

**EXPANDING PINE FLATWOODS HABITAT RESTORATION AT LONGVIEW SALINE NATURAL AREA 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 Natural Area-Wildlife Management Area through mechanical (hand crew) and chemical (herbicide) reduction of woody vegetation, prescribed fire, and the propagation of local genotype shortleaf pine seedlings for future plantings. 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 one conservation action funding priority and benefiting at least seven species of greatest conservation need (SGCN).

**Project Leader**

Bryan Rupar, Chief of Acquisitions and Stewardship  
Arkansas Natural Heritage Commission  
1100 North St.; Little Rock, AR 72201  
(501) 682-1587  
*bryan.rupar@arkansas.gov*

**Project Partner**

Mark Hooks, Biologist Supervisor  
Arkansas Game and Fish Commission  
771 Jordan Dr.; Monticello, AR 71655  
(870) 367-3553  
*mark.hooks@agfc.ar.gov*



*Pine flatwoods pre- (above) and post-restoration (below) using mechanical methods and prescribed fire at Longview Saline Natural Area*

**SWG Funding Requested:** \$50,000 (63%)

Amount and Source of Matching Funds: \$30,000 (37%) will be provided from the Arkansas Natural Heritage Commission and Arkansas Game and Fish Commission

Total Project Costs: \$80,000

**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 Arkansas Game and Fish Commission (AGFC) previously identified pine-oak flatwoods as one of Arkansas’s most endangered forested ecosystems; they now partner to protect and restore them. Major threats to this plant community include conversion to agricultural land and plantations with homogenized forest composition and structure, altered fire regimes, invasive plant species, and habitat fragmentation through development.

Longview Saline Natural Area-Wildlife Management Area (LSNA; 4,910 acres) supports an array of specialized plant communities, including the following that will be restored or enhanced through this project: West Gulf Coastal Plain Pine-Hardwood Flatwoods, West Gulf Coastal Plain Pine-Hardwood Forest/Woodland, and West Gulf Coastal Plain Wet Hardwood Flatwoods. This mosaic of plant communities supports habitat for at least seven animal species of greatest conservation need (SGCN). The natural area provides essential habitat for northern bobwhite year-round, and Henslow’s and Le Conte’s sparrows winter at this location. Additionally, the Diana fritillary is a habitat specialist found within the pine-flatwoods system; adults feed on nectar-producing plants in the woodlands, and caterpillars feed on woodland violets, the host plant. Red-cockaded woodpeckers (RCWs) were once numerous here but are no longer extant, though an RCW repatriation program is planned for LSNA much like the successful one underway at Warren Prairie Natural Area, located 10.5 miles to the north, where at least 25 RCWs now reside with a growing population. The project in this proposal will build on the success of State Wildlife Grant T-46 by restoring additional habitat needed to support sustainable populations of SGCN at LSNA dependent on open woodland and savanna.

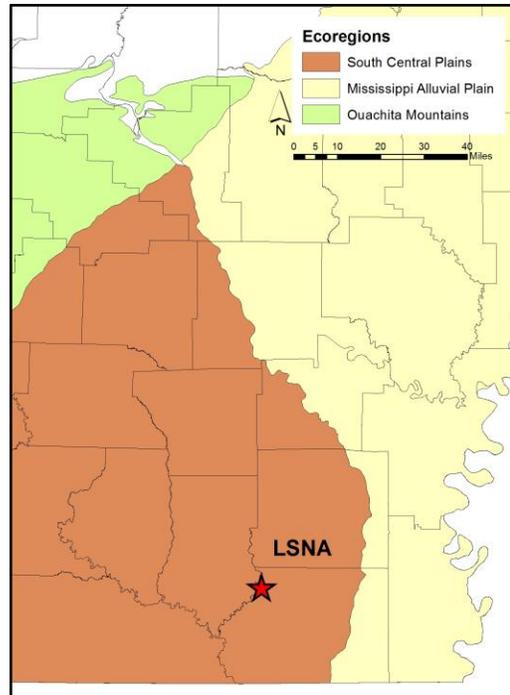
Government Land Office survey notes and aerial photography indicate that the historical flatwoods, savanna, and barrens/glades were much more open than they are today at LSNA, emphasizing the need for fire—the most important ecological process maintaining the distribution, composition, and diversity of this system. Decades of fire suppression prior to state ownership at this site altered species composition and structure, resulting in densification to forested stands. Additionally, much of this site was converted from an open to a closed canopy structure. Further, one of the two pine species within this pine-flatwoods ecosystem, shortleaf (*Pinus echinata*), was historically far more common in the SCP, but forests with a major shortleaf component have decreased by nearly half in just the past 20 years and by much more when compared to the 1800s. There is now an urgency to restore shortleaf pine numbers at LSNA and throughout the SCP so that the species is better represented, which increases the biological diversity of pine flatwoods. Thus, restoration of pine and pine-oak flatwoods structure, re-establishment of fire, and increased propagation of local genotype shortleaf pine seedlings for future plantings 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 one 2018 Arkansas Wildlife Action Plan funding priority: Woodlands (to include sandhills, oak woodlands, and pine-oak flatwoods), Savannas, and Glades and Barrens – habitat management to maintain or increase habitat quality or increase patch size, including forest management 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 and invasive species on 400 total acres at LSNA while increasing the propagation of local genotype shortleaf pine seedlings for future plantings. Project completion will take two years; objectives are:

1. Restore habitat structure with appropriate species composition to 50–75 ft<sup>2</sup>/acre BA on 200 acres at LSNA.
2. Restore fire to increase the amount and quality of native grassland habitat on 300 acres at LSNA.
3. Restore shortleaf pine composition by increasing propagation of local genotype shortleaf pine seedlings for future plantings and collecting genetic material for research supporting large-scale restoration of this species.
4. Measure progress toward desired ecological conditions by monitoring basal area and the response of SGCN at LSNA.

**LOCATION OF WORK:** Project activities will occur at LSNA (Ashley Co.) and restore habitat of the West Gulf Coastal Plain Pine-Hardwood Flatwoods, West Gulf Coastal Plain Pine-Hardwood Forest/Woodland, and West Gulf Coastal Plain Wet Hardwood Flatwoods, all located within the South Central Plains ecoregion (Figure 1).



*Fig. 1: Pine flatwoods restoration site: LSNA (red star).*

**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 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 re-sprouting hardwoods, invasive plant species, and/or to inject additional mid-story trees.

Objective 2 will be addressed in both years of the project. Prescribed fire by the ANHC and AGFC will help maintain appropriate habitat structure, favor native warm-season grasses and forbs, and invigorate the herbaceous layer. Approximately 100 of the 300 acres burned will include restoration methods outlined in objective 1. Burn units that encompass the treatment areas will be established. This will increase the size and connectedness of the pine flatwoods woodland, savanna, and saline barrens/glade system and maintain existing adjacent high-quality habitat.

Objective 3 will be addressed in both years of the project. The ANHC and Arkansas Forestry Commission (AFC) will collect shortleaf pine cones and samples of genetic material from mature stands at LSNA and other areas within the SCP ecoregion and store them in AFC facilities. Subsequently, the AFC will propagate local genotype shortleaf pine seedlings for future plantings at LSNA and other nearby sites (e.g., Warren Prairie Natural Area) as appropriate. Additionally, samples of shortleaf pine genetic material will be sent to a U.S. Forest Service research forester for analysis to assist in the development of local genotype seed zones within the state, a task outlined by the Arkansas Native Seed Program; and to better understand the genetics of shortleaf pine for application in the large-scale restoration of this species and the development of management strategies to sustain it.

Objective 4 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 will be 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 will (1) create additional high-quality habitat for woodland and grassland bird SGCN, (2) help restore an ecological fire regime that is necessary to maintain this system, (3) help restore shortleaf pine composition to increase biological

*Table 1: Arkansas Wildlife Action Plan SGCN which will benefit from this project (7). Habitat at LSNA is known to support these species.*

Bachman’s sparrow	Monarch
Diana fritillary	Northern bobwhite
Henslow’s sparrow	Sedge wren
Le Conte’s sparrow	

diversity of pine flatwoods, (4) increase the abundance of nectar-producing flowering plants and host plants for pollinators, (5) provide connectivity by restoring degraded habitat adjacent to existing high-quality habitat and in newly acquired areas, and (6) increase the scale of managed land, thereby providing a larger landscape to benefit SGCN and other wildlife.

Prescribed burning alone will take decades to reach ecological goals due to decades of fire suppression. Mechanical treatment of priority stands in conjunction with targeted herbicide treatments and the reintroduction of fire will restore community structure; reduce abundance of invasive plant species; favor native warm-season grasses and forbs; increase the size and connectedness of pine flatwoods, woodland, savanna, and barrens/glades; and stimulate the herbaceous layer.

This project will benefit seven SGCN known from LSNA (Table 1), and we will maintain this woodland restoration in future years. Open and frequently burned pine-oak flatwoods, savanna, and barrens/glades will improve habitat for wild turkey, northern bobwhite, white-tailed deer, and non-game birds such as Bachman’s and Henslow’s sparrows.

**BUDGET:** The estimated total cost of this project is \$80,000. The federal share is \$50,000 (63%) and the total match is \$30,000 (37%). The ANHC and AGFC will provide non-federal match.

Category	Total	Match ANHC	Match AGFC	Grant
Salary / Benefits	\$ 13,500	\$ 0	\$ 9,500	\$ 4,000
Contract Services	65,000	20,000	0	45,000
Travel	1,500	0	500	1,000
<b>Grand Total</b>	<b>\$ 80,000</b>	<b>\$ 20,000</b>	<b>\$ 10,000</b>	<b>\$ 50,000</b>

## **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 and the Arkansas Game and Fish Commission previously identified pine-oak flatwoods as one of Arkansas's most endangered forested ecosystems; they now partner to protect and restore them. Pine-oak flatwoods at Longview Saline Natural Area-Wildlife Management Area 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: Bryan Rupar is the Chief of Land Acquisition and Stewardship for the Arkansas Natural Heritage Commission. Bryan received a B.S. in Natural Resource Management from Grand Valley State University and an M.S. in Forest Resource Management from the University of Arkansas at Monticello. Bryan previously worked for the U.S. Forest Service in Michigan and private forestry firms in southern Arkansas. Bryan oversees all acquisition, stewardship, and restoration projects for the 66,500-acre System of Natural Areas.

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.