

**Project Title:** Tall Grass Prairie Restoration Stewardship and Monitoring for Grassland Bird Habitat

**Project Summary:** Beaver Water District owns a 40 acre property adjacent to the water treatment plant in the Ozark Highlands (Ecoregion 39a). The land was a historical prairie before being converted to pasture. The Beaver Prairie restoration was designed to increase native grassland habitat for grassland birds. The prairie restoration is currently in the third year of work. The first two years included baseline monitoring treatments to remove non-native vegetation with pesticide and burning. At the end of year two, a mix of 20 native legumes/forbs and 9 native grasses was planted in December 2012 using a seed drill. Stewardship of the land included both mechanical and chemical treatments for continued non-native vegetation removal during the first growing season. Prescribed fire will also be used as a management tool. This project, when fully established, will serve as a valuable demonstration site for landowners that want to improve habitat for grassland birds.

**Project Leaders & Critical Staff**

Robert Morgan, PhD  
Manager of Environmental Quality, Beaver Water District  
[rmorgan@bwdh2o.org](mailto:rmorgan@bwdh2o.org)  
PO Box 400, Lowell, AR 72745  
479-756-3651

Bradley Hufhines  
Environmental Technician, Beaver Water District  
[bhufhines@bwdh2o.org](mailto:bhufhines@bwdh2o.org)  
PO Box 400, Lowell, AR 72745  
479-756-3651

**Project Partners**

Joe Woolbright  
Ozarks Ecological Restoration Inc  
104 S Skilern, Siloam Springs, AR 72761  
[joewoolbright@cox-internet.com](mailto:joewoolbright@cox-internet.com)  
479-427-4277

Burnetta Hinterthuer  
Northwest Arkansas Community College  
1301 E Sunny Hill Drive, Fayetteville, AR 72703  
[bhintert@nwacc.edu](mailto:bhintert@nwacc.edu); [bur.hint@gmail.com](mailto:bur.hint@gmail.com)  
479-582-0317

**Cost Summary**

Total Amount of Project Cost \$25,600  
Total Amount of SWG request \$12,800  
Beaver Water District Matching Funds \$12,800

## **Project Statement**

**Need:** Urban development has had many impacts to the natural environment in Northwest Arkansas. Habitat loss and water quality degradation are two of the most noticeable impacts that rapid urban development has caused. An estimated 95% of native grasslands have been lost to development or habitat conversion. Grassland bird species lack the habitat they must have to survive and reproduce. Our restoration activities are well underway, but habitat restoration is not a one or two year process. To be successful with the conversion of pastureland to tall-grass prairie, we need to continue stewardship efforts and monitor results for better adaptive management.

The Beaver Prairie Restoration Project addresses the following conservation action priority in the Arkansas Wildlife Action Plan: managing landscapes for native grasslands and grassland birds. The Beaver Prairie (latitude 36°15'7.59"N, longitude 94°6'30.15"W) will provide a 36 acre patch of native grassland for bird habitat and a public demonstration site for best management practices regarding prairie restoration and headwater stream protection.

This grant application builds on early success achieved in partnership with the Arkansas State Wildlife Grant Program (Grant T-32-02:2010 and T-40-01:2012). We assembled a steering committee which developed a management plan of action. From that plan, we collected baseline data and began restoration activities. Now there is a need for continued stewardship including adaptive management for the elimination of non-natives and monitoring the success of the project. Converting pasture back to prairie takes time, a minimum of five years according to Joe Woolbright, our restoration specialist. There are lots of non-native seeds in the seedbank that germinate along with native seeds that were planted. Once the native grasses are established in a concentration that allows them to outcompete non-natives, we plan to manage with biennial prescribed burning.

**Purpose:** The purpose of the Beaver Prairie Restoration Project is to provide a 36-acre patch of native-grass prairie amongst urban development for use by grassland birds as habitat. Providing habitat for grassland birds in a public place also educates the public of best management practices and the benefits of habitat restoration.

**Objective:** The short-term objective of this grant proposal is to 1) continue stewardship of the prairie with adaptive management including prescribed burning and non-native plant removal and 2) continued floral community monitoring to determine success and provide feedback for better adaptive management.

**Location:** The Beaver Prairie is located in the Ozark Highlands Springfield Plateau (Ecoregion 39a). The property is in Benton County. The habitat targeted with the Beaver Prairie Restoration Project is native tall-grass prairie (grasslands).

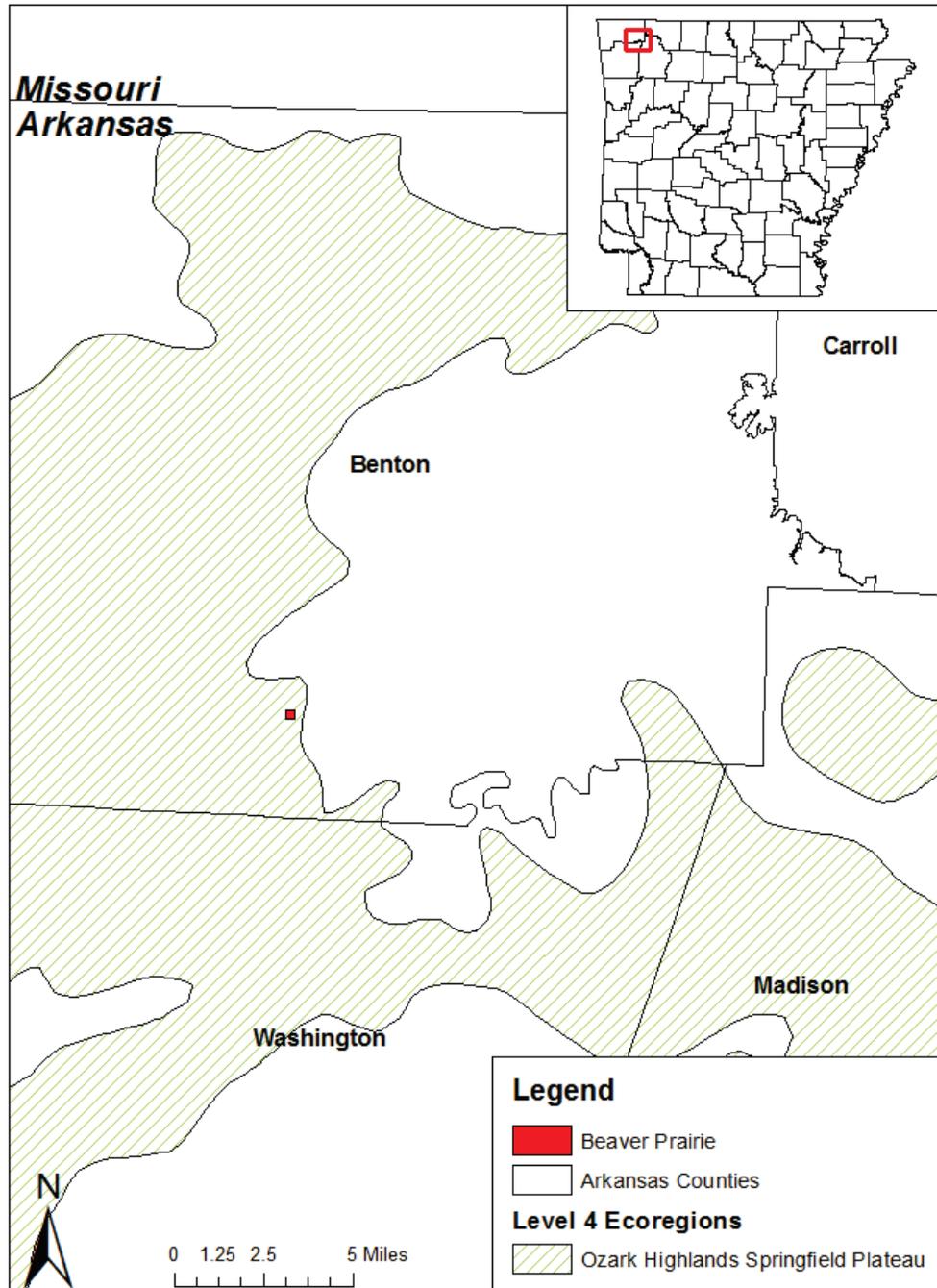


Figure 1. Beaver Prairie located in Benton County within the Ozark Highlands Springfield Plateau.

**Approach:** Previous restoration activities on Beaver Prairie have focused on non-native grass and vegetation removal and native grass and vegetation planting. The prairie was dominated by non-native Fescue, Bermuda, and Johnson grass before restoration began. In 2011, there were five targeted herbicide applications to reduce the amount of non-native cover and was followed by a prescribed burn November, 2011. The steering committee wanted to see if any natives germinated from the relic seedbank after non-

native reduction and prescribed burn. Very few natives came back in the 2012 growing season. Instead, the 2012 growing season was still dominated by non-natives. Four herbicide treatments were used in 2012. We used a brush hog twice that summer and followed treatments with a seed drill planting of 20 native legumes/forbs and 9 native grasses on December 10, 2012. The 2013 growing season showed signs of promise, 5 re-introduced native plants and grasses germinated within the 5-meter floral survey test areas. More native species have been identified on outside of the test plots. The majority of coverage in 2013 was still non-natives. Two targeted herbicide applications and three brush hoggings were used to control non-natives last year. The next phase of adaptive management will include continued specific targeted herbicide treatments for the removal of Johnson and Fescue grasses. Typical conversion of non-native grasses to native grasses takes 3 to 5 years for the natives to become dense enough to outcompete the non-native vegetation. 2014 will bring the second growing season of the reintroduced native grasses and vegetation. Our steering committee's adaptive management plan outlines continued use of chemical and mechanical removal of non-native vegetation. We will use prescribed fire during fall 2014 to help germinate any of the un-germinated seeds that were planted in 2012. We judge our success in restoration on the continued five 5-meter floral survey locations. It is important to continue these surveys so that adaptive management can target specific non-native vegetation that remains.

**Expected Results and Benefits:** We expect that the percent cover of non-native vegetation will continue to decrease and more native species will come up. When native floral species begin to dominate the vegetative cover, we expect the fauna to diversify and re-establish the prairie. Open-space birds should find the restored habitat appealing as functional habitat.

Benefits will also be seen in reduced maintenance costs for Beaver Water District. Mowing is an expensive maintenance operation at Beaver Water District. Once the prairie is established and functional, we plan to use prescribed fire every other year.

**Budget:**

	Total Cost	BWD Cost	SWG Cost
2014 Fire Lines	\$ 2,000	\$ 1,000	\$ 1,000
2014 Prescribed Burn	\$ 5,000	\$ 2,500	\$ 2,500
2015 Stewardship	\$ 8,400	\$ 4,200	\$ 4,200
2015 Monitoring	\$ 900	\$ 450	\$ 450
2016 Stewardship	\$ 8,400	\$ 4,200	\$ 4,200
2016 Monitoring	\$ 900	\$ 450	\$ 450
	\$ 25,600	\$ 12,800	\$ 12,800

## **Qualifications:**

Robert Morgan, Ph.D., Beaver Water District, Manager of Environmental Quality  
Dr. Morgan be the project manager and serve as the head of the Beaver Prairie steering committee. Dr. Morgan is a registered professional engineer in Arkansas with expertise in ecological processes as applied to stream restoration, water quality management, water supply, and wastewater treatment. He has a Ph.D. in Engineering from the University of Arkansas, College of Engineering, a MS in Civil Engineering, and BS in Civil Engineering from the University of Arkansas. Research interests include watershed management with emphasis on stakeholder involvement and stream restoration. Dr. Morgan also currently serves as Adjunct Faculty in the Biological and Agricultural Engineering Department at the University of Arkansas.

Bradley Hufhines, Beaver Water District, Environmental Technician  
Mr. Hufhines will serve on the steering committee and oversee day to day activities of the grant and restoration. He holds a non-commercial restricted use pesticide applicator license from the Arkansas Plant Board. Mr. Hufhines received his BS in Animal Science and his MS in Crop, Soil, and Environmental Science from the University of Arkansas.

Joe Woolbright, Ozark Ecological Restoration INC. (OERI), Founder and Director  
Mr. Woolbright has spent 47 years as a state licensed electrical/general contractor. He started OERI out of a passion for tallgrass prairies. He serves on the board of the Arkansas chapter of The Nature Conservancy, the Fayetteville Arkansas Natural Heritage Association, was the founder of the Flint Creek Property Owners Association, and a founding member on the board of directors of The Illinois River Watershed Partnership. OERI is a 501 c(3) non-profit that specializes in tallgrass prairie restoration and establishment. The employees of OERI are commercial state licensed herbicide applicators and have completed certified red card firefighting training. OERI has performed stewardship services on approximately 70,000 acres for multiple city, county, state, and federal agencies. Joe Woolbright and OERI employees will contract stewardship services for the Beaver Prairie and serve on the steering committee.

Burnetta Hinterthuer, Northwest Arkansas Community College Plant Biology Professor; Hinterthuer Botanical Inventory and Clearance  
She has a BA in Biology and English from Murray State University, a MA in Plant Science, and 48 hrs. toward a PhD in Agronomy from University of Arkansas. Since the late 1980s, she has worked as a consultant working with Federal, State and Local and private agencies in botanical inventory and clearance work. Her interest in tall grass prairie preservation and conservation began in 1975 upon being introduced to Baker Prairie in Harrison while teaching at North Arkansas Community College and working for Buffalo River. Recently, she has been working at restoring tall grass prairie and post oak savanna habitat in the Nature Area at Northwest Arkansas Community College. She is active in the local chapter of the Arkansas Native Plant Society. Burnetta Hinterthuer will contract flora surveys including taxonomic identification and percent coverage and serve on the steering committee.