

## **Restoration and Management of Upland Early Successional Habitat and Woodlands in the Boston Mountains and Ozark Highlands**

### **Project Summary:**

Woodlands and native grassland habitats will be restored to benefit Northern Bobwhite (*Colinus virginianus*) and other priority grassland and woodland birds in the Boston Mountains and Ozark Highlands. This project will restore fire through prescribed burning to 20,000 acres of woodlands, savannah, and grasslands, restore 414 acres of native woodlands and savannahs through wildlife stand improvement (WSI) and fire, and establish and maintain 386 acres of native warm season grasses. This project will double the acreage already restored by similar projects in this geographic area.

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### **Budget Summary:**

State Wildlife Grant Request - **\$163,170**  
Matching Funds and In-kind Service - **\$163,170**  
Total Project costs - **\$326,340**

## **Restoration and Management of Upland Early Successional Habitat and Woodlands in the Boston Mountains and Ozark Highlands**

**Funding and Conservation Priorities:** This project addresses conservation priorities outlined in the Arkansas State Action Plan and funding priorities outlined in the 2008 State Wildlife Grants RFP. The proposed project will integrate wildlife action plan priorities with ongoing land-use or natural resources efforts at the local and state level. Restoration of native grasslands and woodlands will help meet habitat objectives in plans including the Northern Bobwhite Conservation Initiative (NBCI) and also addresses efforts by the Central Hardwoods Joint Venture to provide and evaluate woodland habitat restoration for priority birds. This project addresses needs of species of greatest conservation concern (SGCN) identified in the plan but will also benefit other fish and wildlife species that rely on grassland and woodland habitats. Lastly, this is an on-the-ground stewardship and restoration project that can also serve as a demonstration project for other state, federal, and private lands and for management on other Arkansas Game and Fish Commission (AGFC) Wildlife Management Areas (WMAs).

The proposed project addresses three funding priorities outlined in the 2008 State Wildlife Grants RFP. This project will: 1) restore and maintain native grasslands for grassland birds, 2) restore fire to fire-suppressed habitats to benefit SGCN, and 3) manage forests to benefit SGCN. It will restore a fire regime on 20,000 acres, restore and maintain 386 acres of native grasslands in the Ozarks, and restore and maintain 414 acres of degraded woodlands and savannahs.

**Project Need:** Grassland species have experienced severe declines over much of their range in the United States, including species identified as high priority species in the state action plan as well as by Partners in Flight (Rich et al. 2004). Threats to these species include habitat loss as a result of conversion to agriculture, habitat alteration, and fragmentation. Grassland species of concern include Northern Bobwhite, LeConte's Sparrow, Short-eared Owl, Loggerhead Shrike, Grasshopper Sparrow, Northern Harrier, and Sedge Wren. Although specific species vary in their habitat requirements, varying site specific conditions and successional conditions can provide for many of these species at larger landscape scales. Conservation actions suggested for grassland-reliant species include habitat restoration and provision of larger blocks of grassland habitat. Additionally, establishment of native warm season grasses is an essential element of prairie restoration as are the management techniques outlined in this proposal for maintenance of habitats.

Woodland and savanna habitats have experienced great declines in the Midwest, and currently state and federal resource management agencies are increasing the amount and quality of these habitats through silvicultural treatments that include prescribed fire and thinning. Partner's in Flight classifies bird species such as the Prairie Warbler, Field Sparrow, Blue-winged Warbler, and Northern Bobwhite as species of regional concern (Rich et al. 2004), and declines of these species may be due to historical declines in these habitats. Species such as Bachman's Sparrow, Blue-winged Warbler, Eastern Towhee, Hooded Warbler, Red-headed Woodpecker, and Prairie Warbler are identified as SGCN in the Arkansas state wildlife action plan and will benefit from restoration of woodland conditions.

This project will restore and maintain approximately 20,414 acres of woodlands and savannah habitats through prescribed fire and Wildlife Stand Improvement (WSI). This would encompass 20,000 acres of prescribed fire and 314 acres of WSI treatments to establish woodlands and savannahs. The establishment of prescribed fire to fire-suppressed habitats and the management of forest are identified in the 2008 State Wildlife Grants RFP as high funding priorities and the actions will benefit numerous species of SGCN.

**Project Site:** This project will occur on several tracts of public land in the Ozark Highlands and the Boston Mountains, including Gene Rush WMA (17,210 acres), Gulf Mountain WMA (11,683 acres),

Madison County WMA (14,496 acres), and Harold E. Alexander/Spring River WMA (13,859 acres). These areas are located in Newton, Searcy, Van Buren, Madison, and Sharp counties. All four WMAs are primarily owned and managed by the AGFC. These WMAs contain several thousand acres of grasslands and woodlands that provide critical habitat for Northern Bobwhite and other SGCN grassland birds. These grasslands and woodlands require fire to maintain them in an ideal successional stage to provide optimum habitat for grassland and woodland bird species.

**Project Goals:** The proposed project will help to establish and manage approximately 386 acres of high quality grassland habitat with prescribed fire and other grassland management techniques. Northern Bobwhites require different stages of grass establishment seasonally, therefore a rotational fire system will provide the management to maximize the quality of this habitat type. Additionally, rotational burning will provide a variety of stages of grassland habitats to benefit a greater number of grassland bird species.

Over two years, this project will restore approximately 146 acres of native grassland that have been converted to non-native grasses. AGFC will contract the reclamation of approximately 146 acres of fields by exotic grass eradication and Native Warm Season Grass (NWSG) establishment. After NWSG has been established, fire and fallow disking will be used to maintain them as high quality grassland habitat. This reclamation of 146 acres of native grasslands could increase Northern Bobwhite populations by as much as 35 coveys based on the Northern Bobwhite Conservation Initiative (NBCI). This project will also manage 240 acres of early successional grasslands with fire and fallow disking. This will maintain those grasslands in a high quality grassland stage. The establishment of native warm season grasses is identified in the State Action Plan as a high priority conservation action that will benefit several grassland bird species, such as LeConte's Sparrow, Grasshopper Sparrow, Loggerhead Shrike, and Sedge Wren.

This grant would double the acreage being positive managed for SGCN on these WMAs. Currently, AGFC has funding to maintain a three-person crew implementing prescribed fire and paying for WSI on these areas. This grant would allow the AGFC to hire another three-man crew and provide additional funding to contract WSI work that would double our management capacity on these WMAs.

**Materials and Methods:** In order to reclaim and manage 386 acres of grasslands on Gene Rush, Gulf Mountain, and Madison County WMAs the AGFC will use a contractor to convert 146 acres of exotic grass to NWSG and fallow disk 200 acres of grasslands. The remaining 40 acres of NWSG will be managed by the AGFC with prescribed fire. Half of the acreage will be converted in each year of the grant. AGFC will determine the proper NWSG mix for this area and plant the appropriate amount of seed to establish good wildlife cover for grassland birds. AGFC will use an agency tractor and NWSG drill and/or broadcasting and rolling equipment to establish 146 acres of new NWSG. Any competition will be eradicated prior to planting to insure establishment of the native warm season grasses. Once established these grass stands will be managed with prescribed fire and fallow disking. Planting will be done in winter of 2009 and 2010. In order to maintain high quality grassland habitat where it is established, AGFC will use fallow disking and prescribed fire to manage approximately 240 acres. This will be done in winter of 2008/2009 and 2009/2010. In order to reclaim 414 acres of woodland and savannah habitat, the AGFC will use a contractor to conduct WSI treatments on 314 acres. AGFC will also maintain an additional 100 acres of Post-oak savannah with prescribed fire. Approximately half the acreage of each practice will be managed in each year of the grant.

**Monitoring:** We will monitor both habitat and bird response to this management regime. In order to monitor habitat change we will measure vegetation parameters for pre and post burn and/or WSI. We will measure percentage of native grasses, native forbs, woody plants, bare ground, and non-native plants. In order to monitor avian response to this management, we will conduct a combination of area searches and point counts that will provide species richness and abundance/density for these areas both pre and post

burn periods. Currently, the Central Hardwoods Joint Venture is evaluating the response of high priority birds to woodland restoration, and this monitoring will be linked to that effort as appropriate. The final monitoring methodology will be entered on the Natural Resources Monitoring Partnership website.

**Study Results and Benefits:** Through the establishment of an additional AGFC prescribed fire crew and money for NWSG management and WSI treatments we plan to restore and maintain an additional 20,800 acres of native grassland, woodland, and savannah habitats. This management should positively benefit grassland birds by increasing quality nesting and brooding habitat that will be maintained by prescribed fire, fallow disking, and WSI. Additionally, species such as Bachman’s Sparrow and Red-headed Woodpecker that require from more open, woodland structure over closed forest conditions will also benefit from the prescribed burning and WSI treatments.

**Budget and Expenditures:** The budget below outlines costs for the following habitat accomplishments: fire crew to introduce fire to additional 20,000 acres, NWSG restoration and maintenance on 386 acres (146 restored, 40 burned, and 200 maintained by disking), and 414 acres of degraded woodland and savanna restored (314 acres of WSI plus 100 acres of burning in post-oak woodland).

<b>Item</b>	<b>Total</b>	<b>Match</b>	<b>Grant</b>
<b>Salary Expenses</b>			
Prescribed Fire Crew Salaries (1 leader & 2 techs/crew) (work at all four WMAs)	\$140,000	\$70,000	\$70,000
<b>Contract Work</b>			
106 acres of NWSG @ \$200/ac (Gene Rush)	\$42,400	\$21,200	\$21,200
40 acres of NWSG @ \$200/ac (Gulf Mountain) + 40 acres fire maintained by fire crew (budget above)	\$16,000	\$8,000	\$8,000
200 acres of fallow disking @ \$40/ac	\$16,000	\$8,000	\$8,000
114 acres of WSI @ \$105/ac (Gene Rush)	\$23,940	\$11,970	\$11,970
200 acres of WSI @ \$105/ac (Gulf Mtn) + 100 acres fire in post-oak (budget above)	\$42,000	\$21,000	\$21,000
<b>Operating Expenses</b>			
Meals and Lodging	\$10,000	\$5,000	\$5,000
Vehicle Service and Maintenance	\$6,000	\$3,000	\$3,000
Fuel/Oil/Grease-vehicle, bulk, small engine	\$14,000	\$7,000	\$7,000
Small engine repairs	\$4,000	\$2,000	\$2,000
<b>Capital Expenses</b>			
Prescribed Fire hand Tools	\$4,000	\$2,000	\$2,000
Safety Clothing	\$6,000	\$3,000	\$3,000
Water for Burn Crew	\$2,000	\$1,000	\$1,000
<b>Project Totals:</b>	<b>\$326,340</b>	<b>\$163,170</b>	<b>\$163,170</b>

\*All matching funds will be through AGFC budgeted items or in-kind service.

**Literature Cited**

Rich, T.D., C.J. Beardmore, H. Berlanga, P.J. Blancher, M.S.W. Bradstreet, G.S. Butcher, D.W. Demarest, E.H. Dunn, W.C. Hunter, E.E. Inigo-Elias, J.A. Kennedy, A.M. Martell, A.O. Panjabi, D.N. Pashley, K.V. Rosenberg, C.M. Rustay, J.S. Wendt, T.C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, NY.

## Qualification of Individuals and Organizations Involved

### Organization:

The Arkansas Game and Fish Commission's mission is to wisely manage all the fish and wildlife resources of Arkansas while providing maximum enjoyment for the people. Arkansas Game and Fish Commission are engaged in bird initiatives including the Northern Bobwhite Conservation Initiative and Partners in Flight, which are initiatives with goals to restore high quality habitat for high priority bird species.

### Research Personnel:

Steve Fowler has served as the Quail Program Coordinator at the AGFC for 2 years and previously was a private lands biologist for 3.5 years with the AGFC. He received his MS degree in Biology from Arkansas State University studying the Survival, Cause-Specific Mortality, and Habitat Use of Wild Northern Bobwhite Quail at Camp Robinson WDA. He is a member of the The Wildlife Society and the Arkansas Chapter of the Wildlife Society and currently chairs the Arkansas Quail Committee.

Catherine Rideout has worked as the Passerine Bird Program Coordinator at Arkansas Game and Fish Commission since 2003. She received a BS degree in Biology at Davidson College in North Carolina in 1994 and an MS degree in Biology from Boise State University in Idaho in 2003. She participates in Joint Ventures and Partners in Flight, serves as the co-chair of Southeast Partners in Flight, and is a member of the Bird Conservation Committee of the Association of Fish and Wildlife Agencies. She coordinates bird conservation and management of nongame birds for the agency and is a member of the Wildlife Society and several ornithological societies.

Eddie Linebarger is the Regional Supervisor of the Eastern Ozarks AGFC region and has worked for the Arkansas Game and Fish Commission since April 1972. He received a BS Degree from Arkansas Tech University in 1971. He worked on Wildlife Management Areas and private land management for 20 years, served as Regional Coordinator for 6 years, and as Regional Supervisor for over 9 years. He has worked extensively on early successional habitat management, post-oak savannah restoration and pine and pine-oak woodland restoration efforts. He has been closely connected with Bobwhite Quail management efforts throughout the State and serves on the State Quail Committee, the AGFC Quail Committee and the Southeast Quail Study Group.

A. J. Riggs has worked as an Assistant Regional Supervisor for the Arkansas Game and Fish Commission since March 2004 (4 years). In addition, she has worked at Fort Chaffee Maneuver Training Center (Arkansas State Military Department, Fort Chaffee, AR) as a biologist (2.75 years), the St. Francis Ranger District of the Ozark -St. Francis National Forest (Department of Agriculture, Marriana, AR) as a forestry technician (1.25 years), and the Okefenokee National Wildlife Refuge (Department of Interior, Folkston, GA) in a biologist internship position (6 months) and as a park ranger (2 months). She received a BS degree in Ecology from Juniata College in Huntington, Pennsylvania in 1999.