

Establishment of riparian buffers and enhancement of wildlife habitat at The Walls of Jericho and Henshaw Cove.

Alabama State Lands Division
Project # 5

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Final Performance Report

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Need:

Nationwide, approximately 70-84% of riparian forests have been lost (Noss et. al 1995). Beginning with the advent of agriculture in North America the broad, fertile floodplains of the TN river basin were converted from mixed mesophytic forests to agricultural land. Culminating with the impoundment of the TN river system, the loss of broad forested floodplain in North Alabama is nearly complete.

Today it is extremely rare to find mixed mesophytic forests within broad, flat floodplains in North Alabama (Wheeler Wildlife Refuge and the adjacent U.S. Army's Redstone Arsenal being notable exceptions.) Remnant forest of this type can be found within the Paint Rock River watershed, one of the few Tennessee River watersheds that have not been dammed. The Nature Conservancy has targeted the Paint Rock River watershed as a "landscape conservation area" and is working to restore riparian habitat in the area. The Paint Rock harbors 19 fish, 21 mussel and 2 aquatic snail GCN species. This includes the federally endangered Palezone Shiner (*Notropis albizonatus*), Alabama Lampshell (*Lampsilis virescens*), and Pale Lilliput (*Toxolasma cylindrellus*). The mostly intact forests at the headwaters of the River's three major tributaries ensure the river is fed by cool, filtered water, upon which these species rely. Reforestation of riparian woodlands within the watershed will promote the continued persistence of these listed species.

The large forest of Skyline WMA lies at the southern terminus of the Cumberland Plateau, another project focal area for the Nature Conservancy. It provides critical habitat for 4 birds ranked as highest or high priority for conservation by the CWCS (cerulean warbler (*Dendroica cerulea*) – P1, wood thrush (*Hylocichla mustelina*) – P2, Kentucky warbler (*Oporornis formosus*) – P2, and worm-eating warbler (*Helmitheros*

vermivorus) – P2). These birds rely upon large, unfragmented tracts of mature forests and Skyline WMA provides a rare refuge for them in Alabama. Gaps in the canopy created by abandoned pastures encourage invasion by exotic plants, potentially alter the temperature of Hurricane Creek, and give a foothold to the parasitic Brown-headed cowbird (*Molothrus ater*), which may be suppressing reproduction of the Cerulean Warbler and other birds.

Woodland bats also rely upon mature forests for foraging and roosting. Rafinesque's Big-eared Bat (*Corynorhinus rafinesquii*), Gray Myotis (*Myotis grisescens*), Indiana Myotis (*Myotis sodalists*) and Northern Myotis (*Myotis septentrionalis*) have been documented foraging at the confluence of Turkey Creek and Hurricane Creek. The Gray Myotis and Indiana Myotis are known to rely on riparian woodlands for foraging. In summer, Rafinesque's Big-eared bat, Northern Myotis and Indiana Myotis all rely upon large, mature trees, either roosting in cavities within the trees or under their exfoliating bark. The Green Salamander (*Aneides aeneus*) is also known take refuge in hollow trees and exfoliating bark.

Some GCN species that occur in the area can benefit from early successional habitat, such as the eastern spotted skunk (*Spilogale putorius*), and long-tailed weasel (*Mustela frenata*), as well as game species such as the Northern Bobwhite and Wild turkey. However, the fescue pastures that remain from previous agricultural activities are inhospitable and provide no value to wildlife. Conversely, warm season grasses native to North America provide a tremendous value to wildlife.

The goal of this project is to protect water quality and enhance habitat quality for 68 GCN species that occur or are likely to occur in the area by reclaiming land once used for agricultural production.

Objectives:

The purpose of this project will be achieved by meeting these objectives:

- Create riparian woodland buffers and close gaps in the forest canopy
- Establish native warm season grasses
- Eradicate invasive plants
- Establish artificial roosts for bats

Expected Results and Benefits:

The expected result is to restore ecosystem function by reducing or eliminating threats that interrupt inherent ecosystem processes. Improving the quality of habitat through the proposed on-the-ground activities are the building blocks for achieving conservation restoration goals. The results of these management activities will likely increase populations of GCN species thereby accomplishing some of the recovery goals outlined in the CWCS. Other non-game species of lower conservation concern (Priority 3 and below) and some game species, particularly Northern Bobwhite (*Colinus virginianus*) will benefit substantially.

The project will result in both short term and long term benefits. Elimination of invasive plants will immediately release the habitat from the detrimental effects of their encroachment. Eradication of the fescue pastures will allow native herbaceous plants to create more useful early successional habitat for wildlife. Artificial bat roosts will provide an immediate increase in roost availability as well as providing shelter for any green salamanders that may be present. Establishment of native warm season grasses will take 2-4 years, but once present will provide excellent early successional habitat for wildlife. The results from establishing riparian woodland buffers will be long term, 40 years or more, but ultimately will increase habitat acreage for GCN woodland birds, increase forage areas and roosts for GCN bats, and protect water temperature and quality for aquatic GCN species.

Having quickly becoming known as a premier hiking spot in Alabama, the Walls of Jericho hosts hundreds of visitors per weekend who will have the opportunity to see the positive work of the Forever Wild program and Alabama's Comprehensive Wildlife Conservation Strategy. Along with Henshaw Cove, these restored tracts will fulfill the mission of the Alabama's Forever Wild Amendment to the state constitution, by serving as representatives of Alabama's diverse natural heritage, providing the public a place to experience preserves supporting intact, functioning ecosystems, improving the quality of recreational experiences such as hunting and bird watch, and enhancing the aesthetic value of the property, all of which may increase much needed appreciation for Alabama's natural heritage.

Actions will potentially benefit 68 GCN species; 25 terrestrial and 43 aquatic:

Approach:

Tasks to be completed under this project include planting riparian woodland buffers, establishing native warm season grasses, eradicating invasive plant species, and establishing artificial roost habitat for bats. Work began to control invasive species during early 2009 targeting fields covered in tall fescue. Reforestation efforts began with on-site inspections to define specific actions needed to establish trees. A combination of prescribed fire and herbicide treatments were used to eliminate tall fescue and woody competition where present. Following the necessary site preparation practices, mast producing bottomland hardwood seedlings were planted to provide wildlife habitat and appropriate light conditions for more shade tolerant trees. Planting and continued establishment of riparian buffers continued in 2009 through 2011. Assessment of seedling survival will continue in the following year. Bat roost structure construction began in 2010 following guidelines for building from Bat Conservation International. Activities to establish and improve stands of native warm season grass also began in 2009 through 2010.

Project Duration:

Start Date: October 1, 2009

End Date: September 30, 2011

Activities:

1. Create riparian woodland buffers. Riparian woodland buffers were planted along Hurricane Creek during April 2010 by planting trees along the existing streamside management zones. Tree species used for this treatment include Common Persimmon and Cherrybark Oak. Trees were spaced twenty feet apart leaving additional natural vegetation to transition from this wooded area into the remaining field. The remaining fields will be managed to add habitat diversity. Riparian zones were site prepared on the Henshaw Cove tract during the summer of 2010 by bush-hogging and spraying herbicides. These areas on Henshaw Cove were planted using a combination of Black Walnut, Common Persimmon, and Green Ash during early 2011. Tree shelters were used on planted seedlings to protect from predation by wildlife and to improve initial height growth. Competition control was performed as needed to benefit the seedlings.

Water quality in Hurricane Creek and the Paint Rock River were monitored using methods following the Alabama Water Watch program. Water quality parameters were measured once a quarter on the Paint Rock River and Hurricane Creek. Attributes measured include turbidity, dissolved oxygen, pH, hardness, alkalinity, and water temperature. The aim of this monitoring is to establish baseline data against which we can judge the results of establishing the buffers in the future. The baseline will also be used to alert us if water quality begins to decline.

2. Establish native warm season grasses. The fields at the Henshaw Cove were covered to a large extent in tall fescue which offers little, if any benefit for wildlife. Prescribed burning was used to help control these grasses and improve stands of existing warm season grass. Rotational burning was begun during 2009 by Game and Fish and additional burns were conducted during February 2010. Assessment of fields post-burn found that fires did benefit native grass, most notably sagebrush bluestem. Additionally, some areas of fields were sprayed with Garlon 3A to promote grass and control native woody competition in field areas. We will continue to perform prescribed burns and spray as needed to benefit these existing stands. It was determined following assessments that due to the level of site prep necessary and the amount of grass present that seed would not be planted at this time.

3. Eradicate invasive plants: Invasive exotic plants were aggressively monitored for control during the year. Fields at both the Walls of Jericho and Henshaw Cove Tracts were sprayed, burned, and/or mowed to control fescue. Spraying efforts continued to control invasive exotic, with particular attention to Multiflora rose (*Rosa multiflora*) and Chinese privet (*Ligustrum sinense*) at both tracts.

4. Establish artificial roosts for bats: Construction of bat boxes resulted in a total of six artificial roost sites at Henshaw Cove and the Walls of Jericho. These roost sites will be monitored for bat habitation and their location moved as necessary to provide the most benefit.

Significant Problems Encountered: None

Significant Deviations: Originally, plans were to plant buffers 300 feet from stream bank utilizing several tree species. After consulting with management area biologists, NRCS, and state lands staff, it was determined that riparian zones should not envelop the entire field in most cases. The method that was used would allow for a significant riparian zone, but would also establish a transition zone and manage remaining field for diversity. Our feeling was this would benefit woodland birds and bats while providing habitat for game species, most notably E. wild turkey and white-tailed deer. Also, plans were to originally plant native warm season grass over field areas. Based on the stocking levels of native warm season grass and the amount of site preparation necessary to establish grasses, seed was not planted on the field sites.

Costs: See original agreement

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