rinne 1995).

Distribution (narrative)**:**

The Sonora sucker is widely distributed in the Gila and Bill Williams drainages of Arizona (Barber and Minckley 1966). The Sonora sucker is widely distributed and abundant between 300 and 2000 m elevation in the Gila and Bill Williams River basins of Arizona and New Mexico, and in the headwaters of the Santa Cruz and San Pedro Rivers in northern Sonora, Mexico (Minckley 1973, Lee et. al. 1981, Sublette et. al. 1990).

Key Distribution/Abundance/Management Areas:

Panel key distribution/abundance/management areas:

Breeding (narrative)**:**

Spawning of Sonora suckers occurs from Feb through at least early July (Minckley 1973, Lee et. al. 1981)and occasionally fails to reproduce for one or more years (Lee et. al. 1981). Sonora suckers tend to move to smaller streams or onto riffles of larger streams to reproduce (Minckley 1973). The reproductive act involves two males and one larger female (Minckley 1973). Cleaning of gravels occurs much as reported for salmonid species (Minckley 1973).
The adhesive eggs are buried in loose gravels where they hatch in a few days (Minckley 1991).
The larvae of Sonora suckers along with Desert sucker comprise 95% of the drift in the Gila River (**Propst 1987**).

Habitat (narrative)**:**

The Sonora sucker is one of the most common larger fishes remaining in the lower Colorado River basin (Minckley 1991). The Sonora sucker is found in a variety of habitats from warm water rivers to trout streams (Sublette et. al. 1990). The Sonora sucker occupies hard-bottomed habitats from 300 to 2,000 m elevation (Minckley 1991). The Sonora sucker has a tendency for gravelly or rocky pools, or at least for relatively deep, quiet waters (Minckley 1973, Lee et. al. 1981). The Sonora sucker utilizes pools areas with depths of 30.0 cm, velocity of 15-25 cm s^{-1} and gravel/sand substrates (Rinne 1992). The Sonora sucker is typically found living on the bottom in areas near undercut banks, boulders or logs and other debris (Schreiber and Minckley 1981). The Sonora sucker is common in pools behind irrigation diversions (Barber and Minckley 1966). The Sonora sucker tends to remain near cover in daylight, but moves to runs and deeper riffles at night, especially when large in size (Minckley 1973). Adults live in pools

and commonly move to swift riffles and runs to feed at night (Minckley 1991). Young Sonora suckers also may be in riffles, but more typically live in runs and quieter eddies (Minckley 1991).

Key Habitat Components: pools with sand-gravel substrates for adults and shallow, low velocity riffles and backwaters for young.

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)**:**

Foods of the Sonora sucker appear to vary with availability (Minckley 1973). The Sonora sucker is a generalized carnivore feeding on tiny, bottom-dwelling organisms such as Acarina and microcrustaceans (Schreiber and Minckley 1981). In Aravaipa Creek the Sonora sucker is almost exclusively a carnivore, feeding upon the abundant aquatic insect larvae of that stream (Minckley 1973, Rinne 1992). A significant component of the diet is macroinvertebrates, particularly *Ephemeroptera* (Clarkson and Minckley 1988) with some coarse sand occasionally ingested (Sublette et. al. 1990). *Dipteran* larvae are the most common organism in the stomachs of the bottom-dwelling Sonora sucker (Schreiber and Minckley 1981). *Tubellaria* are heavily preyed upon by Sonora suckers when present in summer (Schreiber and Minckley 1981). In other areas the Sonora sucker is an omnivore, feeding in the early morning and late evening on plant and animal assemblages of shallow pools (Sublette et. al. 1990). Examined Sonora suckers had their intestines filled with plant debris, mud, or algae (Minckley 1973, Lee et. al. 1981, Schreiber and Minckley 1981). Young Sonora suckers feed along margins of streams upon tiny crustaceans, protozoans, and other animal and plant groups (Minckley 1973).

Diet category (list):

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

Grazing Effects (narrative):

The species is widespread and abundant and when combined with pool-inhabiting behavior grazing probably has little negative effect on the species. Livestock trampling of spawning gravels could occur, however, the widespread abundance and distribution of the species renders impacts by livestock minimal relative to alteration of habitats and co-inhabiting of pools by large predatory species such as bass and channel and flathead catfish.

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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