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Historic Arkansas Museum

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Old State House Museum



Arkansas Natural Heritage
Commission

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March 13, 2007

Re: 2007 Arkansas State Wildlife Grant Proposal
Prairie restoration of an abandoned railroad to benefit grassland birds and
insects in the Grand Prairie Region of East Central Arkansas

Dear Jane Anderson,

The Arkansas Natural Heritage Commission respectfully requests \$18,600 of State Wildlife Grant funding to restore five acres of native tallgrass prairie for the benefit of grassland bird and insect species of conservation concern and increase connectivity by eliminating fragmentation within Downs Prairie Natural Area in the Grand Prairie region of Arkansas.

We made a concerted effort to minimize project costs in an attempt to make it more economical. Administration and travel expenses were trimmed and equipment and personnel (when applicable) will be shared between this project and the Arkansas Game and Fish Commissions' Grand Prairie restoration project at the Stuttgart Airport. Furthermore, to ensure the success of this project, ANHC pledged additional matching funds resulting in a 53% match. Through these efforts, we were able to reduce the total cost of this project by \$3,800 and the SWG funding request by \$2,900 from the original amount reported in the pre-proposal.

To successfully restore five acres at Downs Prairie Natural Area, the total project cost is \$39,200. The enclosed proposal respectfully requests \$18,600 (47%) of SWG grant funding and provides matching funds of \$20,600 (53%). If funding allows, we would appreciate this project being considered at the 50% matching requirement. Thus, the grant share would be \$19,600 and the total match \$19,600.

In the event full funding is not available success can still be achieved by restoring 2.5 acres at Downs Prairie Natural Area. Downs Prairie is bisected by Highway 70 with 2.5 acres requiring restoration in the northern tract and 2.5 acres in the southern tract (Figure 1). Restoring the abandoned railroad bed in either of these tracts will still increase the amount of suitable habitat for grassland bird and insect species of conservation concern and increase connectivity by decreasing fragmentation.

If full funding is not available, we respectfully request funding to restore 2.5 acres to tallgrass prairie in the northern tract. Large woody vegetation was mostly removed from the railroad right-of-way in 2005 and efforts need to concentrate upon this tract to complete its restoration. The estimated total cost to restore the 2.5 acres in the northern tract is \$25,850. The grant share would be \$12,925 and the total match \$12,925 (\$9,805 ANHC, \$1,700 AFC, \$1,420 AGFC). Please note that decreasing the area to be restored by half does not correspond to a decrease in total costs by half as several costs such as travel expenses remain nearly constant. The budget for restoring the 2.5 acres in the northern tract can be emailed upon request.

Thank you for your consideration.

Sincerely,

Jennifer Akin

March 5, 2007

Jane Anderson
Arkansas Wildlife Action Plan Implementation Coordinator
Arkansas Game and Fish Commission
2 Natural Resources Drive
Little Rock, AR 72205

Re: 2007 Arkansas State Wildlife Grant Proposal
Prairie restoration of an abandoned railroad to benefit grassland
birds and insects in the Grand Prairie Region of East Central
Arkansas

Dear Jane Anderson,

This letter is written in support of the Arkansas Natural Heritage Commission grant proposal entitled, "Prairie restoration of an abandoned railroad to benefit grassland birds and insects in the Grand Prairie Region of East Central Arkansas". This proposal is being submitted by the Arkansas Game and Fish Commission for consideration for funding by the "State Wildlife Grant Program."

The Arkansas Game and Fish Commission (AGFC) has a strong working relationship with the Arkansas Natural Heritage Commission and is a long-term partner in the protection of Arkansas' important animal and plant species of concern. In as much, the AGFC enthusiastically pledges \$2,800 of non-federal match to help ensure the success of this project.

We are happy to express our support of this project and look forward to playing an important role in its success. If you have any questions or require more information, please feel free to call me at (877) 734-4581.

Sincerely,



Mike Coker
Regional Supervisor, Arkansas Game and Fish Commission

Arkansas Wildlife Action Plan, State Wildlife Grants Proposal - Cover Page

Project Title: Prairie Restoration of an abandoned railroad to benefit grassland birds and insects in the Grand Prairie Region of East Central Arkansas

Affiliation: Arkansas Natural Heritage Commission

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Project Partners: Jennifer Akin, Plant Community Ecologist, Arkansas Natural Heritage Commission
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Tom Foti, Natural Area Chief Planner, Arkansas Natural Heritage Commission
Michael Warriner, Entomologist, Arkansas Natural Heritage Commission
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Total funding requested: \$18,600 (47%)

Source of matching funds: Total match will be a minimum of \$20,600 (53%). Matching funds will come primarily from salaries, benefits, and travel of Arkansas Natural Heritage Commission staff, Arkansas Forestry Commission and from the Arkansas Game and Fish Commission.

Project summary: Restore native tallgrass prairie to benefit insect and avifauna in the Grand Prairie region of Arkansas. This will be accomplished by restoring an abandoned railroad bed in Downs Prairie Natural Area. This project will increase habitat productivity for grassland bird and insect species of conservation concern by providing additional foraging and nesting habitat and increase connectivity by eliminating fragmentation within the prairie.

**Arkansas Wildlife Action Plan, State Wildlife Grants Proposal
Arkansas Natural Heritage Commission**

**Prairie Restoration of an abandoned railroad to benefit grassland birds and insects in the Grand
Prairie Region of East Central Arkansas**

Need

Prior to European settlement, the Grand Prairie ecosystem covered approximately 900,000 acres, with 320,000 acres consisting of tallgrass prairie. During the early 20th century, much of the land was lost as it was converted to other uses, primarily agriculture. Today, there are now fewer than 600 acres of tallgrass prairie remaining (Heitmeyer et al. 2000). This large scale loss of habitat has resulted in a major negative impact on grassland animal and insect species in this ecosystem. Most notably, Greater-prairie Chicken (*Tympanuchus cupido*) were once so common in this region that hunters would travel from as far away as Illinois and the eastern United States to hunt them. However, due to the loss of this critical habitat, this species has been eliminated from the Grand Prairie.

In addition to supporting large numbers of breeding grassland birds, the Grand Prairie was an important area for migrating shorebirds, breeding water birds, and wintering songbirds. The prairie grasslands were interspersed with seasonal wetlands, providing prime foraging habitat for shorebirds, herons and rails. The importance of this area to wintering songbirds is underscored by those species that continue to use the little remaining habitat. For example, Sedge Wren (*Cistothorus platensis*) and LeConte's Sparrow (*Ammodramus leconteii*) are consistently observed wintering at Downs and Railroad Prairie Natural Areas and migrating Henslow's Sparrow (*A. henslowii*) have been observed recently in two different years at the Stuttgart Airport (ANHC Database, 2007). In addition, a large population of Smith's Longspur (*Calcarius pictus*) winters at the Stuttgart Airport as does a small population of Short-eared Owl (*Asio flammeus*). Generous numbers of Short-eared Owl, LeConte's Sparrow, and Sedge Wren have been observed in the last few years wintering at Konecny Prairie and a pair of nesting Sedge Wrens were observed there in the summers of 2004 and 2005. Furthermore, Northern Bobwhite (*Colinus virginianus*) are frequently observed in a few remaining prairie remnants of the Grand Prairie. This is important as bobwhite quail populations have declined by as much as 90% in the Mississippi Alluvial Plain. The Grand Prairie region is a subdivision of the Mississippi Alluvial Plain.

Insects dependent upon prairies have also declined as a result of habitat loss in the Grand Prairie. Prairie Mole Crickets (*Gryllotalpa major*) are only found in tallgrass prairie and today are limited to a handful of small, isolated patches of prairie across the Grand Prairie region (ANHC and USFWS, no date). Downs Prairie Natural Area supports the largest viable population of Prairie Mole Crickets. A 2003 survey reported more than 100 individuals which far exceeds populations found in other Grand Prairie remnants and is one of the largest known populations statewide (ANHC Database, 2007). Downs Prairie is also the only known location in the Grand Prairie to host the Red Milkweed Beetle (*Tetraopes quinque maculatus*). This beetle is a milkweed specialist (*Asclepias*), with adults feeding on leaves and flowers and larvae feeding within roots. These beetles require large patches of milkweed in good quality prairie.

Downs Prairie Natural Area is an example high quality tallgrass prairie remnant in the Grand Prairie region. This natural area consists of 24 acres owned and managed by the Arkansas Natural Heritage Commission. It also functions as an extension of the 253.7 acre Railroad Prairie Natural Area, the former Rock Island Railroad right-of-way, also owned by the Arkansas Natural Heritage Commission.

An abandoned railroad right-of-way extends through Downs Prairie which has become overrun by invasive non-native vegetation (Figure 1). Today, the former rail path occupies approximately five acres. The area was examined this past year and revealed locations dense with invasive woody plants (trees and shrubs) and impenetrable thickets of invasive vines that have spread into the adjacent high quality prairie. Relatively few native species were present.

Because so much tallgrass prairie habitat has been lost in Arkansas, it is imperative to restore remaining habitat to be managed in a manner that can optimize breeding and wintering opportunities for grassland bird species and provide quality habitat for insect populations. Restoring the abandoned railroad bed in Downs Prairie will increase the productivity of this natural area for species of conservation concern by providing additional foraging and nesting habitat and increase connectivity by eliminating fragmentation within the natural area.

Project Objective/ Goals

Restore native tallgrass prairie to provide additional habitat for insect and avifauna species of greatest conservation concern and connect disjunct portions of prairie habitat in the Grand Prairie region of Arkansas. This objective addresses three of the Arkansas State Wildlife Action conservation priorities: Arkansas Prairie and Grassland Initiative, Terrestrial Habitat, Restore Native Vegetation, Arkansas Prairie and Grassland Initiative, Terrestrial Habitat, Increase Block Size and Connectivity, and Arkansas Prairie and Grassland Initiative, Grassland Birds, Restore and/or Maintain Prairies and Native Grasslands.

Methods/ Deliverables Calendar

For this proposal, prairie restoration efforts will be conducted on five acres at Downs Prairie Natural Area to provide additional habitat for species of greatest conservation concern and increase connectivity by eliminating fragmentation within the prairie (Figure 1). Additional restoration efforts will occur on an adjacent Grand Prairie remnant, Railroad Prairie Natural Area, in years following the project. The long term goal for restoration is to provide species of conservation concern with a large continuous block of high quality tallgrass prairie habitat.

Restoration of the abandoned railroad bed at Downs Prairie Natural Area will span two years. The following methods for restoration will be used.

July 1, 2007 – December 2008

- 1.) Remove woody and non-native plants from the project site. This will be accomplished by a combination of techniques including mechanical removal, chemical vegetation control and/or prescribed burning.
- 2.) Prepare the project site to receive seed. This will be accomplished through several techniques including mechanical preparation, herbicide application to non-prairie species and/or prescribed burning.
- 3.) Seed the project site with a winter cover crop to reduce invasion by exotic plant species. This will be accomplished by mechanically broadcasting seed.

February 2008 – June 30, 2009

- 4.) Prepare the project site to receive seed. Proper site preparation is the biggest single factor in ensuring the success of any restoration. This will be accomplished by a second season of herbicide application to non-prairie species and prescribed burning.
- 5.) Collect native prairie seed on adjacent areas in Downs Prairie and Railroad Prairie Natural Areas to preserve local genotype. Seed will be collected throughout the growing season to help ensure a diversity of species as well as limit aggressive prairie species from out-competing other native prairie species. This will be accomplished by mechanical and manual collection.

- 6.) Revegetate the project site with native prairie seed of local genotype through mechanical and/or manual broadcasting.

Once the project site has been restored, the Arkansas Natural Heritage Commission will continue restoration efforts by applying herbicide to non-prairie species and through prescribed fire to ensure that the area remains restored.

Transects to detect bird species of greatest conservation concern will be conducted throughout the five acres in the summer and winter prior to and following restoration activities. Baseline data collection for winter surveys will be conducted prior to the project funding period and associated expenses are not included in the budget. Because grassland birds are often under detected using standardized survey methods such as point counts, strip transect surveys will be conducted to flush birds so they can be detected and identified (Bibby et al. 2000). Transects will be modified by narrowing the width as suggested by Roberts and Schnell (2006). Bill Holimon and Catherine Rideout, both of whom have conducted grassland bird research in this area, will lead transect efforts.

Surveys will be conducted for Prairie Mole Crickets in the spring of 2008 and 2009 throughout the five acres. Surveys begin once the nightly low temperature exceeds 63°F on clear evenings with little wind. Surveys are performed by listening for vocalizing Prairie Mole Crickets around sunset, tracing the vocalization to the special burrows they use for calling, and then flagging the burrow site to reduce double counting (Figg and Calvert 1987). This process is repeated for all vocalizing Prairie Mole Crickets and then the number of flags, each representing a different male, are counted. Michael Warriner collected baseline data from the abandoned railroad bed in 2003 and did not find any individuals (though he found numerous individuals in the adjacent prairie habitat). This data will be used to compare with the number of Prairie Mole Crickets observed post-restoration.

Monitoring methodologies will be entered in the Natural Resources Monitoring Partnership internet accessible database. This partnership is a collaborative effort led by the United States Geological Survey to improve monitoring efforts in order to drive effective management decisions and evaluation of those decisions. This important resource provides information to researchers on existing, tested monitoring methodologies.

Conservation Outcomes

These restoration efforts will increase the amount of tallgrass prairie habitat within the Grand Prairie region of Arkansas. Habitat restoration will have the following benefits for birds and insects.

- 1.) Increase the amount of suitable habitat for migrating shorebirds, breeding water birds and bobwhite quail.
- 2.) Increase the amount of suitable habitat for wintering songbirds and Short-eared Owls.
- 3.) Increase the amount of suitable habitat for the Prairie Mole Cricket and Red Milkweed Beetle.
- 4.) Increase connectivity between portions of the prairie that are disjunct. Fragmentation will be eliminated within the prairie by removing a barrier to movement to avian and insect species.

In addition, this project will serve as a demonstration that can be replicated for restoring habitat in the Grand Prairie region.

Comprehensive Wildlife Conservation Strategy database

The Arkansas Wildlife Action plan identifies conservation priorities for the protection and management of nongame species in greatest need of conservation. This plan implements conservation priorities determined by a database of scientific wildlife knowledge. Updating this database will provide valuable

knowledge towards protecting species of conservation concern. At the conclusion of this project, the Comprehensive Wildlife Conservation Strategy database will be updated.

Updating the Scientific Community

The Arkansas Natural Heritage Commission has presented and published numerous research and conservation papers to the scientific community. Several avenues frequently used to present research and conservation management techniques include but are not limited to the Arkansas Academy of Sciences or the Natural Areas Conference. One of these or other similar venues will be selected and this project presented after data analysis is completed in 2010.

Making a Public Connection

Addressing, engaging and educating the public about species of conservation concern are key to protecting and managing CWCS species of concern. As part of this project, we are dedicated to informing the public about restoring native tallgrass prairie to benefit these species at Downs Prairie Natural Area. This will be accomplished by using resources such as the internet, print media and/ or television media. The Arkansas Natural Heritage Commission frequently uses the associated press, local newspapers, television interviews or internet articles to inform the public and our partners of our conservation activities.

Species of Greatest Conservation Concern that may be addressed in project

Restoring the abandoned railroad bed in Downs Prairie Natural Area to native tallgrass prairie will benefit the following ten species of greatest conservation concern. This project will increase habitat productivity for grassland birds and insect species of conservation concern by providing additional foraging and nesting habitat and increase connectivity by eliminating fragmentation within the prairie.

Northern Bobwhite (<i>Colinus virginianus</i>)	Henslow's Sparrow (<i>Ammodramus henslowii</i>)
Short-eared Owl (<i>Asio flammeus</i>)	Le Conte's Sparrow (<i>Ammodramus leconteii</i>)
Sedge Wren (<i>Cistothorus platensis</i>)	Painted Bunting (<i>Passerina ciris</i>)
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Prairie Mole Cricket (<i>Gryllotalpa major</i>)
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	Red Milkweed Beetle (<i>Tetraopes quinque maculatus</i>)

Budget

The estimated total cost of the project is \$39,200. The grant share is \$18,600 (47%). The grant share along with the total match of \$20,600 (53%) will restore five acres of tallgrass prairie. Below is a more detailed version of the budget.

Match in the amount of \$14,385 from the Arkansas Natural Heritage Commission comes in the form of in-kind contributions (staff time, equipment, travel and operating expenses). The Arkansas Forestry Commission generously committed \$3,415 of non-federal funds to support this project. Staff time associated with mechanical vegetation removal serves as their match contribution.

The Arkansas Game and Fish Commission also graciously pledged \$2,800 of non-federal funds to ensure the success of this project. To use resources wisely, the AGFC and ANHC have partnered to share specialized equipment and personnel between this project and another Grand Prairie restoration project

entitled “Prairie and Grassland Bird Habitat Restoration at the Stuttgart Airport in Arkansas’ Grand Prairie Region of the Mississippi Alluvial Valley” (awarded funding by the State Wildlife Grant program in 2005). The AGFC match covers the cost of mechanical seed harvesting and associated salary/ travel expense.

Item	Total	Match-ANHC	Match-AFC	Match-AGFC	Grant
Salary/ Benefits					
Grassland bird surveys	\$ 1,250	\$ 625			\$ 625
Prairie Mole Cricket surveys	450	225			225
Herbicide application	5,200	2,600			2,600
Seed harvesting – mechanical & manual	5,200			2,800	2,400
Supervision of contracted work	2,600	1,300			1,300
Grant Administration	1,500	750			750
Prescribed burn(s)	3,800	1,700			2,100
Operating Expenses					
Travel	2,400	1,200			1,200
Vegetation removal	12,500	3,835	3,415		5,250
Seeding project site	2,000	1,000			1,000
Herbicides	700	350			350
Capital Expenses					
ATV herbicide sprayer & assoc. equip.	1,600	800			800
GRAND TOTAL	\$ 39,200	\$ 14,385*	\$ 3,415	\$ 2,800	\$ 18,600

*The Arkansas Natural Heritage Commission is dedicated to the success of this project and has pledged additional matching funds resulting in a 53% match in efforts to make this project more economical.

Literature Cited

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Staff Qualifications and Organization's Track Record

Both the Arkansas Natural Heritage Commission and the Arkansas Game and Fish Commission have successful experience restoring and protecting prairie habitat. The Arkansas Natural Heritage Commission has natural areas that consist mostly of prairie habitats in four natural divisions of the state. The Arkansas Game and Fish Commission's Grandview Prairie represents the largest, contiguous tract of blackland prairie in public ownership in the nation.

Jennifer Akin is a Plant Community Ecologist for the Arkansas Natural Heritage Commission. Jennifer received a B.S. in biology and a M.S. in botany both from the University of Arkansas at Fayetteville. Jennifer has worked for The Nature Conservancy documenting the recovery of restored wetland and uplands and the National Park Service performing surveys in over two hundred vegetation types in the Sierra Nevada Mountains for production of a vegetation map. She has published two scientific papers on algae in relation to aquatic vegetation in Arkansas.

Bill Holimon is an Ornithologist and is Chief of Research for the Arkansas Natural Heritage Commission. Bill received a B.S. in biology from the University of Arkansas at Little Rock and a M.S. in biology from New Mexico State University. Bill previously worked for The Nature Conservancy in Texas on conservation of two federally listed endangered bird species, the Golden-cheeked Warbler (*Dendroica chrysoparia*) and Black-capped Vireo (*Vireo atricapilla*). Bill has published three scientific papers on rare birds of Arkansas; two on grassland birds and the third on the endangered Red-cockaded Woodpecker (*Picoides borealis*).

Theo Witsell of the Arkansas Natural Heritage Commission is one of the state's leading botanists. He has worked as the staff botanist for the Arkansas Natural Heritage Commission since 2000 and is responsible for maintaining the state's list of plant species of conservation concern as well as conducting statewide surveys for rare plants and plant communities. Theo is an active member of the Arkansas Vascular Flora Committee, a group of botanists writing a manual to the flora of Arkansas. He has published a number of scientific articles on rare plant species including the description of a new species, *Sabatia arkansana*, from glades in central Arkansas. He is currently working on a comprehensive floristic inventory of the Grand Prairie region.

Tom Foti is recently retired as Plant Community Ecologist and Chief of Research and Inventory of the Arkansas Natural Heritage Commission, a state agency responsible for inventory and protection of natural areas. His section was responsible for scientific evaluation of potential natural areas to guide protection and management, and review of potential environmental impacts of proposed state and federal development projects. He now serves in a part-time capacity as Natural Area Chief Planner of ANHC. He has done research, inventory and restoration in the Grand Prairie region for 40 years and considered by many to be the most knowledgeable person on Arkansas' prairies.

Michael D. Warriner is a field ecologist with the Arkansas Natural Heritage Commission. In that role, Warriner conducts surveys on animal species of conservation concern, particularly invertebrates. He also coordinates citizen-science activities for the agency, including forming partnerships with volunteer groups. Warriner holds B.S. and M.S. degrees in biology.

Doug Fletcher is the Chief of Stewardship for the Arkansas Natural Heritage Commission. Doug received a B.S. in Wildlife Management and a M.S. in Biology from Arkansas State University at Jonesboro, Arkansas.

Other contributing partners are Mike Coker, Wildlife Management Regional Supervisor in Brinkley, and Rob Willey, habitat biologist, of the Arkansas Game and Fish Commission who have experience conducting prairie restoration on Wildlife Management Areas in Arkansas.