

Egypt Valley Wildlife Area

Final Report



Mission

Green Forests Work's (GFW) mission is to re-establish healthy and productive forests on formerly mined lands in Appalachia

Vision

GFW's vision is to create a renewable and sustainable multi-use resource that will provide economic opportunities while enhancing the local and global environment. By converting reclaimed, non-native grasslands and scrublands into healthy, productive forestland, GFW is effectively addressing two needs of the region.

Our reforestation projects provide jobs for equipment operators, nursery workers, and tree planters, and improve the environment by eradicating exotic species and restoring ecosystem services. With the help of our partners and volunteers, this vision is quickly becoming a reality...

**Since 2009, we have planted more than 1.83 million trees on more than 2,900 acres,
but there are nearly one million acres left to reforest.**



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Twenty year old research plots on a surface mine in Breathitt County Kentucky show how the Forestry Reclamation Approach allows native forests to be re-established after reclamation.

Front Cover: Michael French shows private donor the project site.

BACKGROUND

Project Description

This project was a collaborative effort between the Ohio Department of Natural Resources – Division of Wildlife (ODNR-DOW), the USDA Forest Service – State and Private Forestry, the National Fish and Wildlife Foundation, the Arbor Day Foundation, Green Forests Work, the Appalachian Regional Reforestation Initiative, The American Chestnut Foundation, and private donors to reforest 86 acres of Egypt Valley Wildlife Area, which is managed by ODNR-DOW (Figure 1). Egypt Valley Wildlife Area consists of 18,011 acres located in Belmont and Guernsey Counties. Over the last 50 years, much of this wildlife area has been surface mined for coal. The wildlife area is managed for recreational opportunities, primarily for forest wildlife species. The area's primary public uses are deer, turkey, and waterfowl hunting, and also bird watching.

The project location is a typical northern Appalachian surface coal mine. The soils were heavily compacted by machinery and seeded with non-native grasses, forbs, and legumes as part of a “hay/pastureland” revegetation plan. Fifty-six acres of the project site had been maintained as pasture and managed for hay production through leases for many years, but ODNR-DOW desired to return the area to forest to increase the percentage of forest cover in Egypt Valley Wildlife Area. Due to excessive soil compaction and established non-native grasses, natural tree regeneration would have been hindered and would not have occurred in a reasonable timeframe without intervention. Moreover, autumn olive (*Elaeagnus um-*

bellata), an invasive exotic species, had colonized the entire periphery of the site (Figure 2) and it is likely that the entire area would have become a nearly pure stand of autumn olive if management for hay production had ceased and the area was left to regenerate naturally.



Ohio Division of Wildlife partner teaches project supporters about the surrounding invasive vegetation.

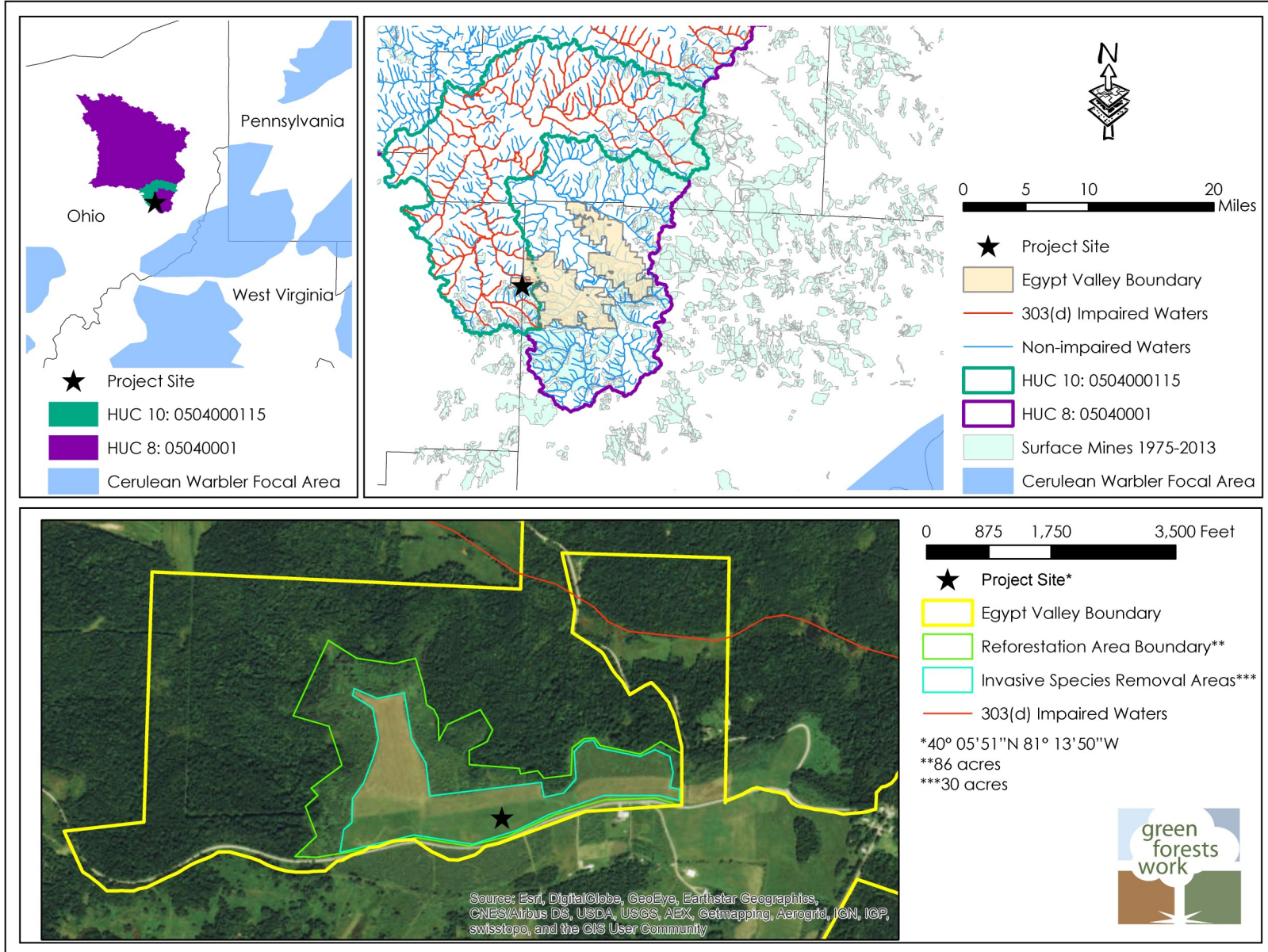


Figure 1. Project site.

BACKGROUND

Project Goals

The project site is located in the headwaters of the Tuscarawas River Watershed and is intended to benefit wildlife and to improve downstream water quality. Numerous species will



Figure 2. Autumn olive surrounding the project site.

benefit in the short-term through the establishment of early successional habitat with a moderate density of shrubs and small trees. Examples include ruffed grouse (*Bonasa umbellus*) and prairie warbler (*Dendroica discolor*). The local ruffed grouse population has been declining since the early 1990s, likely due to avian predation and habitat loss due to land-use changes. The site preparation for this reforestation project immediately created a rough ground surface and exposed

large rocks, creating microsites that will provide cover for insects, small mammals, reptiles, and amphibians. As the planted seedlings grow, the patch of young forest will provide habitat that many songbirds, game birds, reptiles, and large and small mammals rely on for foraging and breeding. As the forest matures, the increased contiguous tree cover will provide a resting point and potential breeding ground for many neotropical songbirds. Nuts from mature oaks, hickories, and chestnuts will provide nutrition for white-tailed deer, wild turkey, ruffed grouse, and a variety of small mammals that currently reside in the surrounding forest. Exfoliating bark from mature oak and hickory trees will provide roosting sites for several bat species including the endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*), which has been proposed for listing as threatened. It is also anticipated that increased forest cover will benefit the local bobcat (*Lynx rufus*) population and transient black bears (*Ursus americanus*) which have recently been noted in the Egypt Valley Wildlife Area.

This project also removed approximately 30 acres of exotic invasive species, primarily autumn olive. Our hope is that the planted, native hardwood seedlings will quickly achieve crown closure and suppress re-emerging autumn olive and other invasive exotic species that may colonize the site. Other benefits of this project include improved water and air quality, increased carbon sequestration, improved aesthetics, and future economic returns through timber harvests.

Although the project area does not include riparian zones, up-

land reforestation may improve water quality and downstream habitat conditions by increasing infiltration, buffering streamflow, filtering runoff, and reducing sedimentation. Improved buffering and reduced sedimentation could improve water quality in the downstream watershed, benefitting numerous fish populations, including the state-threatened mountain madtom (*Naturus eleutherus*) and American eel (*Anguilla rostrata*), which are present in the Tuscarawas River.

Additionally, eastern hellbender salamanders (*Cryptobranchus alleganiensis alleganiensis*) have been listed as endangered at the state level since 1990 and became federally listed as a Species of Concern as of May 1, 2013. Hellbenders have been recorded in Belmont County as recently as 2006 and are being released into the area as an objective of the Eastern Hellbender Ohio Conservation Plan (Ohio Division of Wildlife, 2012). Recovery plans for eastern hellbender emphasize the importance of protecting hellbender populations by minimizing the threats imposed by sedimentation and altered water chemistry (Mayasich et al., 2003; Ohio Division of Wildlife, 2012). Both sedimentation and altered water chemistry can be mitigated, in part, through the upland forest restoration and watershed protection resulting from this type of work.

The project location's proximity to I-70 and other large surface mines in the area make it an ideal site for demonstrating mined land reforestation techniques to landowners and natural resources professionals. It is anticipated that this project will assist owners of surface mined land in the area in determining

the best management practices for returning their properties to healthy, productive forests. It is also hoped that this site will become a high-profile reforestation project that will lead to the creation of other reforestation projects of similar nature, both within and outside of the Tuscarawas River Watershed.



MILESTONES

June 30, 2015: Aerial herbicide application

ODNR-DOW contracted a professional herbicide company to kill approximately 30 acres of autumn olive surrounding the area that had been leased for hay production. A helicopter equipped with boom sprayers was used to apply a combination of herbicides for the aerial application (Figure 3).



Figure 3. A helicopter was used to apply herbicide to the autumn olive due to the thick cover.

August 25-29, 2015: Ground herbicide application

ODNR-DOW used a 27' sprayer mounted on a tractor to broadcast herbicide on the area that had been maintained as pasture. This was done to control aggressive grasses and legumes that would have reduced growth rates and survival of planted seedlings.

March 2016: Windrowing of brush and ripping to mitigate compaction

GFW contracted a local excavating company to perform the remaining site preparation work prior to tree planting. In early March, a D6 bulldozer and D9 bulldozer were brought to the site. The D6 pushed the autumn olive and small trees present on the 30 acres between the existing forest and the hay field into piles at the bottoms of the slope, adjacent to the surrounding forest (Figure 4). These piles will provide ideal shelter for many birds, mammals, and reptiles.



Figure 4. The autumn olive brush was pushed into piles around the perimeter of the project site to create wildlife habitat.

While the D6 was clearing brush, the D9 bulldozer equipped with two, 3' ripping shanks cross-ripped the hay field to alleviate compaction. After the D6 had completed pushing the brush into piles, the D9 followed behind and cross-ripped the slopes so that the entire 86 acre area was ready for tree planting.



Figure 5. Rips in the soil after the first pass of the D9 with ripping shanks.

April 4-6, 2016: Tree planting

A professional tree planting company was contracted by GFW to plant the entire 86 acre area after the site preparation had been completed (Figure 6). Professional tree planters worked for three days to plant the area with a mix of hardwoods and shrubs that were selected by ODNR-DOW staff to benefit wildlife (Table 1).



Figure 6. Professional tree planter at work.

“GFW is restoring a critical natural resource. Trees counter climate change, reduce carbon dioxide in the atmosphere, provide an important shelter for other forms of life, and are aesthetically pleasing. What more could you ask? I am happy to support GFW's work.”

-Dick Whitaker, private donor for the project

DISCUSSION

Species	No. of Trees	Percent
White Oak (<i>Quercus alba</i>)	18,995	31
American Beech (<i>Fagus grandifolia</i>)	1,001	2
Shellbark Hickory (<i>Carya laciniosa</i>)	5,855	10
Eastern White Pine (<i>Pinus strobus</i>)	2,928	5
Northern Red Oak (<i>Quercus rubra</i>)	7,616	12
Black Walnut (<i>Juglans nigra</i>)	2,928	5
Willow Oak (<i>Quercus phellos</i>)	2,928	5
Shagbark Hickory (<i>Carya ovata</i>)	2,928	5
Yellow Poplar (<i>Liriodendron tulipifera</i>)	2,928	5
Sugar Maple (<i>Acer saccharum</i>)	2,928	5
American Hazelnut (<i>Corylus americana</i>)	2,928	5
Common Persimmon (<i>Diospyros virginiana</i>)	2,928	5
Black Cherry (<i>Prunus serotina</i>)	3,895	6
American Chestnut (<i>Castanea dentata</i>)	500	1
TOTAL	61,286	

Table 1. Species planted and corresponding numbers and percentage of planting mix.

Partners
AmeriCorps
Appalachian Regional Reforestation Initiative
Arbor Day Foundation
Dick Whitaker
Green Forests Work
Luburgh, Inc.
Let's Move Outside!
National Fish and Wildlife Foundation
Office of Surface Mining Reclamation and Enforcement - USDI
Ohio Department of Natural Resources - Division of Wildlife
The American Chestnut Foundation
United States Forest Service - State and Private Forestry
Williams Forestry and Associates

Table 2. Project partners.

This project was originally intended to reforest the 56-acre field that was being managed for hay. A site visit that included representatives of GFW, ODNR-DOW, ARRI, and private donors (front cover) was conducted in September of 2015 to view the project location and results of the herbicide applications. Everyone present indicated the desire to reforest the 30 acres of autumn olive around the periphery that had been killed by the aerial herbicide application and would most likely revert to a stand of autumn olive within a few years if further reforestation measures were not undertaken. GFW staff worked to raise the additional funding necessary to contract brush removal and ripping required to reforest the additional acre-

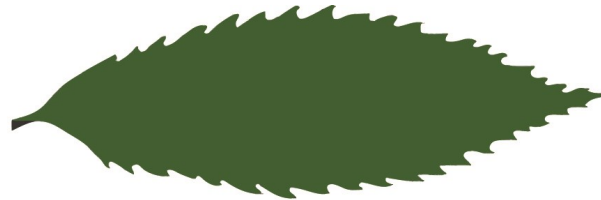
age. For a complete list of project partners, see Table 2. Once the funding was raised, contracts were sent for bid and awarded. Due to the steepness of some slopes, an additional 2,720 white oak seedlings were planted, resulting in the planting of 61,286 seedlings rather than the originally proposed 58,566. Monitoring of growth and survival of planted seedlings will begin in the summer of 2016.

Literature Cited

Mayasich, J., Grandmaison, D., Philips, C. 2003. Natural Resources Research Institute. Eastern Hellbender Status Assessment Report. Duluth, MN. 43 pp.

Lipps, G., C. Caldwell, and J. Narvarro. 2012. Ohio Conservation Plan: Eastern Hellbender, *Cryptobranchus alleganiensis alleganiensis*. Ohio Division of Wildlife, Columbus, OH. 42 pp.

PARTNERS



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