

EXPANDING PINE FLATWOODS HABITAT MANAGEMENT TO BENEFIT SPECIES OF GREATEST CONSERVATION NEED

Project Summary

High priority pine-oak flatwoods, woodland, savanna, and associated saline barrens/glade habitats will be restored at Longview Saline and Warren Prairie Natural Areas/Wildlife-Management Areas through mechanical reduction of woody vegetation and prescribed fire. Larger burn units will be established at both sites, increasing scale and logistical and financial efficiency. Feral hogs, an invasive species that interrupts food webs by damaging native ground flora, will be trapped and reduced in number. These restoration actions will create additional high-quality habitat, build upon past and current restoration projects, provide connectivity to previously restored high-quality habitat, and revitalize a large landscape of priority habitat, thereby addressing two conservation action funding priorities and benefitting at least 12 species of greatest conservation need (SGCN).

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Pine Flatwoods pre-(above) and post-restoration (below) using mechanical methods and prescribed fire.



SWG Funding Requested: \$79,800 (50%)

Amount and Source of Matching Funds: \$80,000 (50%) will be provided from the Arkansas Natural Heritage Commission and Partners

Total Project Costs: \$159,800

NEED: Flatwoods have changed dramatically in the South Central Plains (SCP) ecoregion over the past several decades, mainly due to suppression of fire and large-scale conversion of open flatwoods and pine-oak forests to dense pine plantations. The Arkansas Natural Heritage Commission (ANHC) and The Nature Conservancy (TNC) previously identified pine-oak flatwoods as one of Arkansas's most endangered forested ecosystems; they and the Arkansas Game and Fish Commission (AGFC) now partner to protect and restore them. Major threats to this plant community include conversion to agricultural land and plantations, altered fire regimes, invasive plant species, feral hogs, and habitat fragmentation through development.

Longview Saline (LSNA; 3,837 acres) and Warren Prairie (WPNA; 4,660 acres) Natural Areas-Wildlife Management Areas support a mosaic of important habitats—West Gulf Coastal Plain Dry Pine-Hardwood Flatwoods, Pine-Hardwood Forests, Wet Hardwood Flatwoods, and Saline Glades—that support at least 12 animal SGCN. The National Audubon Society recognizes WPNA as a globally Important Bird Area (IBA) because of its sizable winter population of Henslow's sparrow, the largest known wintering site in Arkansas. An IBA is a significant site that provides essential habitat for one or more breeding, wintering, and/or migrating species of bird. Both sites also support brown-headed nuthatch, red-headed woodpecker, and northern bobwhite year-round, and Bachman's sparrow nests at these locations. Six pairs of red-cockaded woodpecker (RCW) have been established at WPNA as part of a repatriation program, and similar efforts are planned for LSNA following habitat restoration. The project in this proposal will build on the success of State Wildlife Grants T27-11 and T38-01 by restoring additional habitat needed to support sustainable populations of the many species of greatest conservation need at WPNA and LSNA dependent on open woodland and savanna.

Government Land Office survey notes and aerial photography indicate that the historical flatwoods, savanna, and barrens/glades were much more open than they are today at LSNA and WPNA, emphasizing the need for fire—the most important ecological process maintaining the distribution, composition, and diversity of this system. Decades of fire suppression prior to state ownership at both sites altered species composition and structure, resulting in densification to forested stands. Additionally, much of both sites was converted from an open to a closed canopy structure, and feral hogs are interrupting food webs by damaging native ground flora. Thus, restoration of pine and pine-oak flatwoods structure, reestablishment of fire, and reduction of impacts of feral hogs are needed if SGCN preferring this habitat are to increase or even persist. This project will create additional high-quality habitat and increase the scale of managed land, thereby providing a larger landscape for SGCN.

FUNDING PRIORITIES: This project addresses two 2014 AWAP funding priorities: (1) Birds of Pine Woodland and Savanna Habitat – implementation and/or evaluation of habitat restoration and management of pine woodland and savanna, and (2) Woodlands – habitat management to maintain or increase habitat quality or increase patch size for SGCN.

PURPOSE AND OBJECTIVES: The purpose of this project is to restore and improve quality of pine-oak flatwoods, woodland, savanna, and associated saline barrens/glades by reducing woody encroachment, invasive species, and the destruction of native ground covers by feral hogs on 900-1,200 acres at LSNA and WPNA. Project completion will take two years; objectives are:

1. Restore habitat structure with appropriate species composition to 50-70 ft²/acre BA on 100-160 acres at LSNA and WPNA.

2. Restore fire to increase the amount and quality of native savanna habitat on 900-1,200 acres at LSNA and WPNA.
3. Increase scale and logistical and financial efficiency of prescribed burning by establishing larger burn units (one at each site), thereby extending ecological benefits well beyond the project period.
4. Restore and maintain important native groundcovers by removing feral hogs at LSNA and WPNA.
5. Measure progress toward desired ecological conditions by monitoring basal area and the response of species of greatest conservation need at LSNA and WPNA.

LOCATION OF WORK: Project activities will occur at LSNA (Ashley Co.) and WPNA (Drew and Bradley Co.) and restore habitat of the West Gulf Coastal Plain Dry Pine-Hardwood Flatwoods, West Gulf Coastal Plain Pine-Hardwood Forests, West Gulf Coastal Plain Saline Glades, and West Gulf Coastal Plain Wet Hardwood Flatwoods, all located within the South Central Plains ecoregion (Figure 1).

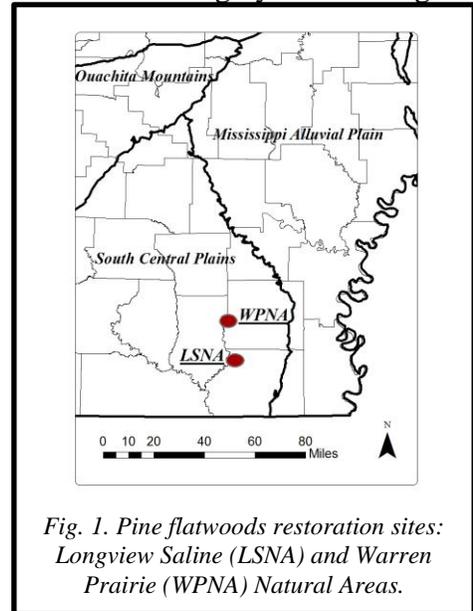


Fig. 1. Pine flatwoods restoration sites: Longview Saline (LSNA) and Warren Prairie (WPNA) Natural Areas.

APPROACH: Objective 1 will be addressed in the project’s first year. Structure and species composition will be managed by mechanically removing shrubs, saplings, and canopy trees via forestry grinder and hand crews. Areas to be restored include degraded habitat adjacent to existing high-quality managed habitat and areas purchased within the past few years that previously were managed mainly for timber production. Herbicide will be used to treat resprouting hardwoods, invasive plant species, and/or inject additional mid-story trees.

Objectives 2 and 3 will be addressed in both years of the project. Prescribed fire by ANHC, AGFC, and TNC will help maintain appropriate habitat structure, favor native warm-season grasses and forbs, and invigorate the herbaceous layer. The establishment of larger burn units (> 500 acres at each site) will eliminate the need for internal fire lines by mechanically (via forestry grinder and hand crews) removing slash and vegetation that create high, unpredictable fuel loads. This will allow burn lines to occur at roads in many cases. In addition, larger, permanent fire lines will be established where needed. Collectively, this will reduce the number of burn units from ten to two. This work will include the following methods:

- Establishment of new, permanent fire lines using a forestry mulcher and other mechanical methods.
- Light-intensity prescribed burns within newly established units to reduce spotty areas with heavy fuel loads (e.g., burning slash piles or running a fire through young pine stands).
- Hand crews to clear and maintain new fire lines, reduce fuels, and restore habitat.

Objective 4 will be addressed in both years of the project. AGFC will acquire feral hog traps for use at LSNA and WPNA; these will use remote monitoring and gate-management devices.

Objective 5 will be addressed by ANHC staff conducting pre- and post-treatment surveys over the two-year period. Surveys for birds will be conducted using a combination of point counts and general area searches; also, butterflies surveyed and tree basal area measured.

EXPECTED RESULTS AND BENEFITS TO SPECIES OF CONCERN: Restoring

degraded pine-oak flatwoods, woodland, savanna, and saline barrens/glades at LSNA and WPNA will (1) create additional high-quality habitat for woodland and savanna priority birds, (2) help restore an ecological fire regime that is necessary to maintain this system, (3) provide connectivity by restoring degraded habitat adjacent to existing high-quality habitat (WPNA) and in newly acquired areas (LSNA), (4) increase the scale of managed land, thereby providing a larger landscape to benefit SGCN and other wildlife, and (5) establish larger burn units that will enhance the logistical and financial ability to conduct prescribed fire.

Table 1: Arkansas Wildlife Action Plan SGCN which will benefit from this project (12). All species have been documented at LSNA and WPNA.

American woodcock	Northern bobwhite
Bachman’s sparrow	Prairie warbler
Brown-headed nuthatch	Red-cockaded woodpecker
Henslow’s sparrow	Red-headed woodpecker
Le Conte’s sparrow	Rusty blackbird
Diana fritillary	Sedge wren

larger burn units that will enhance the logistical and financial ability to conduct prescribed fire.

Prescribed burning alone would require decades to reach ecological goals and thus in the long-run is the least timely and most expensive method to benefit SGCN in these habitats. The mechanical removal of vegetation combined with the reintroduction of fire and a reduction in feral hog damage will restore community structure; reduce abundance of invasive plant species; favor native warm-season grasses; increase the size and connectedness of pine flatwoods, woodland, savanna, and barrens/glades; and stimulate the herbaceous layer. Fire and woodland restoration are key habitat enhancement actions called for in the AWAP for both savanna and woodland bird species. The expansion of burn units will facilitate fewer and larger burns, allowing ANHC to better and more consistently meet the needs of SGCN, because (1) the bigger burn units will have fewer logistical challenges thanks to better fire lines and reduced fuel loads, and (2) the cost of burning two larger burn units is far less than that of burning the ten smaller units. The cost of burning a large burn unit and any of the smaller units is similar, thus burning the new, larger units could cost about 1/5th that of the same habitat across the smaller units.

This project will benefit 12 SGCN known from LSNA and WPNA (Table 1). Open and frequently burned pine-oak flatwoods, savanna, and barrens/glades will improve habitat for 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, and RCW.

BUDGET: The estimated total cost of this project is \$159,800 and we are providing match above the required minimum level. The federal share is \$79,800 (50%) and the total match is \$80,000 (50%). The ANHC and partners will provide non-federal match for restoration activities. Grant funding for salary of ANHC staff will be used for staff paid from non-recurring federal funds.

Category	Total	Match ANHC	Match AGFC	Match TNC	Grant
Salary / Benefits	\$ 17,700	\$ 3,333	\$ 3,333	\$ 3,334	\$ 7,700
Contract Services	130,000	60,000	0	0	70,000
Equipment	10,000	0	10,000	0	0
Travel	2,100	0	0	0	2,100
Grand Total	\$ 159,800	\$ 63,333	\$ 13,333	\$ 3,334	\$ 79,800

ORGANIZATION AND STAFF QUALIFICATIONS

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. The ANHC, The Nature Conservancy, and the Arkansas Game and Fish Commission previously identified pine-oak flatwoods as one of Arkansas's most endangered forested ecosystems; they and the Arkansas Game and Fish Commission (AGFC) now partner to protect and restore them. Pine-oak flatwoods at Longview Saline and Warren Prairie Natural Areas were identified as top priorities by the partnership to protect, monitor, and restore. The partnership has a proven background in restoring and managing this important habitat type.

Project Leader: 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. His current projects include oversight of restoration of open loblolly (*Pinus taeda*)-shortleaf (*P. echinata*) pine ecosystems in southern Arkansas and repatriation of a population of red-cockaded woodpeckers (*Picoides borealis*). Recently completed projects focused on two rare grassland birds: structure and composition of grassland habitats used by wintering Smith's longspurs (*Calcarius pictus*) and density and habitat associations of Henslow's sparrows (*Ammodramus henslowii*) in saline soil barrens. His thesis work focused on spatial patterns of red crossbills (*Loxia curvirostra*) and conifer cones in southeast Alaska, and he later worked on similar projects in lodgepole pine (*P. contorta*), ponderosa pine (*P. ponderosa*), and black spruce (*P. mariana*) dominated ecosystems.

Mark Hooks is a Certified Wildlife Biologist and Regional Wildlife Division Supervisor for the Arkansas Game and Fish Commission's South Delta Wildlife region in southeast Arkansas. Mark received a B.S. in Wildlife and Fisheries Management from the University of Arkansas at Monticello. Mark previously worked for the University of Arkansas's Forestry and Wildlife program conducting research with white-tailed deer and wild turkeys. Mark's current responsibilities include coordinating the management of the Arkansas Game and Fish Commission's public lands within a nine-county area of southeast Arkansas, which includes one of the largest state-owned waterfowl areas in the nation, as well as critical habitats along the Lower White and Mississippi River corridors. Mark is a native Arkansan currently residing in the Monticello area.

Douglas Zollner is the Director of Conservation Science for TNC, Arkansas Field Office. He has been working with the Conservancy for 12 years. Zollner also serves as the Conservancy's National Fire Restoration Coordinator, coordinating Conservancy efforts to reduce the threat of altered fire regimes to biodiversity across ownerships at landscapes in the US and Mexico. Zollner has over 25 years of working experience with ecological assessments and conservation planning, woodland and watershed restoration, fire ecology, ecological modeling, and developing and implementing measures of conservation success in an adaptive management context. He received a B.S. from the University of Arizona in Watershed Management and an M.S. from Texas Tech University in the Ecology of Arid Lands.