

2008 State Wildlife Grant Preproposal

**IMPLEMENTATION OF THE WARREN PRAIRIE CONSERVATION AREA PLAN:
WOODLAND, SAVANNA, AND PRAIRIE HABITAT RESTORATION AND ECOLOGICAL
MONITORING**

PROJECT SUMMARY:

Restore pine-oak woodland, savanna, and saline prairie habitat structure and composition in the South Central Plains using prescribed fire and timber management and conduct ecological monitoring for Arkansas Wildlife Action Plan animal Species of Greatest Conservation Need (SGCN) in order to measure progress toward desired ecological conditions. This project will address three priority implementation actions and benefit several SGCN species (fifteen are known from this site).

PROJECT LEADER:

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PROJECT PARTNERS:

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BUDGET SUMMARY:

Total Amount Requested: \$55,965 (50%)
Matching Funds from TNC and ANHC: \$55,965 (50%)
Total Project Amount: \$111,930

FUNDING PRIORITY ADDRESSED BY PREPROPOSAL

This project will restore pine-oak woodland, savanna, and saline prairie using prescribed fire and timber management. Three priority implementation actions will be addressed:

- Restore and/or maintain prairies and native grasslands for grassland bird habitat
- Restore fire to fire-suppressed habitats to benefit Species of Greatest Conservation Need
- Manage forests to benefit Species of Greatest Conservation Need

Additional attributes of the project include:

- On-the-ground stewardship and restoration that both implement the priorities of the Arkansas Wildlife Action Plan and serve as a demonstration project that can be replicated in other places
- Addressing the needs of Species of Greatest Conservation Need while also benefiting fish and other wildlife



Figure 1. Warren Prairie Conservation Area location (shown in red).

ECOREGION WHERE PROJECT WILL BE CONDUCTED

Restoration activities will be conducted in the South Central Plains Ecoregion, within the Warren Prairie Conservation Area including Warren Prairie Natural Area in Bradley and Drew Counties, Arkansas (Figure 1). This project will focus on restoring West Gulf Coastal Plain Saline Glade and West Gulf Coastal Plain Dry Pine-Hardwood Flatwoods habitats, and areas of Cultivated Forest.

BACKGROUND

The Warren Prairie Conservation Forestry and Stewardship project is situated within the 4,087-acre Warren Prairie Conservation Area (WPCA). The project site contains the highest-quality examples of saline prairies (including associated barrens) in Arkansas; native loblolly-shortleaf pine cover type identified by USDA Forest Service as the 2nd least protected cover type nationally; and the Pine-Hardwood Flatwoods system identified by the Arkansas Natural Heritage Commission (ANHC) and The Nature Conservancy (TNC) as the most endangered forested ecosystem in the state. Other significant plant communities at the site include pine savannas, Carolina ash/overcup oak/dwarf palmetto sloughs, and riparian/bottomland forests, along with industrial timberlands of loblolly pine plantations of varying ages. The mosaic of plant communities within the WPCA supports 15 known species of Arkansas Wildlife Action Plan species of greatest conservation need and 19 species of rare plants of federal, regional, or state concern.

Examination of aerial photos and General Land Office records indicate that the historical woodlands were much more open than today in the WPCA. Prior to conservation ownership most of the area's prairie, savanna, and woodlands were planted with loblolly pine and converted from an open to a closed canopy structure. Fire was also excluded from the landscape for decades. This conversion from open to closed canopy negatively alters species composition, and adversely impacts herbaceous-layer plants and dependent animals.

The project area supports the largest known wintering site of Henslow's Sparrow (*Ammodramus henslowii*) in Arkansas and Bachman's Sparrow (*Aimophila aestivalis*), have been documented to breed within the site. Restoration and management of the saline prairie, pine woodlands and savanna will benefit these and other species of greatest conservation need which prefer grassland understories. Fire and woodland restoration are key habitat enhancement actions called for in the Arkansas Wildlife Action Plan for both grassland and woodland bird species. In addition, the project site is recognized by the National Audubon Society as an Important Bird Area.

Restoration of the pine woodlands and savanna at WPCA will also aid in the recovery of the federally listed endangered Red-cockaded Woodpecker (*Picoides borealis*). A habitat specialist which occurs only in mature, open pine woodlands and savannas, this species has declined drastically due to suppression of fire that increases woody encroachment of hardwood trees and logging practices that reduce or eliminate mature pines. ANHC and the Fish and Wildlife Service signed an agreement that grants permission and provides a donor population for reestablishing breeding groups of RCW in the project area in the very near future once habitat conditions are restored to support a self-sustaining population. RCW are occasionally observed foraging at Warren Prairie Natural Area located within the WPCA but no known breeding groups occur there currently. Historically, the WPCA supported several breeding groups of RCW until around 1990.

GOALS, OBJECTIVES, AND METHODS

The primary goal of the project is to restore woodland-savanna-prairie habitat structure and species composition to historical levels to benefit several species of conservation concern as identified by the 2008 State Wildlife Action Plan Steering Committee, measure progress toward desired ecological conditions, and monitor the effects on species of greatest conservation need at WPCA. The Nature Conservancy, Arkansas Natural Heritage Commission, and Potlatch Corporation are implementing a conservation area plan at WPCA, including fire management and woodland restoration/thinning. Completion of the project will take two years.

Overall Project Objectives:

- Increase the amount of sunlight needed to promote native grass and forbs through prescribed fire to 1,100 acres of the WPCA once within two years, with average 75% unit coverage.
- Restore habitat structure (40-60 BA/acre) and species composition to historical levels using mechanical thinning and brush control on 100 to 400 acres.
- Measure progress toward desired ecological conditions by monitoring all bird species, including those using grassland habitats; performing ecological and baseline monitoring of reptile, amphibian, and insect populations; and monitoring photopoints in treatment areas.

The Nature Conservancy and Arkansas Natural Heritage Commission will restore an ecological fire regime and reduce stem densities at appropriate areas throughout the WPCA site. Before conducting burns, ecologically-based, peer-reviewed burn plans and thinning treatments will be developed and approved. Burns will be conducted by trained TNC/ANHC burn crews and lead by a TNC burn boss with a NWCG certification rating of RXB2. Thinning treatments will be planned and accomplished under the supervision of registered professional foresters.

Fire management and ecological thinning methods:

- Maintain all existing firelines at WPCA.
- Install firelines around and within new burn units as they are delineated.
- Apply prescribed fire to delineated areas and implement burn plans for new burn units.
- Conduct ecological timber harvest on delineated areas to reduce basal area.
- Control brush in thinned and burned areas.

TNC's Arkansas Field Office utilizes a fire effects monitoring procedure to track attainment of fire. This monitoring includes tracking burn acreage and effectiveness in reaching fire management objectives. Fire severity is calculated from point transects through the burn unit. Monitoring information includes substrate consumption, understory vegetation consumption, scorch height, crown scorch percent, char height, and char degree. Ecological restoration through thinning of dense stands has a similar monitoring protocol. Wintering grassland bird, breeding bird point counts, and reptile, amphibian, and insect monitoring will be based on previous protocols established by TNC and ANHC.

Monitoring methods:

- Track burned, thinned, and brush controlled acres.
- Track burn unit coverage and effectiveness through post fire effects monitoring.
- Develop Post Burn Evaluation reports for each burn.
- Develop Post Harvest Evaluation reports for thinned treatment areas.
- Conduct photopoint monitoring of treatment areas.
- Conduct bird point count surveys, grassland bird surveys, reptile, amphibian, and insect monitoring.

MEASURABLE OUTCOMES/ACTIONS

The Nature Conservancy and Arkansas Natural Heritage Commission will restore an ecological fire regime within the WPCA site. The most important stewardship objective for this system is the restoration and maintenance of an ecological fire regime. However, because of decades of fire suppression, the use of prescribed burning will take decades more to reach ecological goals. Therefore, the reintroduction of fire, coupled with mechanical thinning of priority stands, will

open up woodlands, reduce the abundance of non-native species, favor native warm season grasses, increase the size and connectedness of woodland-savanna-prairie habitats, restore structure to the degraded woodlands, and reinvigorate the forest-woodland understory. Such open and frequently-burned pine-oak woods will be beneficial to Wild Turkey, Northern Bobwhite, White-tailed Deer, and a host of non-game birds, such as Henslow’s and Bachman’s Sparrows, Brown-headed Nuthatch, Red-headed Woodpecker, Prairie Warbler, and the federally listed Red-cockaded Woodpecker (Table 1). Project partners are committed to the long term success of this project. Following project completion, partners will continue monitoring activities and an ecological fire regime to maintain restoration areas to support Arkansas Wildlife Action Plan species of greatest conservation need.

Table 1: Arkansas Wildlife Action Plan Species of Greatest Conservation Need that are known from the project site (15) which will benefit from this project.	
Common Name	Common Name
American Woodcock	Red-cockaded Woodpecker
Bachman’s Sparrow	Red-headed Woodpecker
Brown-headed Nuthatch	Sedge Wren
Henslow’s Sparrow	Goldstripe Darter
Hooded Warbler	Lake Chubsucker
LeConte’s Sparrow	Gulf Crayfish Snake
Northern Bobwhite	Northern Crawfish Frog
Prairie Warbler	

Measurable Actions:

- Write burn plans and thinning prescription for treatment area.
- Install fire lines around burn units.
- Implement prescribed burns on 1,100 acres.
- Conduct ecological thinning in priority stands.
- Conduct brush control.
- Complete post-fire effects/thinning prescription monitoring and operational reports.
- Conduct photopoint, avian, and reptile/amphibian/insect monitoring and produce reports.

PROPOSED BUDGET

Category	Total	TNC/ANHC (Match)	SWG
Salary / Benefits	57,500	32,500	25,000
Operating Expenses	33,500	13,000	20,500
Subtotal	91,000	45,500	45,500
Indirect Costs (23%)*	20,930	10,465	10,465
<i>Totals</i>	<i>111,930</i>	<i>55,965</i>	<i>55,965</i>

***Indirect Costs:** The Nature Conservancy has a federal negotiated indirect cost rate (NICRA) of 23%, which is accepted by USFWS.

QUALIFICATIONS OF THE NATURE CONSERVANCY TO CARRY OUT THE PROJECT

The Nature Conservancy (TNC) has worked in Arkansas's South Central Plains ecosystems with our partners for approximately 20 years. TNC has developed a broad understanding of this at-risk ecosystem through years of scientific observation and use of adaptive management in implementation of restoration techniques. TNC also maintains a science and conservation staff that is trained in planning and implementing prescribed fires as per National Wildfire Coordinating Group (NWCG) standards. Each burn plan is peer reviewed and a Prescribed Burn Boss Type II (RXB2) leads every burn. The Arkansas Chapter of TNC annually employs a seasonal burn crew which conducts 10-20,000 acres/year of prescribed burns on private, state and federal properties. In addition to burning expertise, TNC employs a Director of Conservation Forestry that is responsible for planning and oversight of forestry-related projects. Successful ecological thinning has been accomplished on TNC preserves, including a previous SWG project at Kingsland Preserve.

The Arkansas Natural Heritage Commission (ANHC) is charged with the responsibility of establishing and maintaining a System of Natural Areas. Natural areas are those lands specifically managed to preserve and sometimes restore natural communities that are now rare across the state. ANHC has placed a high priority on lands with the Warren Prairie Conservation Area (WPCA) based on 25 years of field investigations and inventory. ANHC owns and manages Warren Prairie Natural Area (WPNA), a 2,169 acre natural area, located within the WPCA. ANHC and TNC have demonstrated successful experience in restoring and protecting areas within WPNA through prescribed burning and timber thinning.

Mike Melnechuk is the Assistant Director of Stewardship for the Arkansas Field Office. His responsibilities include assisting with the implementation of fire management activities in Arkansas as well as stewardship and restoration activities on the various preserves for TNC, the Arkansas Natural Heritage Commission, and occasionally military installations. Mike is also involved with ecological monitoring and herpetological surveys. He coordinates with the Director of Conservation, as to the day to day operations of the seasonal burn crew. He has a Bachelor of Science degree in geography/natural resource management from Western Michigan University.

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 an 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*). In addition, he has conducted extensive work on various taxa of Red Crossbills (*Loxia curvirostra*) throughout North America. Bill is a native Arkansan who has published scientific papers on rare birds of Arkansas including one on Henslow's Sparrows (*Ammodramus henslowii*) and another on the endangered Red-cockaded Woodpecker (*Picoides borealis*).

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.