



## U.S. Fish & Wildlife Service

# Arkansas River Shiner

## *Oklahoma Ecological Service Field Office*

### Arkansas River Shiner

*Notropis girardi*

#### Description

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).

#### Distribution

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 considered an annual species, with less than ten percent of the population surviving to spawn a second year (Wilde 2005). ARS release their eggs and sperm in open flowing water which drift downstream (Platania and Altenbach 1998, Johnston 1999). 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.



*Arkansas River Shiner*. Daniel Fenner / USFWS

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. 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).

#### Conservation

The Arkansas River Basin population of the ARS was listed as a threatened species on November 23, 1998, based on reductions of the species' 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 (USFWS 1998). Critical habitat was designated in October 2005 (FR Vol. 70,

No. 197, October 13, 2005). An introduced non-native population of ARS occurs in the Pecos River in New Mexico, which is not protected under the Endangered Species Act.

#### What You Can Do To Help

Building partnerships focused 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. 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.

#### References

A full list of references is available at: [www.fws.gov/southwest/es/oklahoma/shiner.htm](http://www.fws.gov/southwest/es/oklahoma/shiner.htm)

#### For Further Information

U.S. Fish and Wildlife Service  
Oklahoma  
Ecological Services Field Office  
9014 East 21st Street  
Tulsa, OK 74129  
918/581-7458

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