

**Road and Stream Restoration for Multiple Species of Greatest Conservation Need in Cedar Creek,  
Alum Fork Saline River Watershed, Ouachita Mountain Ecoregion, Arkansas**

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*January 2013*



*Cover Photo: Cedar Creek Road and Cedar Creek.*

**Project Summary:**

The Saline County Road Department (SCRD) has expressed interest in partnering with The Nature Conservancy (TNC) on a stream bank/road stabilization project at Cedar Creek, a tributary to the Alum Fork Saline River. In May 2012, SCRD indicated that much time and material have been spent on efforts to stabilize the road and stream bank and they would like to seek a more sustainable solution.

**Project Partners:**

Saline County Road Department

Marty Polk, Assistant Road Superintendent

2000 "U" Street

Benton, AR 72015

[mepolk@sbcglobal.net](mailto:mepolk@sbcglobal.net)

(501) 303-5690 (Work)

**Total Project Cost: \$25,151**

**Total Amount Requested: \$16,366**

**Total Matching Funds/In-kind Services: \$8,786**

**State Wildlife Action Plan Priority to be Addressed**

This project is geared toward “Stream Bank/Riparian Corridor Restoration for the candidate mussel species, *Lampsilis powelii*,” within the Alum Fork Saline Watershed, Saline County, Arkansas. This action was identified as a conservation priority in the Arkansas State Wildlife Plan. Completing this project will reduce sedimentation in Cedar Creek, a tributary to the Alum Fork Saline River and increase habitat suitability to benefit fifteen aquatic endangered, threatened, and species of greatest conservation need (see Figure 2). Of these fifteen species, there are three fish, eleven mussels, and one macroinvertebrate species of concern.

**Project Area**

The project is located in the Ouachita Ecoregion, Alum Fork Saline River Watershed, Cedar Creek, Saline County, near Paron, Arkansas; and is targeted to address both small river riparian terrestrial habitat, headwaters aquatic habitat of the Alum Fork Saline River (See Figure 1), water quality, aquatic habitat, and fifteen species of greatest conservation need (See Figure 2). Figure 1.



**The Need**

The Arkansas fatmucket (*Lampsilis powelii*) is found only in the Ouachita Mountains Ecoregion of Arkansas. Prior to the status assessment conducted by Harris and Gordon (1988), the known range of Arkansas fatmucket was restricted to 10 localities in the Ouachita River basin; one in

the upper Ouachita River, two in the South Fork Ouachita River, two in the Caddo River, and five in the Forks of the upper Saline River (Gordon and Harris 1985). In the Saline River Basin, the species is known to occur in the Alum Fork, the Middle Fork, and the North Fork above their confluence with the Saline River, and in the main stem Saline River from its formation downstream to about the Fall Line.

Based on a 2005/2006 threats assessment for the Upper Saline River watershed, conducted by TNC, and partner agencies, the following activities ranked highest (in order) for degrading suitable habitat for multiple at-risk species;

1. Urban development
2. Altered hydrologic regime due to municipal and recreational water withdrawal
3. Lack of adequate riparian buffers
4. Unrestricted cattle access into streams
6. Gravel mining
7. Non-point source pollution arising from a broad array of activities

Unpaved roads are a significant contributor of sediment into the Upper Saline River. Since 2004, TNC and partners have mapped and inventoried over 800 miles of unpaved roads in priority Ozark and Ouachita watersheds of Arkansas using differential GPS. Specifically, TNC assessed the status of unpaved roads in the neighboring Middle Fork Saline watershed. TNC used field measurements on over 20 miles of road and the Water Erosion Prediction Project (WEPP) model to determine erosion rates for the roads that were mapped. Over 4,500 road features such as culverts, wing ditches, and stream crossings were also mapped. Using GIS, road maintenance priorities were identified. After the GIS field assessments were completed, road maintenance workshops were held with county judges and road crews to provide them with road inventory and maintenance information, and to demonstrate best management practices for sediment reduction from unpaved roads. TNC is currently funded through a State Wildlife Grant to conduct an in depth road inventory on unpaved roads in the Alum Fork Saline watershed. The Cedar Creek site will serve as a demonstration site for TNC, SCRCD and local timber industries to showcase sustainable solutions for stabilizing stream banks adjacent to road bases. This project will reduce maintenance costs for SCRCD, therefore, reducing sedimentation to Cedar Creek by lessening road grading and rip rapping and increasing the riparian buffer between the road and stream.

### Method

This stabilization will require installation of two J-hook rock structures placed at specific elevations along the channel to help guide flow away from the eroding stream bank and road base of Cedar Creek Road. The natural channel design methodology, developed by Dave Rosgen, will be followed for the formal design, bioengineering, and construction phases of the project. Additionally, an appropriate sized culvert will be installed in order to replace a currently undersized and damaged culvert. Bioengineering will include laying jute mat, for immediate protection, and restoring native vegetation to the streambank to promote long-term protection and stability of the road base and stream bank.

Measurable Outcomes/Objectives

1. Install in-channel rock structures to guide flow away from the eroding stream bank while allowing vegetation to reestablish.
2. Host a field visit for watershed stakeholders describing the stream bank stabilization and road work. Involve multiple partners including the nearby County Road Departments and timber industries, during construction to demonstrate techniques used for stream bank and road stabilization.

Budget

Category	Funds Required	TNC Match	3rd Party Match**	Total
Salaries and Benefits	\$10,366	\$0	\$0	\$10,366
Operating Expenses	\$3,503	\$7,370	\$89	\$10,962
Capital Expenses	\$0	\$0	\$0	\$0
<b>Subtotal</b>	<b>\$13,869</b>	<b>\$7,370</b>	<b>\$89</b>	<b>\$21,328</b>
Indirect Cost 18% *	\$2,496	\$1,327	\$0	\$3,823
<b>TOTAL</b>	<b>\$16,366</b>	<b>\$8,697</b>	<b>\$89</b>	<b>\$25,151</b>

\*The Nature Conservancy has a current 18% Negotiated Indirect Cost Rate (NICRA) that is accepted by USFWS.

\*\*Riggs Cat has generously agreed to donate a 20% discount on all rental equipment.

Deliverables

- Pre- and Post-site photos and final report.
- Pre- and Post- site WEPP Modeling to determine total sediment reduction from the implemented BMP's.

Figure 2.

Upper Saline and 4 Forks SGCN				
	Scientific Name	Common Name	Global Status	State Status
Fish	<i>Noturus lachneri</i>	Ouachita madtom	G2	S2
	<i>Crystallaria asprella</i>	Crystal darter	G3	S2?
	<i>Percina uranidea</i>	Stargazing darter	G3	S3
Insects	<i>Agapetus medicus</i>	Arkansas agapetus caddisfly	G1G2	S?
Mussels	<i>Alasmidonta marginata</i>	elktoe	G4	S3
	<i>Cyprogenia aberti</i>	western fanshell	G2	S2
	<i>Lampsilis ornata</i>	Southern pocketbook	G5	S1
	<i>Lampsilis powellii</i>	Arkansas fatmucket*	G1G2	S2
	<i>Toxolasma lividus</i>	purple lilliput	G2	S2
	<i>Villosa arkansasensis</i>	Ouachita creekshell	G2	S2
	<i>Obovaria jacksoniana</i>	Southern hickorynut	G1G2	S2
	<i>Lampsilis abrupta</i>	Pink Mucket**	G2	S2
	<i>Pleurobema cordatum</i>	Ohio pigtoe	G3	S2
	<i>Pleurobema rubrum</i>	Pyramid pigtoe	G2	S2
	<i>Ligumia recta</i>	Black sandshell	G5	S2

\*Federally listed threatened species

\*\*Federally listed endangered species.

**Joy DeClerk**, River Restoration Program Director, has worked for The Nature Conservancy since April 2005, first as the Ouachita Rivers Project Manager and currently as the River Restoration Program Director. DeClerk is a 2002 graduate of Hendrix College and double-majored in Economics and Business and Environmental Studies. In her current position she has focused conservation work on assessing sedimentation from various land uses and applying natural channel design restoration techniques to reduce sedimentation and restore habitat. DeClerk has completed trainings in “Applied Fluvial Geomorphology” and “Natural Channel Design” led by instructor Dave Rosgen, Ph.D. The most recent successful project completed was a ½ mile stream restoration project on the Middle Fork Saline River, near Jessieville, AR, designed and constructed by DeClerk. Other projects completed include: Assessment and improvement project on unpaved roads in the Middle Fork Saline Watershed, in Garland County; and Development of a trail assessment and monitoring methodology for Best Management Practices on ATV trails in the Wolf Pen Gap Area, Ouachita Headwaters Watershed near Mena, Arkansas.

**Melissa Jenks**, River Restoration Project Specialist, will be responsible for facilitation between groups. Jenks is a graduate of Arkansas Tech University with a B.A. in Geology and Environmental Science and has worked with The Nature Conservancy since 2008. In her current position she has completed two courses in “Applied Fluvial Geomorphology” led by instructor Dave Rosgen, Ph.D., conducted numerous geomorphic surveys, and worked to implement a stream restoration project on the Middle Fork Saline River. She also has six years combined experience in the Geographic Information Systems (GIS) field with the U.S. Forest Service and The Nature Conservancy.

**Mitchell Allen**, Stream Restoration Specialist, will be responsible for bioengineering materials, site safety plans and procedures, and vehicle and equipment maintenance. Mitchell is a graduate of the University of Central Arkansas with a B.S. in Environmental Science/Biology. While working on his undergraduate degree, he was able to gain 3 years of experience with non-native plant removal and restoration ecology. Since graduating he has worked with the U.S. Fish and Wildlife Service on the Upper Colorado River Endangered Fish Program, helping restore habitat for four endangered species, as well as removing non-native fish species. He began work for The Nature Conservancy in August of 2012.

**The Nature Conservancy’s Arkansas Field Office** has a great interest and knowledge in watershed restoration, and has successfully planned for and implemented a large number of watershed projects across the country, including many in Arkansas. As a result of this and other conservation work, TNC recognizes the foundational importance of planning for successful implementation, and utilizes a four-step planning process for priority conservation areas with high biodiversity. This extensive experience has proven an excellent track record for TNC in generating public involvement for watersheds across the state. Furthermore, the Arkansas Field Office of TNC has a successful track record for leveraging limited conservation dollars via collaborations with multiple partners toward measurable conservation successes.