

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

Common Name: Little Colorado spinedace

Scientific Name: *Lepidomeda vitatta*

Lead Region: Region 2

Lead Field Office: Arizona Ecological Services Field Office

Species Information:

Status: Threatened

Recovery Priority Number: 5C – The degree of threat is high, the recovery potential is low, the listed entity is a species, and there is potential conflict due to increased water development for human needs.

Recovery Plan: Little Colorado Spinedace Recovery Plan, January 9, 1998.

Most Recent 5-year Review: Completed October 6, 2008

Other: Original listing rule March 11, 1967 (32 FR 2001), final listing rule October 16, 1987 (52 FR 35034).

Threats: At the time of listing in 1987, impoundments and water development combined with predation by and competition with non-native fishes had resulted in significant stream and river habitat loss and fragmentation throughout the spinedace's range. Habitat loss and fragmentation continue to be serious threats to the fish's existence. Human uses, such as riparian modification and destruction, urban growth, mining, timber harvest, road construction, livestock grazing, and other watershed disturbances (e.g., road construction and maintenance, recreational development and usage, fire management, and inter-basin water diversions) have also had detrimental effects to spinedace habitat. These activities have affected watershed function, runoff patterns, peak flows, seasonal flows, riparian vegetation, wet meadow functions, bank erosion, siltation, and water quality. Introduction of non-native trout, baitfish, and crayfish at recreational lakes and reservoirs have increased competition for available resources and predation on spinedace. In addition, extended drought cycles resulting in drought-intolerant habitats and increased development of groundwater resources are impacting habitat for spinedace within their historical range.

Many recent studies and assessments of the Little Colorado River watershed and its underlying groundwater resources indicate that these water resources are under increasing pressure from development (Bills et al. 2005). The North-Central Arizona Water Supply Study Report of Findings (BOR 2006) predicts that by the year 2050, the human demand for water will be unmet in north central Arizona. Plans are underway to determine how additional water resources can be developed to provide for this unmet demand. Protecting water resources for environmental needs is included in these plans. However, it is likely that with the need for additional water for human uses, there will be additional stress put on environmental demands for water. In addition, there is high potential that extended drought, perhaps exacerbated through global climate change, will further stress water resources within the range of the spinedace.

As part of an environmental impact statement to analyze the effects of the Black Mesa Project, two hydrologic models were developed to evaluate the impacts of proposed project pumping on groundwater in the C-aquifer in Arizona. The C-aquifer is located on the Colorado Plateau of northeastern Arizona, western New Mexico, and southern Colorado and is the aquifer that underlies the Little Colorado River Basin. Both models predicted depletion in baseflow from current and proposed groundwater withdrawals in lower Chevelon and Clear Creeks over the next 50 to 100 years. The flow model (Papadopulos and Associates 2005) predicted that, based on current regional pumping, the base flow of Lower Chevelon Creek would be zero in 60 years. One of the most robust spinedace populations left, in Chevelon Creek near a location called The Steps, and designated critical habitat are located in the area expected to lose surface flow. Based on the precarious status of the spinedace and current impacts to its habitat, any further reduction in flows should be considered significant.

It has become more difficult to find spinedace because drought conditions have reduced available habitat. In addition, drought conditions over the last decade have confounded cooperative recovery efforts for the Little Colorado spinedace throughout its range. During several recent years, particularly in 2002 and 2006, spinedace have been salvaged from drying pools and either brought into captivity or moved to more permanent pools. Efforts to establish spinedace in additional habitats within currently occupied drainages have been thwarted over the last several years as spinedace were introduced to areas only to have the habitat dry within months of reintroduction. The lack of permanent waters within the range of the spinedace continues to impede recovery efforts.

Target: The 5-year target will be to maintain the status of the species as threatened and prevent extinction.

The Recovery Plan calls for the protection of existing populations of spinedace, restoration of occupied habitats, and the reintroduction of spinedace to sites within their historical range. In order to accomplish these goals and maintain the existing populations, we need to maintain and/or identify and restore habitats that will continue to hold water into the foreseeable future within each currently occupied watershed (Chevelon, East Clear Creek, and the Little Colorado River). This action plan target is dependent upon cooperation among multiple agencies and private partners to ensure that we can accomplish the necessary tasks to meet this target.

Measures:

Maintain existing populations of fish in the Chevelon Creek watershed (West Chevelon Creek, The Steps), East Clear Creek watershed (Leonard Canyon, West Leonard Canyon, Bear Canyon, and Dane Canyon), and the Little Colorado River watershed (Becker Lake-Enders and Wenima Wildlife Areas, Nutrioso Creek, Rudd Creek) through habitat protection. We do not have definitive numbers of fish at each of these sites. However, this action will be met if we can continue to locate spinedace at these specific locations in similar numbers to what we see now (50 to 100 fish at each site) and continue to work with our partners to implement habitat protection measures (e.g., East Clear Creek Watershed Heath Project and East Clear Creek Watershed Strategy for the Recovery of the Little Colorado Spinedace, AGFD Wildlife Area Plans, etc.).

Establish new populations in Kehl Canyon (located in the East Clear Creek watershed) and Beaver, Gentry, Turkey, and Willow Creeks (located in the Chevelon Creek watershed). Each area will count as one new population if we can stock fish in the site and see continued presence and recruitment in the two to three years following stocking (stocking may occur two or three times at each site). However, our ability to stock these sites with spinedace is dependent upon our ability to find fish at existing sites within the East Clear Creek and Chevelon Creek watersheds. We plan to begin stocking at these sites in 2010, begin monitoring the sites for spinedace persistence and recruitment, stock additional fish as needed, and track the progress of these sites over the next five years.

Actions: The following actions, taken from the Little Colorado Spinedace Recovery Plan and from information collected from the Recovery Team and others, must be implemented over the next 5 years to meet the action plan target.

Action	Description	Threat/Listing Factor Addressed	Responsible Parties	Cost (dollars)
1.3 Acquire and protect lands and water rights where required to conserve spinedace	Purchase of base property for Buck Springs Range Allotment	Factor A	AGFD	\$680,000
1.0 Protect existing populations of spinedace and 2.0 Restore habitats occupied by spinedace	Complete NEPA for C.C. Cragin Reservoir Renovation	Factor A, Factor C	U.S. Fish and Wildlife Service (FWS)	\$70,000
1.0 Protect existing populations of spinedace and 2.0 Restore habitats occupied by spinedace	Implement C.C. Cragin Reservoir Restoration	Factor A, Factor C	FWS, AGFD, Forest Service (FS), Salt River Project (SRP), Bureau of Reclamation (BOR)	\$75,000
1.0 Protect existing populations of spinedace and	Begin planning and initiate NEPA planning for renovation	Factor A, Factor C	FWS, AGFD, FS	\$250,000

2.0 Restore habitats occupied by spinedace	of upper Chevelon Creek			
3.0 Reintroduce spinedace to selected habitats within historic range	Kehl Canyon, Beaver Creek, Gentry Creek, Turkey Creek, Willow Creek	Factor A	AGFD, FWS, FS	\$50,000
3.1.2 Remove nonnative fish and crayfish from habitats essential for spinedace recovery	Begin development of novel pesticides for control of nonnative fish and crayfish	Factor A, Factor C	BOR, U.S. Geological Survey, FWS, AGFD, and other partners to be identified	\$1,000,000 over a five-year period

Role of other agencies: Meeting the target for this species action plan will require the continued cooperation and assistance of the AGFD, BOR, FS Region 3 (specifically the Coconino and Apache-Sitgreaves National Forests), the Bureau of Land Management, and SRP. These entities all participate on the Little Colorado Spinedace Recovery Team and are committed to the conservation of the species. However, in order to accomplish the actions listed above, not only will funding need to be obtained, but these items will need to be recognized priorities for each of the identified agencies. The FWS is taking a leadership role in the organization and effort to search for funding and implement these actions, and we worked with representatives from each of these entities to develop the action list. However, ensuring that these actions continue to be priorities for these entities is critical to maintaining the spinedace throughout its range.

AGFD has already obtained the money for the purchase of the base property for the Buck Springs Range Allotment, and this purchase and development of a management plan is in progress. The FWS funded the work needed to complete the NEPA for the C.C. Cragin Reservoir Renovation (nonnative fish removal) and the FS will obtain any funding needed for their participation. In addition, SRP is contributing time and coordination of the reservoir draw-down so that we can implement the project following the NEPA decision. We have estimated an additional amount of money that may be needed for implementation, but we will not know definitively what funding is needed until the NEPA analysis is completed. AGFD has and will continue to budget for implementation of day-to-day surveys, management, and habitat evaluations, but additional funds may be needed for these actions as well. We have not yet obtained funding for the Chevelon Creek pre-planning and NEPA, but this will be a high-priority for the FWS and our partners. It is critical that we establish habitat for the Chevelon Canyon spinedace above the section of creek predicted to dry under current hydrologic models.

The most significant funding item identified is the development of novel pesticides for the control of nonnative fishes and crayfish. The BOR and the Little Colorado Spinedace Recovery Team initiated informal conversations with the U.S. Geological Survey (USGS) in Wisconsin, and they developed a draft proposal to begin this work. The FWS will need to work with BOR and our other partners to obtain funding for this important work. The products that could be obtained from this research would not only aid in implementation of this action plan, but aid in the recovery of numerous native aquatic species throughout the western United States.

All actions listed above were developed with the parties noted in the table over electronic mail, telephone conversations, and at a Recovery Team meeting held on July 14, 2009. In addition, we met with the Coconino National Forest and AGFD on July 23, 2009, to discuss priorities and assistance with the completion of the C.C. Cragin Reservoir Renovation. Completing the NEPA analysis for this project was identified as a mutual top priority in 2010 or 2011.

Role of other ESA programs: Section 7 consultations will likely continue to be an important tool in protection of existing spinedace populations and identification of conservation measures that agencies can implement to protect the species. The East Clear Creek Watershed Health Project and Hackberry/Pivot Rock Allotment Management Plan (Coconino National Forest) are both examples of recent consultations that included measures to protect spinedace. National funds through the Recovery Budget Initiative (Showing Success/Preventing Extinction) are also available on a competitive basis for on-the-ground recovery actions. These or other sources of funds are crucial for achieving the targets for this species.

Role of other FWS programs: The Arizona Fish and Wildlife Conservation Office (AZFWCO) is a significant partner in spinedace recovery, and the Arizona Ecological Services Office and the Pinetop AZFWCO office will continue to work cooperatively to coordinate and accomplish spinedace recovery.

Additional funding analysis: The actions identified in this plan are only a sub-set of the actions needed to maintain, and eventually recover, the spinedace. We will continue to work with our partners to fund and conduct survey work, habitat assessments, management of existing refugia ponds, and other day-to-day activities that complement the critical actions listed above. However, budgets and available grant money are limits on our ability to fund these actions. If additional funds are provided, additional work related to these activities could be completed. The cost of these additional activities is likely to be in the range of \$50,000 to \$100,000.


Field Supervisor

8/3/09
Date

Literature Cited:

- Bills, D.J., M.E. Flynn, and S.A. Monroe. 2005. Hydrology of the Coconino Plateau and adjacent areas, Coconino and Yavapai Counties, Arizona: U.S. Geological Survey Scientific Investigations Report 2005-5222, 101 pp., 4 plates.
- Bureau of Reclamation (BOR). 2006. North central Arizona water supply study – report of findings. U.S. Department of the Interior, Bureau of Reclamation, Denver, Colorado. 163 pp. + Appendices.
- Papadopulos, S.S. and Associates, Inc. 2005. Groundwater flow model of the C Aquifer in Arizona and New Mexico. Prepared for the Salt River Project and Mohave Generating Station Co-Owners. S.S. Papadopulos & Associates, Inc., Environmental & Water-Resources Consultants, Bethesda, Maryland. 35 pp. + Appendices.