

Title

Northwest Arkansas Wet Prairie Restoration Project for Henslow's Sparrow and Arkansas Darter

Summary

Audubon Arkansas requests funding to restore seasonal wetlands, grasslands, and associated streams at two sites in Northwest Arkansas. The project's goal is to benefit two highly ranked species in the State Non-Game Wildlife Conservation plan -- the Arkansas Darter and Henslow's Sparrow. The project will also improve water quality and groundwater recharge. With our partner, Beaver Water District, Audubon will monitor bird, fish, groundwater, and water quality response to restoration efforts. The project will serve as a demonstration site for wet prairie restoration in an urbanizing area.

Project Leader & Critical Staff

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Project Partners

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Cost Summary

Total Amount of Project Cost \$84,000
Total Amount of SWG request \$42,000
Amount and Source of Matching Funds or In-kind Services \$42,000
--Audubon Arkansas Matching Funds \$18,000
--Beaver Water District Matching Funds \$24,000

Which of the funding priorities does your pre-proposal address?

These projects specifically address the habitat needs of two identified species of greatest conservation need; the Arkansas Darter (*Etheostoma cragini*) and Henslow's Sparrow (*Ammodramus henslowii*). The project will integrate SWG priorities with local conservation efforts in Washington and Benton County, publicize the Action Plan with local advocates and prairie preservation constituents, and provide a model for wet prairie restoration in urbanizing environments. Finally, a key component of the restoration plan is citizen science and involvement. This will occur both through planned prairie restoration activities and volunteer assisted monitoring.

The seasonal wetlands, streams and grasslands at Wilson Springs (Site 1) constitute the single largest remaining block of prairie habitat in the region that is in public ownership, and can be managed by Audubon for use by the public. Site 2, Beaver Prairie, is owned by Beaver Water District and provides an opportunity for a highly visible public organization in the region to demonstrate prairie restoration techniques. Beaver Water District is centrally located in the Northwest Arkansas metropolitan area near Lowell. Beaver Water District is interested in promoting best management practices (BMP) that protect water quality in the area. The project on this property will promote BMP's in the area and hopefully result in similar BMP's within the Beaver Lake watershed.

The restoration of these wet prairies and their headwater streams addresses the priorities of the SWG Steering Committee. These include maintaining the habitat quality of prairies and native grasses; restoring and enhancing wetland integrity and protection of recharge zones. These sites were chosen because of the threat they face from changing land use and development of Northwest Arkansas. This project's restoration efforts will greatly protect aquatic diversity while reducing potentially devastating human impacts to the headwater streams on site.

In what ecoregion, ecobasin, terrestrial habitat or area will your project be conducted?

Both sites are within the Ozark Highlands (Eco-Region 39). Wilson Springs is located near the junction of Interstate 540 and Arkansas 112 near Fayetteville Arkansas. Beaver Prairie is located near Lowell, Arkansas.

Site 1 Wilson Springs. The 210 acres at Wilson Springs were originally Tallgrass Prairie with distinctive upland and wetland characteristics. Relatively dry terrestrial habitat occupies a small portion of the southern uplands, with elevations similar to those along the I-540 bypass. Most of the remainder of the terrestrial habitat is a seasonal wetland (or wet-mesic prairie) at the lower elevations associated with Clabber Creek and its tributaries. This seasonal wetland has been converted to a fescue monoculture, but it retains numerous ecological indicators different than those of typical upland terrestrial habitats. Perennial wetlands are associated with Wilson Springs, Clabber Creek, and its tributaries. Wilson Springs supports a population of the rare Arkansas Darter (*Etheostoma cragini*) and Henslow's Sparrow (*Ammodramus henslowii*)¹

Site 2 Beaver Prairie. The Beaver Prairie area is 36 acres of original Tallgrass Prairie with distinctive upland and wetland characteristics. The property is divided by an ephemeral stream that serves as the uppermost headwater area of Puppy Creek. The stream channel remains wet most of the year but only flows during precipitation events. Two man-made ponds are located on the property as well as several prairie pothole wetland areas. The Tallgrass Prairie has been converted to pasture. The dominant cool

¹ Holimon et al. 2004. First documentation that Henslow's Sparrow regularly occurs during the breeding and wintering seasons in Arkansas. Journal of the Arkansas Academy of Science, Vol. 58

season forages are fescue and clover. The dominant warm season forages are Bermuda grass and Johnson grass.

What are the methods by which you propose to carry out your work?

Audubon Arkansas and Beaver Water District manage these two properties and have access to the property for restoration activities.

(1) Audubon Arkansas and Beaver Water District will conduct an ecological assessment of both sites to document current plant, bird, and fish communities.

(2) Audubon Arkansas and Beaver Water District will develop a long-term management plan that outlines the restoration and management of the conservation areas.

(3) Audubon Arkansas and Beaver Water District will carry out on-the-ground restoration as described in the management plan. Local groups, including school clubs, Audubon volunteers, and Scouts, will be engaged to implement various parts of the management and restoration activities (e.g., invasive plant removal). Restoration will start with site preparation as needed. Specific site preparation techniques will depend on the initial condition of the land and may include disking, multiple herbicide applications, and/or burning. Site preparation will be followed by restoring microtopography. This work will be followed by seeding local genotypes of species appropriate to the hydrologic gradient - marsh to wet prairie to dry-mesic prairie. (Local genotypes are best adapted to local environmental conditions.) Native plant species to be propagated include Big bluestem and Indian grass on upland sites, and cordgrass and gamma grass on wet sites. Over the next several years, management and natural succession will lead to establishment of a stable plant community. Native willows will be established in riparian areas where appropriate.

(4) Monitoring will include the response to restoration of: macroinvertebrates, birds, fish, and groundwater/surface water.

(5) Outreach materials for the public and volunteers will be developed and focus on the historical and current importance of wet prairie ecosystems and associated flora and fauna. Materials will highlight key best practices for prairie restoration as defined in the management plan for the two sites.

What measurable products or outcomes will result from your project?

Habitat - Completion of this project at Wilson Springs (site 1) provides an opportunity to restore the largest intact remnant (120 acres) of the original tall grass prairie of Prairie Township (now Fayetteville, Arkansas). It also provides an opportunity to provide habitat for several declining species associated with this habitat type: BIRDS - Henslow's Sparrow, Bell's Vireo, Willow Flycatcher, Sedge Wren, Grasshopper Sparrow, Painted Bunting, and FISH - Arkansas Darter. The restoration of Beaver Prairie (site 2) will provide 36 restored acres of native-tall-grass prairie at an additional site. Total restored habitat will be 156 acres and both sites will serve as demonstrations for wet prairie restoration.

Species - macroinvertebrate, fish, and bird population monitoring data will be available to compare species response to restoration efforts.

Water Quality and Groundwater Recharge - Surface water quality at both sites is heavily influenced by commercial and industrial land use. Both sites have channelized streams with little riparian corridor to help stabilize stream banks. Restoration activities will armor the bank and reduce the sediment contributions to creeks. Groundwater infiltration should occur at higher rates once the prairie restorations

are complete. Increased infiltration will store water in the vadose zone and should help to maintain base flows during periods of little to no precipitation.

To what extent will your proposed project be able to take advantage of existing resources?

Audubon's mission is to conserve and restore natural ecosystems, focusing on birds, other wildlife and their habitats for the benefit of humanity and the earth's biological diversity. With a future nature center being developed in Northwest Arkansas, Audubon considers the rapidly urbanizing Beaver Lake Watershed, and its habitats, as a conservation priority. Toward this end, protecting watersheds and preserving native habitats is the smartest, cheapest, and most effective way of ensuring affordable, clean, drinking water from source water, the primary mission of Beaver Water District. Four years ago, Beaver Water District and Audubon Arkansas recognized this problem and took proactive steps to raise awareness in Northwest Arkansas and begin conservation projects in the area. The goal to engaging citizens of Northwest Arkansas in the process of protecting key habitats and water quality in the area is of utmost importance. This project will expand this partnership and become a key component of the other conservation efforts of the partnership. (http://www.ar.audubon.org/Centers_NorthwestAR.html)

Beaver Water District employs two full-time and one part-time environmental technicians as well as two full-time laboratory technicians under the direction of a laboratory supervisor and manager of environmental quality. The staff is fully capable of monitoring surface water quality and groundwater content. The environmental department and laboratory is accredited by both the Arkansas Department of Environmental Quality and the Arkansas Department of Health. BWD typically monitors streams and Beaver Lake for many water quality parameters. Soil sampling is also done on a less frequent basis by Beaver Water District employees.

What is the proposed total budget of your project?

Item	Audubon - Match	BWD - Match	SWG	Total
<i>Salary & Benefits</i>	10,000	20,000	5,000	35,000
<i>Operating Expenses</i>				0
Travel	1,000	1,000		2,000
Laboratory Analysis		1,000		1,000
<i>Capital Expenses</i>				0
Equipment	7,000	2,000	22,800 ²	31,800
Contracting			10,000 ³	10,000
<i>Indirect Costs</i>			4,200	4,200
Total	\$18,000	\$24,000	\$42,000	\$84,000

² water content reflectometer, rechargeable battery, solar cell and regulator, data logger, conduit, environmental enclosure, prairie seed, seedlings, misc. field supplies.

³ \$5,000 for macroinvertebrate and fish sampling and analysis, \$5,000 for prairie restoration activity contracting

Qualifications of the individual(s) and organization(s)

Kenneth Smith, Executive Director, is the lead manager responsible for this project's success. Mr. Smith served as Assistant Secretary for U.S. Fish Wildlife and Parks where he was responsible for developing policy of the National Park Service and the U.S. Fish and Wildlife Service. He also served as Deputy Chief of Staff to President Bill Clinton and Secretary Bruce Babbitt in the U.S. Department of the Interior where he was instrumental in establishing several new national wildlife refuges. In 1997, Mr. Smith returned to Arkansas where he served as Director of the Ozark Natural Science Center. From 1989 to 1993, he served Governors Bill Clinton and Jim Guy Tucker as Assistant for Natural and Cultural Resources. Earlier, he established the first office of the Nature Conservancy in Arkansas and served as Program Coordinator for the Natural Heritage Program. Mr. Smith holds a B.S. degree in Biology and Chemistry and an M.S. degree in Biology.

Kevin Pierson, Director of Conservation, will be the manager responsible for oversight of day-to-day activities of project implementation, including monitoring to ensure benchmarks are achieved within time frames specified. As Director of Conservation, Mr. Pierson supervises numerous activities related to wetland restoration, habitat improvement, and water quality science. His work currently focuses in watersheds in the Ozarks, Arkansas River Valley, and Delta. Prior to working for Audubon, Mr. Pierson was an associate at an environmental consulting firm. Before that, he worked for the Arkansas Department of Environmental Quality. He graduated from the University of Arkansas with a M.S. in Ecology.

Daniel Scheiman, Ph.D., Director of Bird Conservation, will provide technical expertise on bird habitat requirements, serve as liaison with Arkansas Farm Bureau Federation, and assist with planning, restoration, monitoring, and outreach. Dr. Scheiman manages Arkansas' Important Bird Areas program and Waterbirds on Working Lands Initiative. He also serves on the Ivory-billed Woodpecker Recovery Team and Arkansas Quail Committee. He received his B.S. from Cornell University, M.S. from Eastern Illinois University, and Ph.D. from Purdue University, all in wildlife ecology. He has over ten years of bird research experience on topics such as bird-habitat relationships and population dynamics, resulting in several peer-reviewed publications. He travels throughout the state to lecture on bird conservation.

Robert Morgan, Ph.D., Beaver Water District Manager of Environmental Quality, will provide technical expertise on hydrologic effects of the prairie restorations. Dr. Morgan is a registered professional engineer in Arkansas with expertise in ecological processes as applied to stream restoration, water quality management, water supply, and wastewater treatment. He was awarded his Doctorate in Engineering (2007) at the University of Arkansas College of Engineering. His education also includes a Master of Science degree in Civil Engineering (2003) and Bachelor of Science degrees in Civil Engineering and Education (1973) from the University of Arkansas. Research interests include watershed management with emphasis on stakeholder involvement and stream restoration. He has authored numerous publications on nonpoint source pollution best management practices, natural resource restoration and watershed management. Dr. Morgan currently serves as Adjunct Faculty in the Biological and Agricultural Engineering Department at the University of Arkansas. In this project, Dr. Morgan will provide technical advice on monitoring and analysis of water quality parameters related to ground and surface water quality.

Bradley Hufhines, Beaver Water District Environmental Technician, will conduct all of the water quality and soil water content monitoring. As an environmental technician at Beaver Water District, Mr. Hufhines conducts water quality monitoring regularly. He received his B.S. in Animal Science and is currently finishing his M.S. in Crop, Soil, and Environmental Science at the University of Arkansas. He has over eight years of water and wastewater experience as well as numerous school projects related to water quality.