

## U.S. FISH AND WILDLIFE SERVICE - SPOTLIGHT SPECIES ACTION PLAN

**Common Name:** Arkansas River shiner

**Scientific Name:** *Notropis girardi*

**Lead Region:** Region 2

**Lead Field Office:** Oklahoma Ecological Services Field Office

### **Species Information:**

Status: Threatened

Recovery Priority Number: 5C

Recovery Plan or Candidate Assessment Form: None

Most Recent 5-year Review: Initiated February 11, 2009. Not complete.

Other Documents: Draft Recovery Objectives for the Arkansas River Shiner 2008

Threats:

*Factor A: The present or threatened destruction, modification or curtailment of habitat or range.* Reservoir construction is the most widespread cause of habitat loss for the Arkansas River shiner (ARS). Reservoirs have inundated, dewatered, fragmented, or otherwise directly altered considerable sections of river habitat once inhabited by the species. Not only have reservoirs directly affected habitat immediately upstream of the dam, but downstream altered hydrologic regimes have also significantly reduced Arkansas River shiner habitat (including encroachment of non-native salt cedar (*Tamarix sp.*)) and diminished the species ability to successfully reproduce within certain reaches of the river.

Water depletion and diversion continues threaten the species, particularly in light of significant reductions to the High Plains Aquifer and projected climate change. Approximately 97 percent of the water pumped from the High Plains Aquifer is used for irrigation, resulting in aquifer level declines in the parts aquifer (including drainages occupied by the ARS which overly the aquifer) of more than 150 feet since predevelopment (1950). Water depletion and diversion has affected natural hydrologic regimes which the species requires for successful reproduction. Water depletion has had a detrimental effect on water quality by exacerbating existing water quality threats such as nutrient loading and increased chlorides.

Channelization of the Arkansas River has permanently altered and eliminated suitable habitat for the ARS and is largely responsible for the extirpation of the ARS within the Arkansas River in Arkansas and Oklahoma. Some agricultural practices, such as concentrated animal feeding operations (CAFOs), have contributed to water quality degradation in the Arkansas River basin impacting ARS aggregations. Such practices contribute excess nutrients, sediments, chemicals, and other types of non-point source pollutants, primarily due to runoff from range, pastureland, tilled fields, and feedlots. The Canadian and Cimarron rivers also traverse oil and gas producing

areas and receive municipal sewage effluent and manufacturing return flows, all of which can degrade water quality.

*Factor B: Overutilization for commercial, recreational, scientific, or education purposes.* We have no evidence that the ARS is being overutilized for commercial, recreational, scientific, or educational purposes.

*Factor C: Disease and Predation.* No studies have been conducted on the impact of disease or predation upon the Arkansas River shiner; therefore, the significance of these threats upon existing populations is unknown. There is no direct evidence to suggest that disease threatens the continued existence of the species.

*Factor D: Inadequacy of Existing Regulatory Mechanisms.* Threats continue from streamflow depletion, water quality degradation, and streamflow alteration. Existing regulatory mechanisms either lack the capacity or have not been implemented adequately to decrease or remove these threats.

*Factor E: Other natural and manmade factors affecting the species continued existence.* The overall trend in the status of this species is characterized by dramatic declines in numbers and distribution despite the fact that this species evolved in rapidly fluctuating, harsh environments. The occurrence of a single, catastrophic event, such as the introduction of competing species, a contaminant spill, or a prolonged period of low or no flow, would increase the likelihood of extinction. Arkansas River shiners are undoubtedly capable of recovering from drought, provided other factors have not irreparably degraded their habitat. The fragmentation and apparent isolation of self-sustaining populations of ARS renders the remaining populations vulnerable to any natural or manmade factors that might further reduce population size.

**Target:** Within the next 5 years, maintain species' status as threatened.

This target is appropriate because of increasing threats to the species and the need for further research on the species to develop appropriate and effective recovery actions. Water levels in the High Plains Aquifer continue to decline, salt cedar encroachment into the Canadian and Cimarron basin continues to increase, threats affecting water quality continue to persist (only exacerbated by declining flows), and a lack of information on the species current distribution (particularly in the Cimarron River), life history, potential available habitats for future restoration and genetic diversity among populations limits our ability to develop effective management actions for the species.

**Measures:** To maintain the species' status as threatened, the following steps will be used to measure our target.

- 1) Assess results from annual monitoring efforts. Population stability will be assessed in the South Canadian River whereas presence/absence will be assessed in the Cimarron River.
- 2) Complete a 5-year review for the species, incorporating the most recent information on the species.

- 3) Coordinate recovery team efforts and publish a draft recovery plan in the Federal Register.

**Actions:** The following actions will be implemented over the next 5 years (2010-2014) to meet the species target, pending adequate funds.

<b>Action #</b>	<b>Action Title</b>	<b>Description</b>	<b>Threat/Listing Factor Addressed<sup>1</sup></b>	<b>Responsible Parties<sup>2</sup></b>	<b>Cost (dollars)</b>
1.1	Draft recovery outline	Develop a draft recovery outline for initiation of the ARS recovery plan	A, B, C, D, and E	FWS	\$6,000
1.2	Recovery team	Assign recovery team members for the ARS.	A, B, C, D, and E	FWS, State, Tribes, NRCS, FWS, COE, USGS, UNIV, NRCS, NPS, Private	\$6,000
1.3	Recovery planning	Develop a draft recovery plan for the ARS	A, B, C, D, and E	FWS, State, Tribes, NRCS, FSA, COE, USGS, UNIV, NRCS, NPS, Private	\$500,000
1.4	5-year review	Complete a 5-year review for the ARS	A, B, C, D, and E	FWS	\$10,000
1.5	Administrative record	Update the administrative record for the ARS	A, B, C, D, and E	FWS	\$6,000
2.1	Conduct annual population monitoring	Continue to conduct annual population monitoring of the ARS and revise monitoring protocol, as necessary	A and E	FWS, State	\$100,000
2.2	Process and voucher	Continue to seek funding to identify and	A and E	FWS, State, Acad	\$25,000

	annual fish collections	voucher fish collections			
2.3	Develop monitoring report	After fish are processed, develop a report of annual population surveys	A and E	FWS	\$5,000
2.4	Genetics research	Develop proposal(s) and seek funding for an ARS genetics study	A, B, C, D, and E	FWS, State, Acad	\$5,000
2.5	Life history research	Develop proposal(s) and seek funding for a ARS life history studies, including fish movement and reproductive patterns	A and E	FWS, State, Acad	\$5,000
2.6	Habitat assessment research	Developing proposal(s) and seek funding for a thorough habitat assessment of the species historic and current range, with the intent to repatriate the ARS within portions of its historic range	A and E	FWS, State, Acad	\$5,000
2.7	Competition and tolerance research	Develop proposal(s) and seek funding for studies examining competition between ARS and red river shiners. Proposals could include examination of limiting factors of both species, including tolerance to certain water quality parameters such as chlorides.	A and E	FWS, State, Acad	\$5,000
3.1	Salvage plan	Develop an emergency drought salvage plan for the ARS	A, C, and E	FWS, State	\$6,000
3.2	Spill response plan	Develop a spill response plan for the ARS	A, C, and E	FWS, State	\$8,000

4.1	Assist with state water plan development	Attend workshops and planning meetings to ensure that threats to the ARS is addressed in State water plans.	A, D, and E	FWS, State	\$5,000
5.1	Outreach Plan	Develop and implement an outreach and communications plan that will help all interested parties to better understand the Arkansas River shiner and its habitat, as well as related conservation and water management issues.	A, B, C, D, and E	FWS, NRCS, FSA	\$5,000
5.2	Public awareness and education	Issue notices regarding status of Arkansas River shiner recovery efforts.	A, B, C, D, and E	FWS	\$5,000

<sup>1</sup>Listing Factors: A) The present or threatened destruction, modification or curtailment of habitat or range, B) Overutilization for commercial, recreational, scientific, or education purposes, C) Disease and predation, D) Inadequacy of existing regulatory mechanisms, E) Other natural and manmade factors affecting the species continued existence.

<sup>2</sup>Responsible Parties: FWS – Fish and Wildlife Service, State – Multiple state agencies, Acad – Academic institutions, Tribes – multiple Indian tribes, NRCS – Natural Resources Conservation Service, NPS – National Park Service, COE – Corps of Engineers, EPA – Environmental Protection Agency

**Role of other agencies:** All agencies mentioned above will be essential for development of a recovery plan for the ARS. Because the species spans four states and is mostly within private lands, a coordinated effort involving all interested parties must be developed during the recovery planning process. Multiple programs administered by the Natural Resources Conservation Service (NRCS) and Farm Service Agency (FSA) will be essential for implementing many “on the ground” actions described above. Both agencies will assist with identifying appropriate programs and, with the assistance of the FWS, work with landowners to implement such programs.

The States of Kansas, New Mexico, Texas, and Oklahoma, U.S. Geological Survey, and academic institutions will be essential for implementation of research needed for recovery of the species. The State of New Mexico manages Ute Reservoir and any actions related to the management of that reservoir will be reviewed by the FWS. The involvement of State agencies is also key to addressing water use issues. With increasing demands of water, projected climate change, and additional High Plains Aquifer depletion, involvement of the States and private landowners to promote water conservation efforts will be essential to the survival of the ARS. The National Park Service manages Lake Meredith National Recreation Area which allows Off-highway vehicle (OHV) use within Park lands. The NPS is currently updating its OHV use policy and is consulting with the Service to ensure ARS populations are not affected. Many oil and gas

development projects are coordinated through the Federal Energy Regulatory Commission, which consults with the FWS on their actions.

**Role of other ESA programs:** Given adequate funds, regional management plans and safe harbor agreements (if necessary) will be developed and implemented to benefit the ARS. These management plans could include, but are not limited to, invasive salt cedar control, water conservation practices, and the seeking of funds for additional research. Section 6 grants will be sought to provide assistance with annual monitoring of the species and other essential research. The FWS will continue section 7 consultations with Federal agencies on projects potentially affecting the ARS. The Federal Highway Administration, with the assistance of state transportation departments, will continue to consult with the FWS on potential impacts from bridge and road construction to the ARS. OHV use within Lake Meredith National Recreation Area, Ute Reservoir management actions, and FERC actions related to oil and gas activities.

**Role of other FWS programs:** The Oklahoma Fish and Wildlife Conservation Office (OFWCO) in Tishomingo works in cooperation with the Oklahoma Ecological Services Field Office to conduct annual surveys of the ARS and assists in developing research proposals. The OFWCO, New Mexico fish and Wildlife Conservation Office, and Texas Fish and Wildlife Conservation Office will also be involved with recovery planning efforts for the species. The Partners for Fish and Wildlife program will assist with landowner contacts and outreach in addition to working with NRCS and FSA to implement “on the ground” conservation actions.

**Additional funding analysis:** Many of the actions described above will require additional funds (as described in the Cost column) before benefits to the ARS are observed. Actions 2.1 through 2.7 involve the development of research proposals geared towards providing essential information for those involved in recovery efforts of the ARS. Information on certain aspects of ARS life history, population genetics, and potential habits available for reintroduction in the future will provide the necessary tools to develop effective, long term recovery actions aimed at recovering the ARS. Actions 4.1 through 4.7 are similar in that, without additional funds, on the ground recovery effort cannot be accomplished and threats to the species, including continued decreases in flows and deteriorating water quality, will only increase. Without additional funds, the time and effort of all those involved in recovery planning and implementation would be futile. If actions are funded to the extent necessary for on the ground implementation and increased knowledge of the species, partnerships would improve and efforts to recover the species would significantly accelerate. Not only would recovery actions move the species closer to delisting, but outcomes of such actions would also benefit landowners and water users within ARS watersheds. Actions which will require additional funding are outlined below.

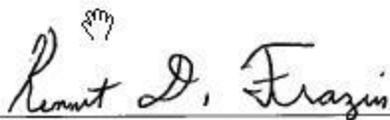
<b>Action #</b>	<b>Action Title</b>	<b>Description</b>	<b>Threat/Listing Factor Addressed<sup>1</sup></b>	<b>Responsible Parties<sup>2</sup></b>	<b>Cost (dollars)</b>
2.8	Genetics research	Implement ARS genetics research	A, B, C, D, and E	FWS, State, Acad	\$400,000
2.9	Life history research	Implement research examining ARS life history studies, including fish	A and E	FWS, State, Acad	\$250,000

		movement and reproductive patterns			
2.10	Habitat assessment research	Implement research for a thorough habitat assessment of the species historic and current range, with the intent to repatriate the ARS within portions of its historic range	A and E	FWS, State, Acad	\$250,000
2.11	Competition and tolerance research	Implement research to examine competition between ARS and red river shiners. Proposals could include examination of limiting factors of both species, including tolerance to certain water quality parameters such as chlorides.	A and E	FWS, State, Acad	\$250,000
4.1	Salt cedar control – Upper Canadian	Salt cedar control efforts on Canadian River upstream of Lake Meredith	A and E	FWS, State, CRMWA, NPS, COE, BLM, Private	\$2,000,000
4.2	Salt cedar control – Mid-Canadian	Salt cedar control efforts on Canadian River downstream of Lake Meredith	A and E	FWS, State, Private	\$500,000
4.3	Salt cedar control – Upper Cimarron	Salt cedar control efforts on Cimarron River in Kansas	A and E	FWS, State, Private	\$500,000
4.4	Salt cedar control – Mid-Cimarron	Salt cedar control efforts on Cimarron River in Oklahoma	A and E	FWS, State, Private	\$500,000
4.5	Upper Canadian River management plan	Continue to work with CRMWA and other entities to implement and revise, as necessary, the existing management plan for ARS.	A and E	FWS, State, COE, NRCS, FSA, Private	\$20,000

4.6	Mid and Lower Canadian River management plan	Develop a management plan for the ARS in the Canadian River downstream of Lake Meredith	A and E	FWS, State, NRCS, FWS, Private	\$50,000
4.7	Upper Cimarron River management plan	Develop an ARS management plan for Upper Cimarron River in Kansas	A and E	FWS, State, NRCS, FSA, Private	\$50,000
4.8	Mid-Cimarron River management plan	Develop an ARS management plan for Upper Cimarron River in Kansas	A and E	FWS, State, NRCS, FSA, Private	\$50,000
4.9	Develop safe harbor agreement (SHA) for management actions	If necessary, develop SHAs to provide assurances for landowners implementing management actions beneficial to the ARS	A, D, and E	FWS, State, NRCS, FSA. Private	\$25,000
4.10	Minimize impacts from Off-highway vehicle (OHV)	Develop conservation measures aimed at minimizing effects to the ARS	A, D, and E	FWS, NPS, Private	\$5,000
4.11	Minimize impacts from concentrated animal feeding operations (CAFO)	Develop conservation measures aimed at minimizing effects to the ARS	A, D, and E	FWS, EPA, State, NRCS, Private	\$10,000

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 Field Supervisor

8/6/09  
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