

# Devils River Minnow

*(Dionda diaboli)*

**5-Year Review:  
Summary and Evaluation  
[Short Form]**

**Current Classification: Threatened**



**Photo by USFWS.**

**Southwest Region  
U.S. Fish and Wildlife Service  
Austin Ecological Services Office  
Austin, Texas**

## **5-YEAR REVIEW**

Devils River minnow (*Dionda diaboli*)

### **1.0 GENERAL INFORMATION**

#### **1.1 Reviewers**

**Lead Regional Office:** Southwest (Region 2), Wendy Brown, Recovery Coordinator, (505) 248-6664.

**Lead Field Office:** Austin Ecological Services Field Office, Nathan Allan, Fish and Wildlife Biologist, (512) 490-0057 extension 237; Adam Zerrenner, Field Supervisor, (512) 490-0057 extension 248.

**Cooperating Field Office(s):** Arlington Ecological Services Field Office, Carole Hale, Fish and Wildlife Biologist, (817) 277-1100 extension 28; Tom Cloud, Field Supervisor, (817) 277-1100 extension 29.

#### **1.2 Methodology Used to Complete the Review:**

This review was prepared by Nathan Allan, U.S. Fish and Wildlife Service (Service), Austin Ecological Services Field Office (AESFO) with assistance from Carole Hale, Arlington Ecological Services Field Office (ARLESFO). Information was obtained from the 1999 final rule listing the Devils River minnow as threatened (64 *FR* 56596); 2005 Devils River Minnow Recovery Plan; the public and peer review comments received on the proposed critical habitat rule published on July 31, 2007, (72 *FR* 41679); and the August 12, 2008, final rule to designate critical habitat for the Devils River Minnow (73 *FR* 46988). The critical habitat designation represents a recent comprehensive review of the status of the Devils River minnow, including the most recent biological information, a comprehensive literature review, a habitat-based threats analysis, and a review of special management needs. This information was peer-reviewed as part of the critical habitat designation process. These documents are available for review on the Service's ECOS website: <http://ecos.fws.gov/speciesProfile/SpeciesReport.do?scode=E03V> .

#### **1.3 FR Notice citation announcing initiation of this review:**

April 23, 2007. U.S. Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; 5-year Reviews of 24 Southwestern Species. 72 *Federal Register* 20134-20136.

We received no information from the public in response to our Federal Notice initiating this 5-year review.

## 2.0 REVIEW ANALYSIS

### 2.1 Application of the 1996 Distinct Population Segment (DPS) Policy:

Not applicable – Devils River minnow is not listed as a DPS.

### 2.2 Review Summary:

The Devils River minnow (*Dionda diaboli*) was federally listed as a threatened species on October 20, 1999. It has a Recovery Priority Number of 2, meaning that the degree of threat is high, the recovery potential is high, and the listed entity is a species (48 FR 43098). The historic range of this small fish once included Rio Grande tributary streams in Val Verde and Kinney counties, Texas, (Devils River, San Felipe, Sycamore, Pinto, and Las Moras creeks) and several streams in northern Mexico. Currently, it occurs in only three streams in Val Verde and Kinney counties: Devils River, San Felipe Creek, and Pinto Creek. The current status of the species in Sycamore Creek, Texas, and in the Río Salado drainage in Mexico is not known (Figure 1). The species is believed to be extirpated from the lower portions of the Devils River (now Amistad Reservoir in Val Verde County), from Las Moras Creek (Kinney County), and from the Río San Carlos (Mexico). It may also be extirpated from Sycamore Creek.

The Devils River minnow is only found in spring-fed streams with shallow to moderate depths and slow to moderate water velocity, over gravel substrates, and in or nearby emergent or submerged vegetation or similar structure from stream bank vegetation that extends into the water. Based on laboratory observations, the species reproduces by releasing eggs that adhere within gravel and hatch as early as 2 weeks after deposition during the spring and summer. Clean, flowing water over gravel substrates with nearby vegetation are general habitat features for the Devils River minnow.

Please refer to the critical habitat designation final rule for the Devils River minnow published on August 12, 2008, (73 FR 46988) for the latest status review of the Devils River minnow. The critical habitat designation evaluated the physical and biological features essential to the conservation of the Devils River minnow and updated management actions to reduce threats. The primary threats to Devils River minnow relate to habitat and impacts from nonnative species. Habitat loss from spring flow declines and alteration of stream courses, along with habitat degradation from reductions in water quality remain important threats. To persist, the Devils River minnow requires specific conditions of water chemistry, temperature, depth, and velocity, in addition to particular cobble to gravel substrates for breeding and vegetative cover for protection from predation (73 FR 46988). Devils River minnows no longer occur in streams with reduced water quality impacted by unnatural chemical inputs, human and animal waste products, pesticides, petroleum residues, and suspended sediments (73 FR 46988). Non-native fish species, a snail, a mollusk, and several plant species have become established within portions of the Devils River minnow's range (73 FR 46988). The armored catfish (*Hypostomus* sp.) appears to be the greatest threat at this time based on competition for algal and invertebrate food resources, displacement of the minnow from suitable habitat,

and predation (73 FR 46988). Expanding populations of non-native aquatic and riparian plants, such as hydrilla, water hyacinth, and giant river cane, also pose threats to the Devils River minnow by altering habitat conditions, food sources, and stream hydrology (73 FR 46988). Collectively, non-native biota present current and potential threats to the Devils River minnow including: predation, competition for food and shelter, altering of habitat, changing of fish assemblages, or transmission of diseases and parasites (73 FR 46988).

The Special Management Considerations or Protections sections of the critical habitat designation final rule reviewed the needs for habitat management, which indirectly reviewed the threats to Devils River minnow habitat (72 FR 41685). The review analyzed the conservation efforts needed to manage: a) groundwater pumping to maintain spring flows, which is the primary long-term threat to the species; b) nonnative species, which are a significant threat to Devils River minnow; c) pollution to maintain water quality; and d) stream channel alterations to protect natural habitat conditions. All of these factors are continuing threats to the Devils River minnow and the analysis within the critical habitat designation process determined that conservation actions continue to be needed throughout the range of the Devils River minnow to address these ongoing threats.

In addition, a comprehensive threats assessment was included in the 2005 Devils River Minnow Recovery Plan. Section 1.7 of the Recovery Plan reviewed the threats to the species under all 5 factors. The most important threats to the Devils River minnow follow under Factor A, related to habitat, and Factor C, which include impacts from nonnative species. The Recovery Plan underwent peer review and represents a comprehensive evaluation of the status of the Devils River minnow. The updated reviews during the critical habitat designation and considerations under this 5-year review process find that the threats and status documented in the recovery plan are still relevant and support the current status of the species as federally threatened throughout all of its range.

### **2.3 Recovery Criteria:**

The 2005 Recovery Plan for the Devils River minnow included four recovery criteria to describe targets to determine when recovery goals have been met and the species should be considered for delisting. These criteria are still current and valid.

- (1) Population monitoring verifies stable or increasing population trends for Devils River minnow for at least 10 years throughout its range including Devils River (middle portion), San Felipe Creek, Sycamore Creek, and Pinto Creek in Texas. If reestablishment is scientifically feasible, populations should be restored in Las Moras Creek. The status of populations in the Rio Salado drainage in Mexico should also be confirmed.

- (2) Adequate flows in streams supporting Devils River minnow have been ensured, including Las Moras Creek (if reestablishment is feasible), through State or local groundwater management plans, water conservation plans, drought contingency plans, regulations, or equivalent binding documents;
- (3) Protection of surface water quality, including the protection of the quality of groundwater sources of surface water flows, is ensured throughout the range of Devils River minnow by demonstrated compliance with water quality standards and implementation of water quality controls, particularly in urban areas such as the cities of Del Rio and Brackettville; and
- (4) Management and control of non-native species by local, regional, State, and Federal authorities are demonstrated to be successful.

None of these criteria have yet been adequately met to consider the Devils River minnow for possible delisting at this time. Section 1.8 of the recovery plan documents conservation efforts that had been completed up to 2005 in working under the 1998 Conservation Agreement for the species. Progress has been made on various other recovery tasks, for example:

- In 2003, Texas Parks and Wildlife Department (TPWD) completed 5 years of population monitoring on the Devils River, with vital assistance from local landowners. Population monitoring continues sporadically throughout the range of the species.
- In 2003, the City of Del Rio and San Felipe Country Club signed management plans for the protection, preservation, restoration, and management of San Felipe Creek. The City has appointed a citizens group, the San Felipe Commission, to develop a master plan to fulfill a vision statement to conserve the creek.
- In 2007, TPWD funded a study through a Wildlife Action Grant to investigate dietary overlap of Devils River minnow and the non-native armored catfish in San Felipe Creek. The study will also investigate possible control methods for the catfish. The study is ongoing and should be completed in 2009.
- In 2007, The Nature Conservancy received a section 6 grant to determine the status of Devils River minnow within its historic range in Mexico. Preliminary results have confirmed the persistence of the species in Mexico. The final report is pending.
- The Nature Conservancy, through partnerships with TPWD and local landowners, has now conserved over 60703 hectares (150,000 acres) in the Devils River watershed through fee-simple ownership and conservation easements.
- Since 2000, the San Marcos National Fish Hatchery and Technology Center (NFHTC) has studied the early life history of the Devils River minnow and developed captive propagation techniques to allow for future development of captive stocks to support reintroduction efforts. These studies are continuing.
- In 2007, the Service's Dexter NFHTC completed the first species-specific genetic analysis of the Devils River minnow, in support of captive propagation efforts at San Marcos NFHTC. They found fish from different sites within the Devils River

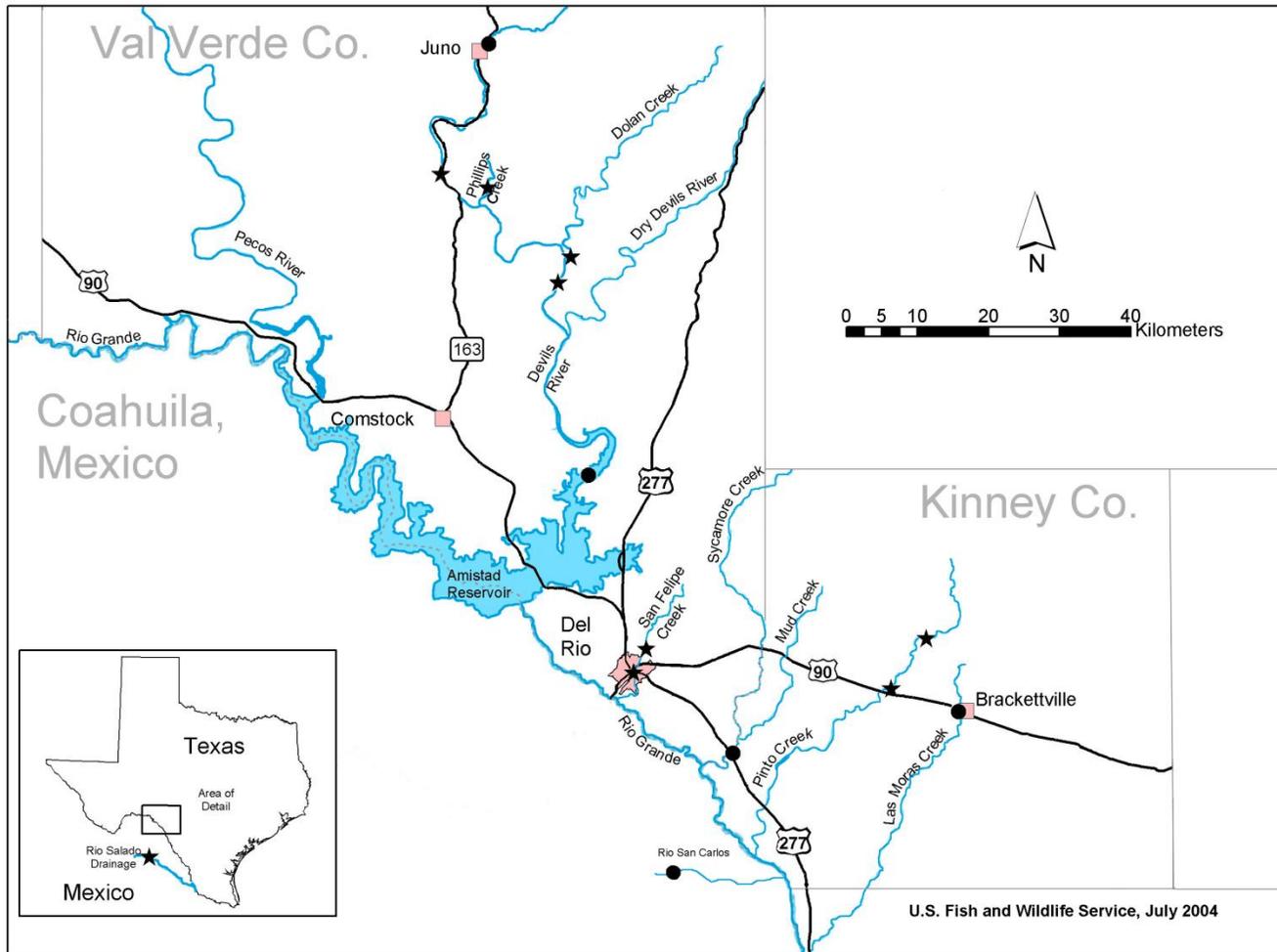
had low variability and could be managed as one stock. Fish from Pinto Creek were genetically different enough from the Devils River that, consistent with recommendations in the Recovery Plan, fish from these two streams should be maintained and managed separately. Also, researchers from Texas A&M University are currently conducting additional genetic analysis of the genus *Dionda*, which may provide additional insight into population management for Devils River minnow.

- The Kinney County Groundwater Conservation District updated their groundwater management plan in 2008. The plan calls for a goal to manage groundwater in the district “without unduly increasing the frequency of the natural cycles of springs and intermittent streams going dry.”
- A number of efforts are underway to collect new, comprehensive groundwater data in Kinney and Val Verde counties to provide better information upon which to base groundwater management decisions and conserve surface water flows (including habitat for Devils River minnow).

In conclusion, threats to the Devils River minnow have not substantially increased to warrant a change from threatened to endangered nor have threats been abated enough to warrant delisting. Ongoing primary threats (highlighted in the Special Management Considerations or Protections section of the final critical habitat rule) include:

- Loss of spring and stream flow due to groundwater withdrawals;
- Impacts from nonnative species, mainly armored catfish (this threat has increased since the listing);
- Degradation of water quality due to pollution; and
- Alterations of stream channel habitats.

**Figure 1.** Devils River minnow range map (from 2005 Recovery Plan). Stars indicate sites where the species has been collected since 1995 (distribution is presumed continuous between sites in the same creek). Filled circles indicate sites where the fish are either presumed or known to be extirpated.



### 3.0 RESULTS

#### 3.1 Recommended Classification:

Downlist to Threatened

Uplist to Endangered

Delist

*Extinction*

*Recovery*

*Original data for classification in error*

**No change needed**

#### 3.2 New Recovery Priority Number:

No change proposed.

**Brief Rationale:** N/A

#### 3.3 Listing and Reclassification Priority Number: N/A

**Reclassification (from Threatened to Endangered) Priority Number:**

**Reclassification (from Endangered to Threatened) Priority Number:**

**Delisting Priority Number:**

**Brief Rationale:** N/A

### 4.0 RECOMMENDATIONS FOR FUTURE ACTIONS:

The Devils River Minnow Recovery Plan contains an up-to-date assessment of recovery actions needed for conservation of the Devils River minnow. The highest priority recovery actions, generally in priority order, for the next 5 years are:

- 1) Work with the local communities in Val Verde and Kinney counties to find acceptable groundwater management strategies to allow aquifers to be maintained at levels that ensure spring flows into streams that serve as habitat for Devils River minnows.
- 2) Work with TPWD and U.S. Geological Survey to determine the necessary instream flow levels for maintenance of Devils River minnow habitat across its range. This work could possibly be done by TPWD River Studies Program through a traditional section 6 grant, concurrent with biological assessment needs identified in item #3c below.

- 3) Determine methods, in cooperation with TPWD, to control the nonnative armored catfish in San Felipe Creek (and implement the methods if found feasible).
- 4) Work with the Fort Clark Springs Association, the City of Brackettville, the Kinney County Groundwater Conservation District, TPWD, and landowners to develop a reintroduction plan and landowner agreements (either using safe harbor agreements, preferably, or a 10(j) experimental population designation) to restore Devils River minnow to Las Moras Creek. Implementing this action will take:
  - a) Significant outreach efforts to gain buy-in from the local community;
  - b) Planning and facility assistance from the Service's Fisheries Program for developing a reintroduction (and genetics) plan and producing large numbers of fish for stocking;
  - c) Biological planning to estimate likelihood of success and provide baseline monitoring data;
  - d) Documentation of landowner agreement through one or more safe harbor agreements (preferred), or designating the area as a 10(j) experimental population); and
  - e) Developing and implementing a monitoring plan.
- 5) Work with TPWD and private landowners along Sycamore Creek, to conduct additional fish surveys to determine the occupancy of the stream by Devils River minnow and whether it is appropriate to consider for reintroductions. If so, the same efforts will be needed as documented under #3 above and could be done concurrently.
- 5) Assist the City of Del Rio, as needed, to complete an appropriate master plan for San Felipe Creek.

Devils River Minnow 5-Year Review

**U.S. FISH AND WILDLIFE SERVICE**  
**5-YEAR REVIEW of Devils River minnow (*Dionda diaboli*)**

**Current Classification:** Endangered

**Recommendation resulting from the 5-Year Review:**

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change needed

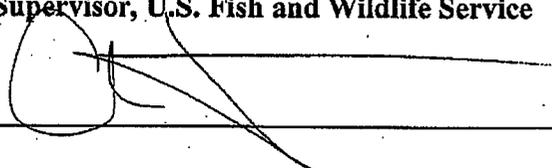
**Appropriate Listing/Reclassification Priority Number, if applicable:** Not applicable

**Review Conducted By:** Nathan Allan, U.S. Fish and Wildlife Service, Austin Ecological Services Field Office

**FIELD OFFICE APPROVAL:**

**Lead Field Supervisor, U.S. Fish and Wildlife Service**

Approve



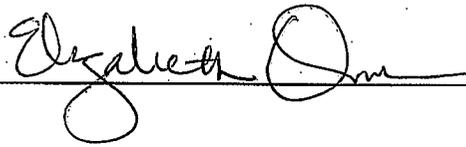
Date

8/12/08

**REGIONAL OFFICE APPROVAL:**

**Assistant Regional Director, Ecological Services, U.S. Fish and Wildlife Service, Region 2**

Approve



Date

9/11/08