



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Ecological Services  
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### Memorandum

To: File (S:\T&E\ESA Section 7\IPaC\Determination Keys\ARLES DKey Finals)

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Through: Debra Bills, Field Supervisor, Arlington, Texas; Daniel Fenner, Supervisory Fish & Wildlife Biologist, Tulsa, Oklahoma

Subject: Arkansas River Shiner Determination Key

This memo documents the rationale behind the Determination Key for the threatened Arkansas River shiner (*Notropis girardi*) within the Arlington, Texas Ecological Services' area of responsibility. This determination key is a logically structured set of questions to assist a user in determining whether a proposed project qualifies for a predetermined consultation outcome based on USFWS standing analysis. General biology and other information is included to support the standing analysis and key. This key is intended to be delivered through the USFWS' Information for Planning and Consultation (IPaC) web application.

The Arkansas River shiner (ARS) is a small, streamlined minnow with a small, dorsally flattened head, rounded snout, and subterminal mouth. The ARS is silver in appearance with a dark blotch at the base of the dorsal (top) fin. Adults attain a maximum length of about 2 inches (Miller and Robison 1973, Robison and Buchanan 1988). The final rule listing the species as threatened was published on November 23, 1998 (63 FR 64772). Critical habitat was designated for this species on April 4, 2001 (66 FR 18002) and amended on October 13, 2005 (70 FR 59808).

### Distribution

The ARS historically inhabited wide, shallow, sandy bottomed rivers and larger streams of the Arkansas River basin (Gilbert 1980). The species is considered a habitat generalist, with no obvious selection for any particular habitat (i.e., main channel, side channel, backwaters, and pools (Wilde et al. 2000). Historically, the ARS was widespread and abundant throughout the western portion of the Arkansas River basin in Kansas, New Mexico, Oklahoma, and Texas. This species has subsequently disappeared from over 80 percent of its historical range and is now almost entirely restricted to about 508 miles of the Canadian River in OK, TX, and NM.

## **Life History**

The ARS historically inhabited wide, shallow, sandy bottomed rivers and larger streams of the Arkansas River basin (Gilbert 1980). The species is considered a habitat generalist, with no obvious selection for any particular habitat (i.e., main channel, side channel, backwaters, and pools (Wilde et al. 2000). The ARS is believed to be a generalized forager, with its diet consisting of grass seeds, detritus (decaying organic material), sand, sediment, and aquatic and terrestrial invertebrates (Jimenez 1999, Bonner et al. 1997, Polivka and Matthews 1997).

ARS have been shown to successfully reproduce from May through September when stream flow exists; however, peak reproduction may take place at moderate to higher flows (Moore (1944); Bestgen et al. (1989); Polivka and Matthews (1997); Wilde et al. (2000); and Durham and Wild (2006). In the absence of sufficient streamflows, eggs likely settle to the channel bottom, where they are smothered by silt and shifting, hindering oxygen uptake and causing mortality of the embryos. Platania and Altenbach (1998) determined that eggs could be transported 45-89 miles downstream before hatching and developing larvae could then be transported an additional distance before capable of direct swimming. This lead Bonner and Wilde (2000) to speculate the ARS needs 135 miles of free flowing river to complete its life history. Direct and indirect evidence suggests the presence of a directed, upstream movement by the ARS over the course of their adult lifespan, which is necessary to maintain upstream source populations and complete the ARS's life cycle.

## **Reasons for Decline and Threats to Survival**

ARS experienced a reduction in range and numbers due to habitat destruction and modification, channelization, construction of impoundments, stream dewatering, diversion of surface water, groundwater pumping, and water quality degradation (U.S. Fish and Wildlife Service 1998). An introduced non-native population of ARS occurs in the Pecos River in New Mexico, which is not protected under the Endangered Species Act.

## **Conservation Actions**

A focus on conserving the quantity and quality of water (ground and surface water) within ARS's range will be essential to recovering the species. Any efforts to conserve water will help to maintain essential flows for the species. Avoiding barriers to fish movement within the Canadian River and Reveulto Creek are important to conservation. Additionally, maintaining riparian buffers promotes natural stream morphology and filters pollutants from entering the river. Control of invasive salt cedar, which effects water quantity and stream morphology, is an on-the-ground measure that benefits the species.

## **Critical Habitat**

Final critical habitat was designated for this species on October 13, 2005 (70 FR 59808). It includes approximately 856 kilometers (532 miles) of linear distance of rivers, including 91.4 meters (300 feet) of adjacent riparian areas measured laterally from each bank are included within the boundaries of the critical habitat designation. The areas that we have determined to possess the features that are essential to the conservation of the ARS include portions of the Canadian River (often referred to as the South Canadian River) in New Mexico, Texas, and

Oklahoma, the Beaver/North Canadian River in Oklahoma, and the Cimarron River in Kansas and Oklahoma, and the Arkansas River in Kansas.

**Key for evaluating potential impacts to the ARS within the ARLES area of responsibility.**

If the project is found to intersect ARS AOI Range [hidden semantic], the Key is as follows:

- A. Is this a reservoir project, interbasin transfer, water diversion, small impoundment, industrial/commercial/municipal/agricultural water well field, or other in-channel project?
  - a. Yes..... *go to F*
  - b. No..... *go to B*
- B. Does the project intersect the Canadian River or adjacent riparian area, including Reveulto Creek? [hidden semantic]
  - a. Yes..... *Go to F*
  - b. No..... *Go to C*
- C. Will the project involve industrial wastewater, treatment of water by reverse osmosis, or the discharge of  $\geq 1$  million gallons of municipal wastewater per day?
  - a. Yes..... *Go to F*
  - b. No..... *Go to D*
- D. Does the project require a permit be obtained from the Texas Commission on Environmental Quality (TCEQ)?
  - a. Yes.....*Go to F*
  - b. No.....*Go to E*
- E. Would the proposed action be expected to have any effects on the Arkansas River shiner, the Canadian River, or Reveulto Creek?
  - a. Yes.....*Go to F*
  - b. No.....*No effect.*
- F. Has a biological evaluation to determine effects to the Arkansas River shiner been conducted?
  - a. Yes.....*Submit biological evaluation to field office*
  - b. No.....*May affect, Conduct biological evaluation and submit to field office*

END KEY

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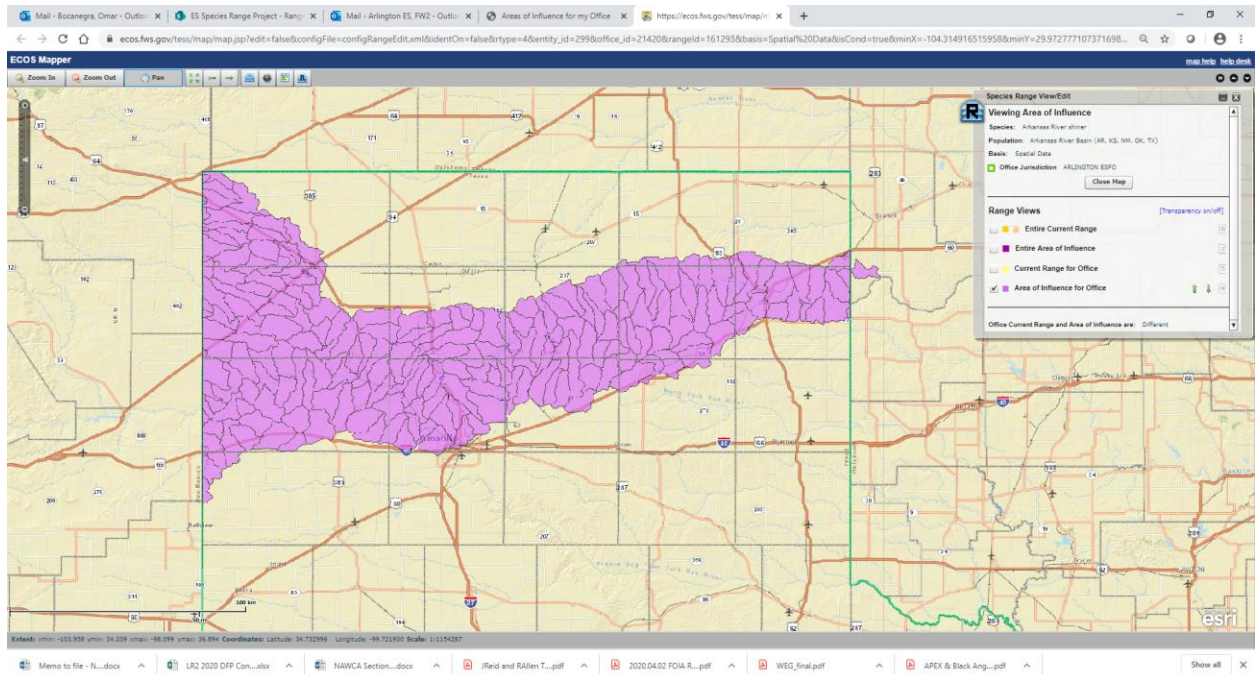


Figure 1 Map of ARS area of influence within the ARLES area of responsibility.