

2007 State Wildlife Grant Application Proposal

Project Title: **Implementing State Wildlife Action Plan Strategies in the West Gulf Coastal Plain Sandhill Oak -Shortleaf Pine Forests and Woodlands to Benefit CWCS Species of Concern**

Project Summary: **The Nature Conservancy will conduct prescribed burns and ecological thinnings on 1,000 acres within the AR Sandhill Ecosystem in Nevada, Ouachita and Miller Counties. The reintroduction of fire, coupled with the thinnings, will enhance wildlife habitat by opening up sandhill woodlands, reducing the abundance of non-native species, favoring native warm season grasses and forbs, increasing the size and connectedness of woodland habitats and restoring structure to the degraded woodlands.**

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Budget Summary: **Total Amount Requested: \$25,000 (50%)**
Matching Funds from TNC: \$25,000 (50%)
Total Project Amount: \$50,000

Implementing State Wildlife Action Plan Strategies in the West Gulf Coastal Plain Sandhill Oak -Shortleaf Pine Forests and Woodlands to Benefit CWCS Species of Concern

Executive Summary

In reference to the 2007 Administrative Guidelines for State Wildlife Grants, this project is categorized as an implementation action. The AGFC CWCS habitat highlighted in this project is West Gulf Coastal Plain Sandhill Oak –Shortleaf Pine Forests and Woodlands, which is located entirely within the Upper West Gulf Coastal Plain ecoregion.

The two year project addresses the AGFC CWCS Strategies: fire restoration and forest management.

The project goal is as follows:

Within two years of grant execution, conduct prescribed burns and or thinning treatments on 1,000 acres within the Arkansas Sandhill Ecosystem in Nevada, Ouachita and Miller Counties, AR. Prescribed burn plans and thinning prescriptions will be developed for each unit. Post-burn and post thinning treatment monitoring will be conducted after each burn or treatment to determine effectiveness. Post treatment evaluation reports will be developed to measure progress.

The Arkansas Sandhill Ecosystem

Sandhills occur as a belt of residual marine and alluvial sands along the upper gulf coastal plain of the southeastern US (Roberts 1978). The soils are deep, droughty sands with extensive seepage zones. Periodic drought, seepage, and fire maintain the structure and composition of the plant communities.

The sandhill ecosystem in Ouachita and Nevada Counties comprises a mosaic of upland plant communities interspersed with seeps that occur in small creeks between sandhills. The sandhill ridgetops and upper slopes support dry sandhill woodland which has a stunted gnarly canopy of oaks. Openings in the woodlands, also on ridgetops and drier south and southwest facing slopes, are xeric sand barrens. Both of these communities occur within a matrix of the more common dry-mesic sandhill woodland. Three seep communities are found between the sandhill uplands at the bases of slopes: wooded sandhill seep, saturated sandhill shrub seep, and herbaceous sandhill marsh.

Conservation Significance

The sandhills represent the most xeric condition in the Upper West Gulf Coastal Plain ecoregion (Braun 1950). Sandhills contain some of the most diverse communities in the United States. Over 400 plant species have been identified in the sandhills of Ouachita and Nevada Counties accounting for over 13% of the entire flora of Arkansas in a very small part of the state. Miller County Sandhills is considered the largest and best example of the western sandhill woodland/sand barrens community known in the state

The sandhill region of south Arkansas harbors a distinctive group of communities. Six ecological communities have been described in the Arkansas sandhills. All rank G2-G3 and they support at least twenty (20) rare plant species. Many of these are disjunct populations previously thought to be endemic to sites in Texas (Roberts 1978). Their discovery in Ouachita and Nevada Counties significantly extended their ranges. One way to explain the long distances between these similar sandhills that share many of the same species is that the contemporary sites are remnants of a much larger contiguous

landscape that had deeper sands and has since eroded over geologic time (Silker pers. comm. to Roberts 1978). Twelve (12) CWCS terrestrial species of concern are listed in the AGFC CWCS Database (Table 1), however, it is likely many more at-risk animal species occur there.

An ecological assessment of the Central Sandhill (Nevada and Ouachita Counties) ecosystem was conducted by TNC in 2000. As a result, the boundaries of the Central Sandhill Conservation Area were identified. A Stress Assessment was conducted and Conservation Recommendations were developed. Major stresses included forest management practices, conversion to pine plantation, fire exclusion, fragmentation, and non-native species. These threats would be reduced by the implementation of this project.

In 2006, TNC purchased tracts within this area. The total acreage currently protected by TNC is 4,818 acres. This acreage is referred to as the Central Sandhills Preserve. In addition, lands managed by the Arkansas Forestry Commission, State Parks, and Natural Heritage Commission would benefit from ecological restoration. All of these lands are included in the Central Sandhills and Miller County sites.

Table 1. *Terrestrial species of the West Gulf Coastal Plain Sandhill Oak –Shortleaf Pine Forests and Woodlands identified as Species of Concern under the State Wildlife Grant Program (CWCS Database).*

Class	Common Name	Scientific Name	Description	S_Rank	G_Rank
Amphibia	Hurter's Spadefoot	Scaphiopus hurterii	Suitable	S2	G5
Aves	Eastern Towhee	Pipilo erythrophthalmus	Marginal	S3	G5
Aves	Yellow-billed Cuckoo	Coccyzus americanus	Marginal	S4B	G5
Aves	Bachman's Sparrow	Aimophila aestivalis	Marginal	S3B	G3
Aves	Prairie Warbler	Dendroica discolor	Marginal	S4B	G5
Aves	Red-headed Woodpecker	Melanerpes erythrocephalus	Suitable	S4B, S4S5N	G5
Aves	Chimney Swift	Chaetura pelagica	Suitable	S4B, S5N	G5
Aves	Chuck-will's-widow	Caprimulgus carolinensis	Suitable	S4B	G5
Aves	Northern Bobwhite	Colinus virginianus	Suitable	S5	G5
Insecta	Georgia Satyr	Neonympha areolata areolata	Suitable	S2	G4T3T4
Mammalia	Long-tailed Weasel	Mustela frenata	Data Gap	S2	G5
Reptilia	Texas Coral Snake	Micrurus tener tener	Optimal	S2	G5T5

Project Objectives/ Methods

The Nature Conservancy will restore an ecological fire regime and reduce stem densities at the Central Sandhills and Miller County Sandhills sites (Appendix A). Before conducting burns, ecologically-based, peer-reviewed burn plans and thinning treatments will be developed and approved. Burns will be conducted by trained TNC burn crews and lead by a TNC burn boss with a NWCG certification rating of RXB2. Thinning treatments will be accomplished by a professional forestry consultant.

Fire management objectives:

- Restore fire to 1,000 acres once within two years, with average 80% unit coverage.
- Attain moderate overall burn intensity for 50% of the burns.

Thinning treatments objectives:

- Where necessary thin dense stands, pre- or post-fire, to the desired density.

Fire management and thinning treatment monitoring:

TNC's Arkansas Field Office utilizes a fire effects monitoring procedure to track attainment of fire objectives. 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.

Monitoring tasks:

- Track acres burned or thinned.
- Track burn unit coverage
- Track burn effectiveness through post fire effects monitoring
- Develop Post Burn Evaluation reports for each burn and thinning

Measurable Product/ Outcome

The Nature Conservancy will restore an ecological fire regime within the Arkansas Sandhills Ecosystem. The most important stewardship objective for this system is the restoration and maintenance of an ecological fire regime. The reintroduction of fire, coupled with mechanical thinning of priority stands, will open up sandhill woodlands, reduce the abundance of non-native species, favor native warm season grasses, increase the size and connectedness of woodland habitats, restore structure to the degraded woodlands, and reinvigorate the forest-woodland understory.

Measurable Actions:

- Write burn plans and thinning prescriptions for treatment areas (Months 1- 12);
- Install fire lines around burn units (Months 1-22) ;
- Implement prescribed burns on 1,000 acres (Months 3-23);
- Conduct ecological thinning in priority stands (Months 1-23);
- Complete post-fire effects / thinning prescription, monitoring and operational reports after each treatment (Months 3-24);
- Enter monitoring methodology in the Natural Resources Monitoring Partnership database (Months 1-3);
- Update Comprehensive Wildlife Conservation Strategy database (Month 24);
- Update scientific community on conservation action outcomes (Fall 2009);
- Inform public via article in TNC publication and personal communications (Months 1- 24).

Proposed Budget

The total cost for this project will be \$50,000. The Nature Conservancy respectfully requests \$25,000 from the AR Game & Fish Commission and will provide \$25,000 as a match (50%). This will be a fixed-price agreement. TNC will submit invoices for completed tasks on a quarterly basis. The following types of expenses are included in the fixed-price budget: Salary and fringe benefits (overtime may be required); Operational Expenses such as travel mileage; Supplies such as drip torch fuel, batteries, safety equipment, etc.; Other expenses such as communications, occupancy, etc.; Contractual expenses such as forestry consulting fees and contract fire break construction; and possible Equipment expenses such as data recorders, notebook computer, etc.

Deliverables and payment schedule are listed below. A federal negotiated indirect cost rate of 25%, which is accepted by USFWS, is included in the total cost.

	<u>Deliverable</u>	Timeframe	AGFC Cost	TNC Match	Total Cost
1	Burn Plans and thinning prescriptions(\$3.125/acre):	Months 1-12	\$1,562.50	\$1,562.50	\$ 3,125
2	Fireline Construction/ Unit Prep (\$7.25/unit acre):	Months 1-22	\$3,625	\$3,625	\$ 7,250
3	Prescribed Burns (\$18.75/acre):	Months 3-23	\$9,375	\$9,375	\$18,750
4	Ecological Thinning:	Months 1-23	\$8,875	\$8,875	\$17,750
5	Immediate Post Treatment Effects Monitoring (\$2.50/ acre):	Months 3-24	\$1,250	\$1,250	\$ 2,500
6	Enter methodology into NRMP database:	Months 1-3	\$62.50	\$62.50	\$ 125
7	Update CWCS database:	Month 24	\$125	\$125	\$ 250
8	Update public/scientific community (Fall 2009):	Months 1-24	\$125	\$125	\$ 250
		TOTAL	\$25,000	\$25,000	\$50,000

Appendix A: Arkansas Sandhill Project Areas

