

**FOREST STEWARDSHIP PLAN**  
**of the 36.45 Acre Sulzbacher Demonstration Forest (SDF)**  
**Big Creek Road, Clearville, PA 15535**

**Owned by The Woodland Owners of the Southern Alleghenies (WOSA)**  
**WOSA mailing address: P.O. Box 253, Everett, PA 15537**  
**-78.35° W 39.84°N**



Laura Jackson admires a majestic white oak tree

**Plan prepared in 2018-2019 by:**

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**Adopted with Board Approval on December 13, 2019**

**“Unless we practice conservation, those who come after us will have to pay the price of misery, degradation, and failure for the progress and prosperity of our day.”**

**Gifford Pinchot, 1910. The Fight for Conservation**

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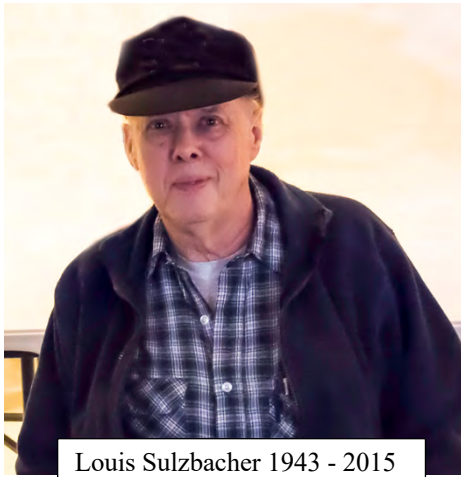
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A look at the canopy in the Old Growth Forest stand

## History of the Sulzbacher Demonstration Forest



Louis Sulzbacher 1943 - 2015

The Woodland Owners of the Southern Alleghenies' (WOSA) property along Big Creek Road south of Clearville, Pa. is named the Sulzbacher Demonstration Forest in honor of Louis Sulzbacher, who donated the property to WOSA.

Louis Sulzbacher was born on January 8, 1943.

Louis was an avid outdoorsman and photographer. He would travel extensively throughout the U.S., documenting his trips with a unique collection of landscape photographs featuring mountain ranges. He preferred living in campsites and in the back of his truck in secluded settings. He felt close to nature and finding solitude in untouched settings was his passion.

Louis was also an avid hunter but would often avoid the “open shot” to bask in the moment of sharing space with Nature’s beautiful living creatures.

Louis was employed as a letter carrier and later as an electronics technician with the U.S. Postal Service for 35 years. He never married.

Knowing he was in a terminal health situation, he spent his last few months making sure the property where he loved to hunt and camp was donated to the Woodland Owners of the Southern Alleghenies (WOSA), an organization he supported wholeheartedly. Louis was a member of WOSA for many years and enjoyed attending workshops, conferences, and the WOSA picnic.

In October 2015, Louis contacted Laura Jackson to see if WOSA would be willing to accept a gift of two properties - one in Frederick County, Maryland, and one in Bedford County, Pennsylvania. Louis asked that WOSA keep the Bedford Co. property undeveloped and that it be used for forest conservation projects and education. Louis told Laura that he wanted more trees planted on the property.

He gave WOSA the Maryland property with the intent that WOSA would sell it, so there would be funds to maintain the Bedford County property. WOSA agreed, with the stipulation that the Bedford Co. property be turned over to the Western Pennsylvania Conservancy if WOSA could no longer maintain it. All the parties agreed to this, so Louis arranged for the properties to be deeded to WOSA in his will.

Louis passed away on Dec. 7, 2015, at the age of 72. He is buried in the Shreve’s Chapel cemetery, south of Clearville, along Big Creek Road.

WOSA became the owner of the two properties in June 2017.

WOSA hired Allan Diehl, Surveyor, to survey the Sulzbacher Demonstration Forest property, which was completed on 12/13/17.

**The deed and survey for the Sulzbacher Demonstration Forest are in Appendices 1 and 2, p. 35 and 40**

## History of the Maryland Property on Marker Road:

On November 24, 2017, WOSA sold the Maryland property, comprised of 13.9 acres, located at S. Marker Road near Burkittsville, Middletown, Maryland, to Stephen F. Slaughter for \$150,000. Mr. Slaughter is an adjacent property owner who farms his property, so he wanted to add WOSA's property to his holdings, as they are part of the original 600-acre farm tract that he hopes to eventually own. Mr. Slaughter signed a Maryland Agricultural Easement for the property, since he plans to keep it part of his farm operations.

Proceeds from the sale of the property will be used to help fund the education and property maintenance goals in accordance with the Mission Statement found on page 6.

The purchase agreement was that Stephen Slaughter would make monthly payments of \$532 with the balance due on September 1, 2019. Cash down payment at settlement was \$45,000, less a deposit of \$2,000, and less realtor fee of \$10,855.00 for a subtotal of \$34,145.00.

Monthly payments will be  $\$532.02 \text{ per payment} \times 18 \text{ months} = \mathbf{\$9,576.36}$

**\$9,576.36** total of monthly payments includes interest payment of \$7,006.56 and \$2,569.80 of principal. The \$2,569.80 principal will be subtracted from the \$105,000 loan, so payment at the end of 18 months is **\$102,430.20**.

Total to be paid at the end of 18 months:  $\$102,430.20 + \$9,576.36 = \$112,006.56$

**Total WOSA will receive:  $\$34,145.00 \text{ (down payment)} + \$112,006.56 \text{ (loan)} = \$146,151.56$**

**Note: As of Nov. 2019, Stephen Slaughter defaulted on his purchase agreement by failing to make the balloon payment by Sept. 1, 2019. Attorney Matt Ruble was retained to initiate foreclosure proceedings unless a final payment is made in a timely manner.**



Dave Scamardella clears brush with his chainsaw while Mike Jackson does the grunt work to clear invasives along the frontage of Marker Road.



Laura Jackson, John Boggess, and Joanne Boggess look at the property map while standing in a field of goldenrod in the back section of the Maryland property.

## Mission Statement

### *The Mission Statement of the Sulzbacher Demonstration Forest:*

- 1. Demonstrate sustainable forestry practices that promote healthy and productive forests while maintaining and enhancing their many ecological values such as wildlife, biodiversity, water quality, clean air, and recreation.*
- 2. Educate private forest landowners and the public to promote best management practices in forest and other natural habitats.*

This forest stewardship plan is meant to be a working document and can be amended by a majority vote of the WOSA board.

## WOSA Properties Committee

1. Armin Behr
2. John Boggess
3. Joanne Boggess
4. John Dunn
5. Laura Jackson
6. Mike Jackson
7. Debbie Magill
8. Dave Scamardella
9. Joe Wolfe

## WOSA GOALS

There were committee meetings to inform the plan writer of WOSA's goals for the property. The committee made the following decisions:

- WOSA voted to join the Hunter Access Program; and signed a contract with the Pennsylvania Game Commission in February 2019. **See Appendix 8**, p. 88
- There will be no firewood cutting except under certain circumstances
- There will be no horses or ATVs allowed except under special circumstances
- Only native species will be planted
- There will be no logging for monetary needs

# Overall Property Inventory and Recommendations

## Landowner's Management Objectives:

The landowner survey developed by Penn State in the 1990's entitled "Developing Landowners Goals" was filled out by the WOSA Properties Committee. WOSA plans to use the property for education of sustainable forestry through demonstrations and interpretation. This plan is meant to be a working document and can be amended by a majority vote of the Properties Committee.

## Directions to Property:

From Clearville: Go east on Rock Hill Church Road for .6 miles. Turn right on Big Creek Road for 6.9 miles. Turn right onto property's access road.

From Purcell: Go north on Big Creek Road for 4.2 miles. Turn left onto property's access road.

**The Property within the Landscape:** The property is in the heart of the Ridge and Valley Physiographic Province and in the oak/hickory forest type. The entire property drains into the West Branch of Sideling Hill Creek or its tributaries. This continues into the main branch of Sideling Hill Creek, through Fulton County and into the Potomac River in Maryland, which meets the waters of the Atlantic Ocean in the Chesapeake Bay.

The elevation ranges from 960 to 1,100 feet above sea level.

The property consists of three distinctly different soil series: Allegheny, Atkins-Ernest complex, and Berks (see **Appendix 3**). All the manageable (streamside is considered unmanageable) portions of the property are Berks soil series.

An interpretive hiking trail is planned that will run through the various stands to demonstrate sustainable forest management techniques, highlight wildlife management practices, and identify tree, shrub, herb, wildflower, and fungi species of importance.

The Properties Committee wishes to monitor meeting our management objectives through photos. A series of nine locations will be established and designated by a metal post and sign at each of the nine stands to document changes over time.

## Species of Concern:

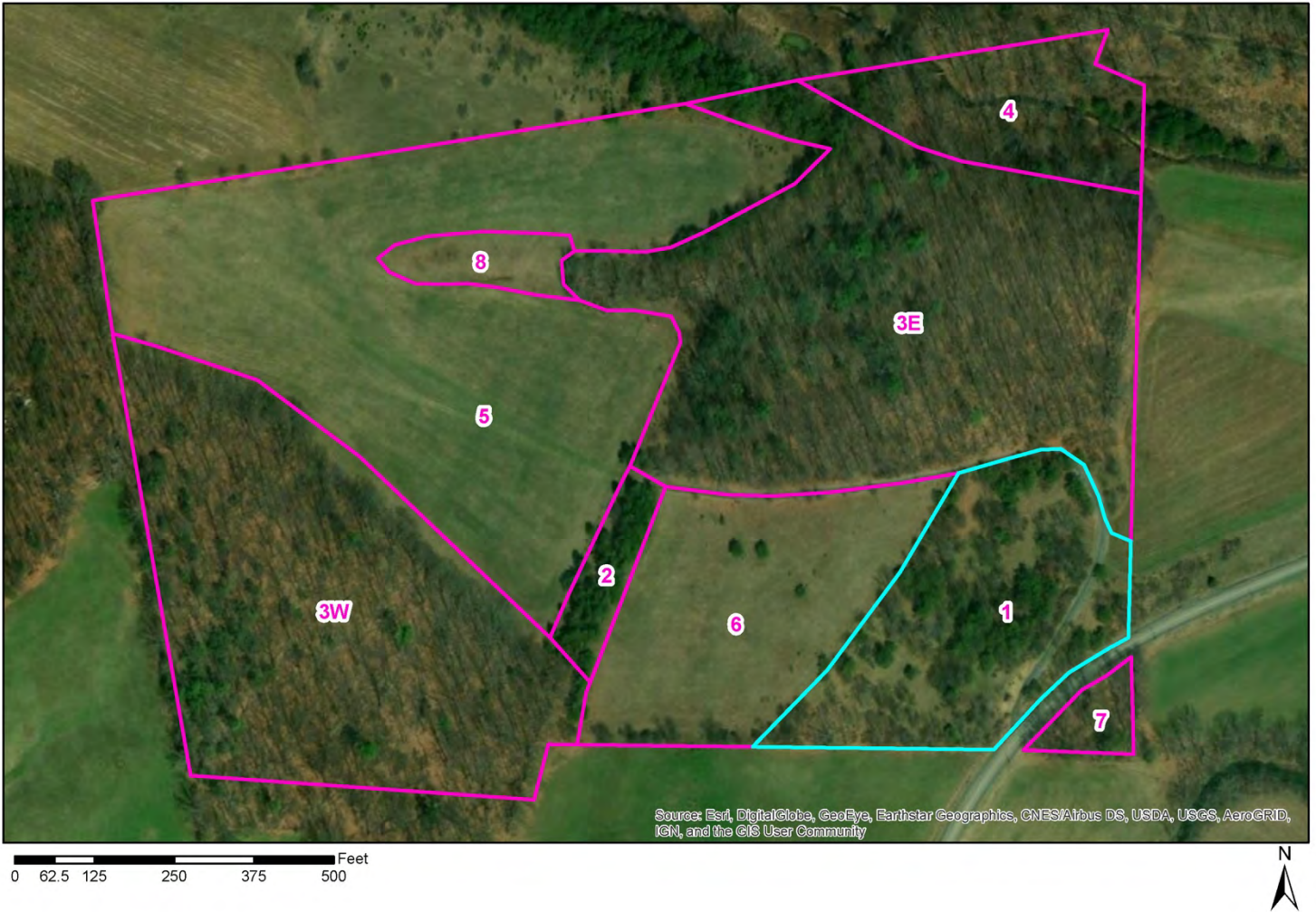
On October 17, 2018, a Pennsylvania Natural Diversity Inventory (PNDI) search of the property indicates there are no species of concern within the project area. See **Appendix 4**, p. 58

## Invasive Species:

Fact sheets describing the invasive species on the property are found in **Appendix 5**, p. 63 - 81

**Stand 1 Entry Stand**  
**Mixed hardwoods 5-11" DBH, poor stocking: 3 acres**

**Sulzbacher Demonstration Forest Stand Map**





**Stand 1 Entry Stand**  
**Mixed hardwoods 5-11" DBH, poor stocking: 3 acres**

**Management History:**

This is a grown-in field which happened very gradually since about 1970. There are some places still dominated by grass. It appears from the aerial photos before 1968 that the area was a crop field before the current state.

**Stand Description:**

Now there is a mix of Virginia pine and assorted hardwoods, such as white oak, black cherry, black oak, and red pine (I assume planted by Mr. Sulzbacher after he took ownership in 1982).

This is now described as a poorly stocked pole timber stand. There are 8.0 cords per acre of mostly mixed hardwoods, with Virginia pine a minor component. Other species found here include scrub oak, hawthorn, staghorn sumac, winged sumac and fragrant sumac. Invasive plants hold at least 20% coverage of the stand. These include autumn olive, Oriental bittersweet, privet, Japanese barberry, multiflora rose, Japanese shrub honeysuckle, Japanese vine honeysuckle, Japanese stilt grass, ailanthus, and sawtooth oak. The sawtooth oaks were planted by the well-intentioned Mr. Sulzbacher.

The soils of this stand are Berks channery silt loam, 15 to 25% slopes. This type is moderately deep, and well-drained. Although well-suited to forest, erosion hazard is severe and suitability for roads is moderate to poor.

**Management Objectives for the Stand:**

Education of sustainable forestry. Manage for wildlife habitat.

**Recommendations:**

Control of invasive plants in coordination with neighboring stands.

Plant native shrubs with wildlife value such as viburnums, dogwood, ninebark, and winterberry holly.

Locate property boundaries and mark with a special boundary marking paint or exterior latex paint.

Find uncommon plant species such as fragrant and winged or shining sumac, scrub oak, and hawthorn and give them more sun when appropriate.

Find good candidates for crop trees (white and black oak) and release.

Construct hiking trail that will tie in with trails in every other stand possible.



Property entrance prior to excavation



Excavation at property entrance completed on July 29, 2019

**Stand 2 Red Pine Plantation**  
**Red Pine, Virginia pine 9-15" DBH, good stocking: 1 acre**

**Sulzbacher Demonstration Forest Stand Map**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 62.5 125 250 375 500 Feet



**Stand 2 Red Pine Plantation**  
**Red Pine, Virginia pine 9-15" DBH, good stocking: 1 acre**



Mike Jackson and Dave Scamardella examine a wire cage that's constricting the trunk of a red pine

**Management History:**

It is assumed that all the red pine in this stand were planted by Mr. Sulzbacher in the early 1980's, and the Virginia pine came in naturally. Also, there are some Douglas fir trees planted. These trees have struggled since planting and are only half the size of the red pines.

**Stand Description:**

There are about 20.5 cords per acre of softwood pulpwood. Stand density is 110 square feet of basal area per acre.

The soils of this stand are Berks channery silt loam, 3 to 15% slopes. This type is moderately deep, and well-drained. Erosion hazard is moderate and suitability for roads is moderate.

Orchard grass dominates the understory of this stand.

**Stand 2 Red Pine Plantation**  
**Red Pine, Virginia pine 9-15" DBH, good stocking: 1 acre**

**Management Objectives for the Stand:**

Education of sustainable forestry. Manage for wildlife habitat.

**Recommendations:**

Remove all cages and stakes from around planted trees.

If possible, cut Virginia pine, which are at the end of their useful lives, with next timber sale on property.

Conduct prescribed burn of area to potentially diversify understory, after Virginia pine are removed.

Control invasives in coordination with neighboring stands.

Cut diseased (rhabdocone needlecast) Douglas-fir to reduce inoculum in stand.

Develop long-term plan for this area (after pines are gone).

Possibilities:

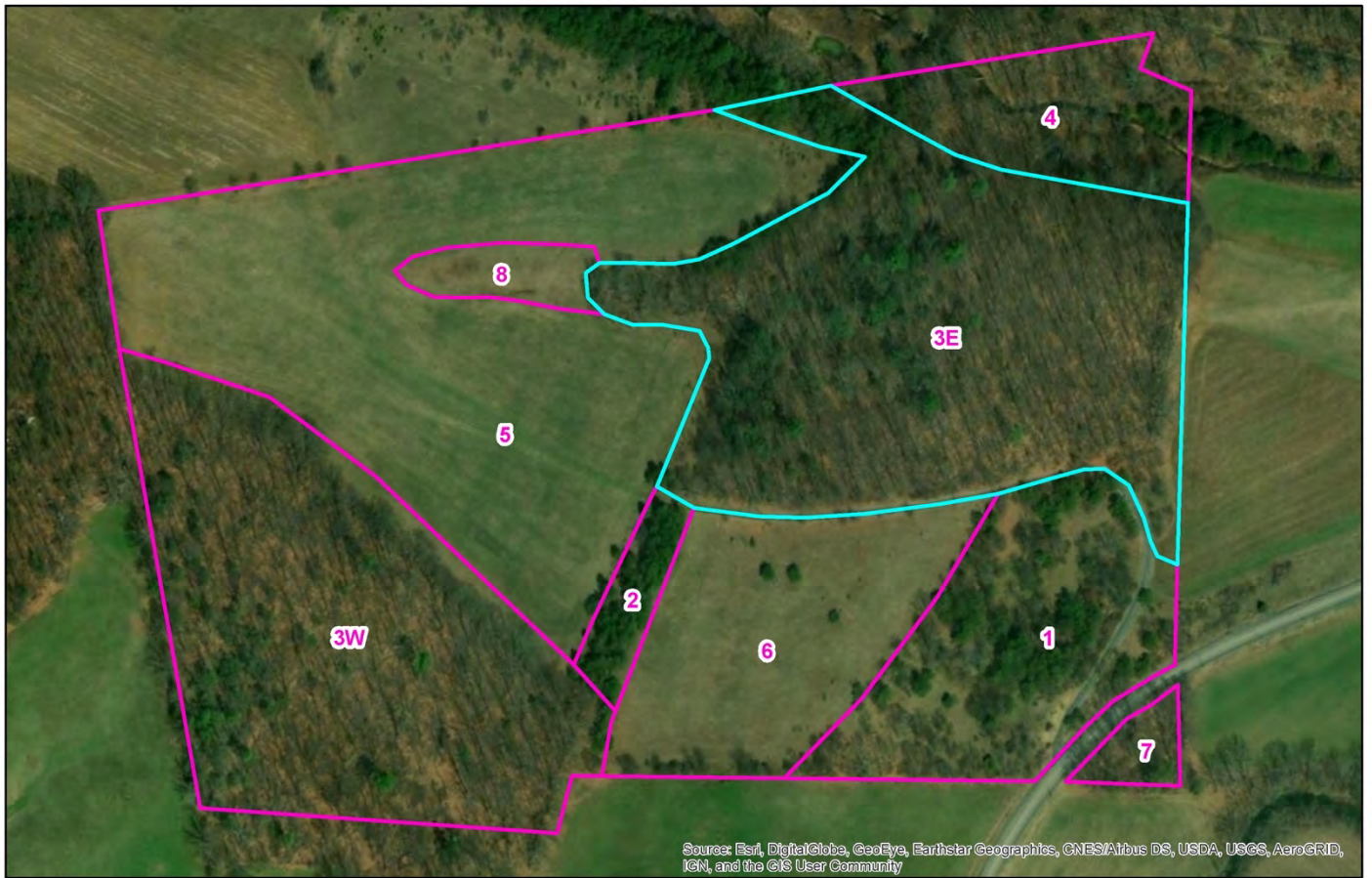
- Re-plant with more evergreens
- Plant with trees or shrubs for wildlife



Dave Scamardella is doing an inventory of the Red Pine Plantation

**Stand 3E Louie's Campsite**  
**White oak, 15" DBH and up, moderately stocked: 9 acres**

**Sulzbacher Demonstration Forest Stand Map**



**Stand 3E Louie's Campsite**  
**White oak, 15" DBH and up, moderately stocked: 9 acres**



Armin Behr, John Dunn, and Joe Wolfe determine the diameter of a white oak tree

**Management History:**

The origin of this stand is estimated at 1856 based on three tree cores. Unfortunately, from the 1958 aerial photo (see **Appendix 6**, p. 83), timber was evidently cut shortly before that, and was most likely a diameter limit cut. This means all the best genetic stock was removed, but it still has an intact overstory, albeit with lower volumes than would be expected otherwise.

**Stand Description:**

This stand has a large, old overstory of mainly white oak, but also some scarlet oak, white pine and hickory. The mid-story has red maple, white pine, black oak, white oak and ironwood. There are 8.0 MBF per acre while only 4.0 cords per acre. Stand density is 105 square feet of basal area per acre.

Ironwood is asserting itself in one part of the stand so it may need to be controlled someday.

The soil of this stand is Berks channery silt loam with varying slopes from 3 to 25%. This is described as moderately deep, and well drained. Erosion hazard is moderate to severe and suitability for roads is moderate to poor.

**Stand 3E Louie's Campsite**  
**White oak, 15" DBH and up, moderately stocked: 9 acres**

**Management Objectives for the Stand:**

Education of sustainable forestry. Manage for wildlife habitat.

**Recommendations:**

Control invasive plants in coordination with neighboring stands.

Construct loop hiking trail through this stand and adjacent Stands 4 and 5. Features along this trail that could be highlighted are the history of the area (1929 Model A Ford truck and Louis Sulzbacher's campsite), creek and associated plants and wildlife, and crop tree release demonstration.

Note: Included in this stand is a small (.1 acres) white oak stand in which a crop tree release has been marked. The WOSA Properties Committee wishes to track the growth of these crop trees through time.



In an effort to balance the age class distribution on the property, it is recommended to defer cutting this stand for an arbitrary time of 20 years. The Bureau of Forestry recommends using the services of a consulting forester for this. Your service forester is available to help you find a forester that suits you.

Prepare the site for regeneration cut. This can be done by cutting or killing with herbicide most competing vegetation (low shade) like white pine, red maple and black gum. These are sapling and pole timber size trees. Doing this lets enough light into the forest floor to start regeneration of desirable species like white oak, chestnut oak, scarlet oak and hickory.

Note: A shelterwood cut is also a valid option, but it is unlikely that a logger would like to cut the lower volume and lower quality on such a small acreage.

Conduct a regeneration cut across entire stand either around 2045 or when the regeneration is an average height of 4'. The Bureau of Forestry recommends using the services of a consulting forester for this. Your service forester is available to help you find a forester that suits you.

Consider cutting one or both aspen trees in western point to regenerate aspen easily.





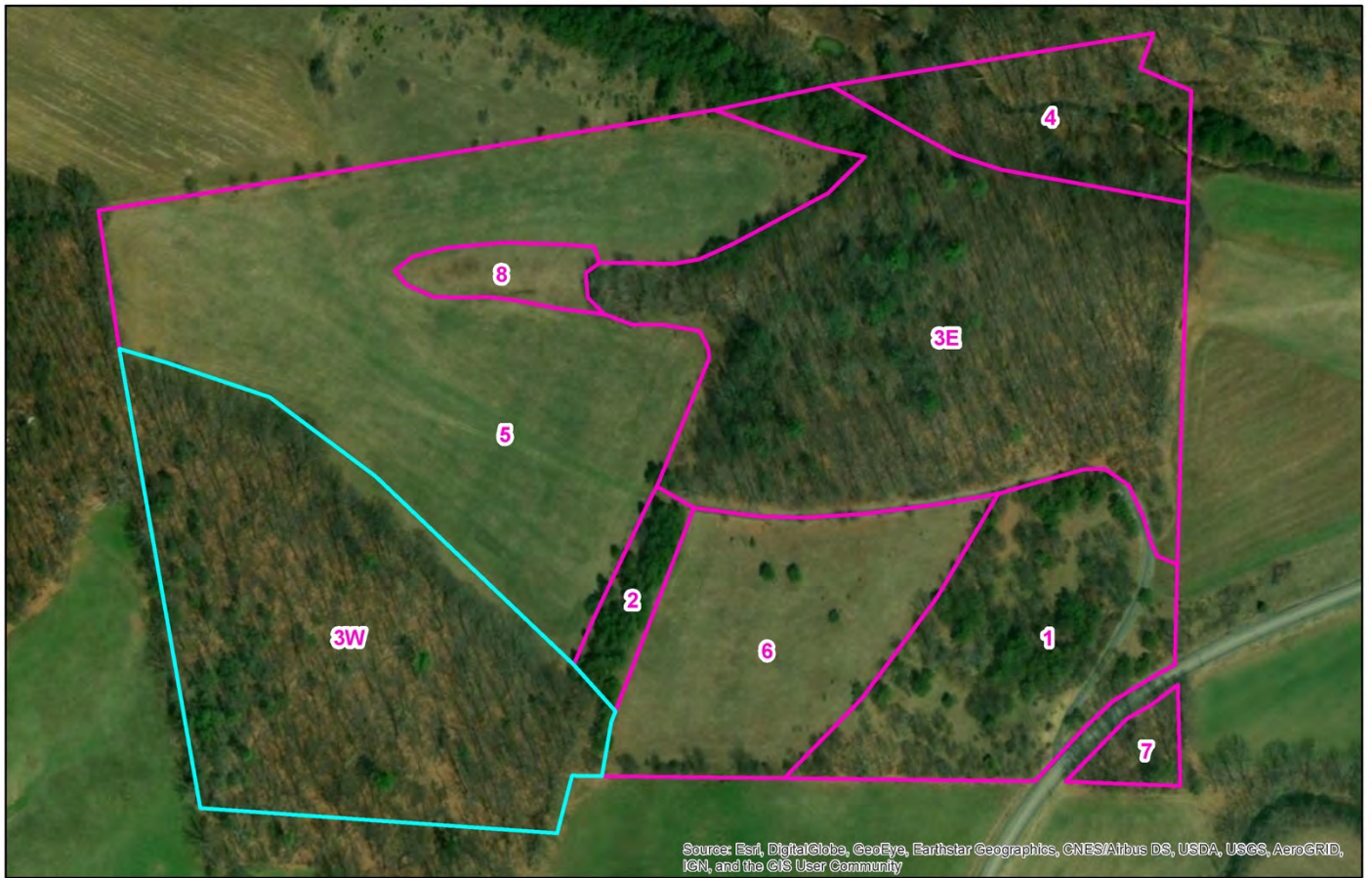
Louie's old campsite



Mike Jackson astride a 1929 Model A Ford truck

**Stand 3W Old Growth Stand**  
**White oak, 15" DBH and up, moderately stocked: 8 acres**

**Sulzbacher Demonstration Forest Stand Map**



**Stand 3W Old Growth Stand**  
**White oak, 15” DBH and up, moderately stocked: 8 acres**



**Management History:**

This stand has the oldest overstory on the property. Core samples determined the stand origin to be about 1838! Unfortunately, from the 1939 aerial photo, (see **Appendix 6**, p. 83), timber was evidently cut shortly before that, and was most likely a diameter limit cut. This means all the best genetic stock was removed, but it still has an intact overstory, albeit with lower volumes than would be expected otherwise.

As a demonstration area and a special place, it makes sense to have active management on the rest of the property, but leave this stand alone, unless there is a catastrophic event (disease, weather). This stand will be a counterpoint to the rest of the property and we will have the opportunity to discuss old growth structure.

**Considerations for Future Management:**

All forests are dynamic, they cannot be preserved in a static condition. Active management will occur after a major catastrophic event. The best way to manage a forest for old-growth characteristics is to:

- 1) ensure that the forest is protected from commercial logging in perpetuity;  
*Reason: forest development and recovery takes longer than a human lifespan, so we must arrange for recovery into the future.*
- 2) remove invasive plants if they are interfering with native plants;  
*Reason: non-native invasive plants can interfere with forest recovery.*
- 3) Allow “overstocked” forests to thin themselves naturally;  
*Reason: forests will thin themselves naturally, as they have always done. The strongest trees will live and the weakest trees will fall to the forest floor. The resulting woody debris on the forest floor is important food and habitat for a myriad of species.*
- 4) consider controlling animals, such as deer, that can overgraze forests when their numbers are too high.  
*Reason: forests experience a continual turnover of trees. New seedlings are important to replace fallen trees. The extirpation of carnivores, and the increase in edges and open areas, has led to an increase in the deer population. Deer can adversely affect tree seedling populations, as well as other native plants.*

**Stand 3W Old Growth Stand**  
**White oak, 15" DBH and up, moderately stocked: 8 acres**

**Stand Description:**

This stand has a large, old overstory of mainly white oak, but also some scarlet oak, chestnut oak, hickory, white pine and black gum. The spindly mid-story has white pine, red maple, white oak, black gum and hickory. There are about 8.7 MBF (thousand board feet) per acre and only 5.3 cords per acre. Stand density is 120 square feet of basal area per acre.

The soil of this stand is Berks channery silt loam with varying slopes from 3 to 25%. This is described as moderately deep, and well drained. Erosion hazard is moderate to severe and suitability for roads is moderate to poor.

There are scattered invasive plants, mainly autumn olive and multiflora rose throughout the stand.

**Management Objectives for this Stand:**

Education of old-growth passive management. Manage for wildlife habitat.

**Recommendations:**

Control invasive plants in coordination with neighboring stands.

Develop interpretive hiking trail to explain old growth forest management.



Dave Scamardella's core sample of this white oak (DBH of 20") revealed it to be 158 years old!

**Stand 4 Creek Bottom**  
**Mixed hardwoods 11-15" DBH – riparian zone: 2 acres**  
**Sulzbacher Demonstration Forest Stand Map**



0 62.5 125 250 375 500 Feet



**Stand 4 Creek Bottom**  
**Mixed hardwoods 11-15" DBH – riparian zone: 2 acres**



**Management History:**

This stand may have been farmed 100 years ago, it's hard to tell. On the 1939 aerial photo, it does look like a field growing in at the time.

**Stand Description:**

This stand is in the riparian zone where an unnamed tributary of the West Branch of Sideling Hill Creek flows through the property. Sideling Hill Creek, and all of its tributaries, has been designated as an Exceptional Value waterway (the highest designation) in the Potomac River watershed by the PA DEP.

The soils of this stand are of the Atkins-Ernest complex, 0 to 8% slopes, which is comprised of two components: Atkins and Ernest. These two types range from deep to very deep, and poorly drained to moderately well drained, respectively. Erosion hazard is from slight to moderate and suitability for roads is poor to moderate.

Forest buffers are the trees and shrubs along waterways that help protect water quality. Technically known as riparian areas, they act as filters to reduce pollutants and sediment from reaching the water. Pollutants come in many forms, including excess nutrients and fertilizers, and chemicals that run off streets and farm fields. Riparian forest buffers don't just filter water; they improve bank stability and reduce erosion and flooding. Buffers slow down surface run-off and allow rainfall to infiltrate, recharging critical groundwater resources.

**Stand 4 Creek Bottom**  
**Mixed hardwoods 11-15" DBH – riparian zone: 2 acres**

Wildlife benefit from food, shelter, and important travel corridors that are provided by buffers. Buffers also cool water temperatures increase oxygen and increase organic materials that feed fish and other stream life.

**Management Objectives for the Stand:**

Education of sustainable forestry. Maintain forested buffer for all the benefits listed above.

**Recommendations:**

Control invasive plants in coordination with neighboring stands.

Construct hiking trail recommended in adjacent Stand 3E.

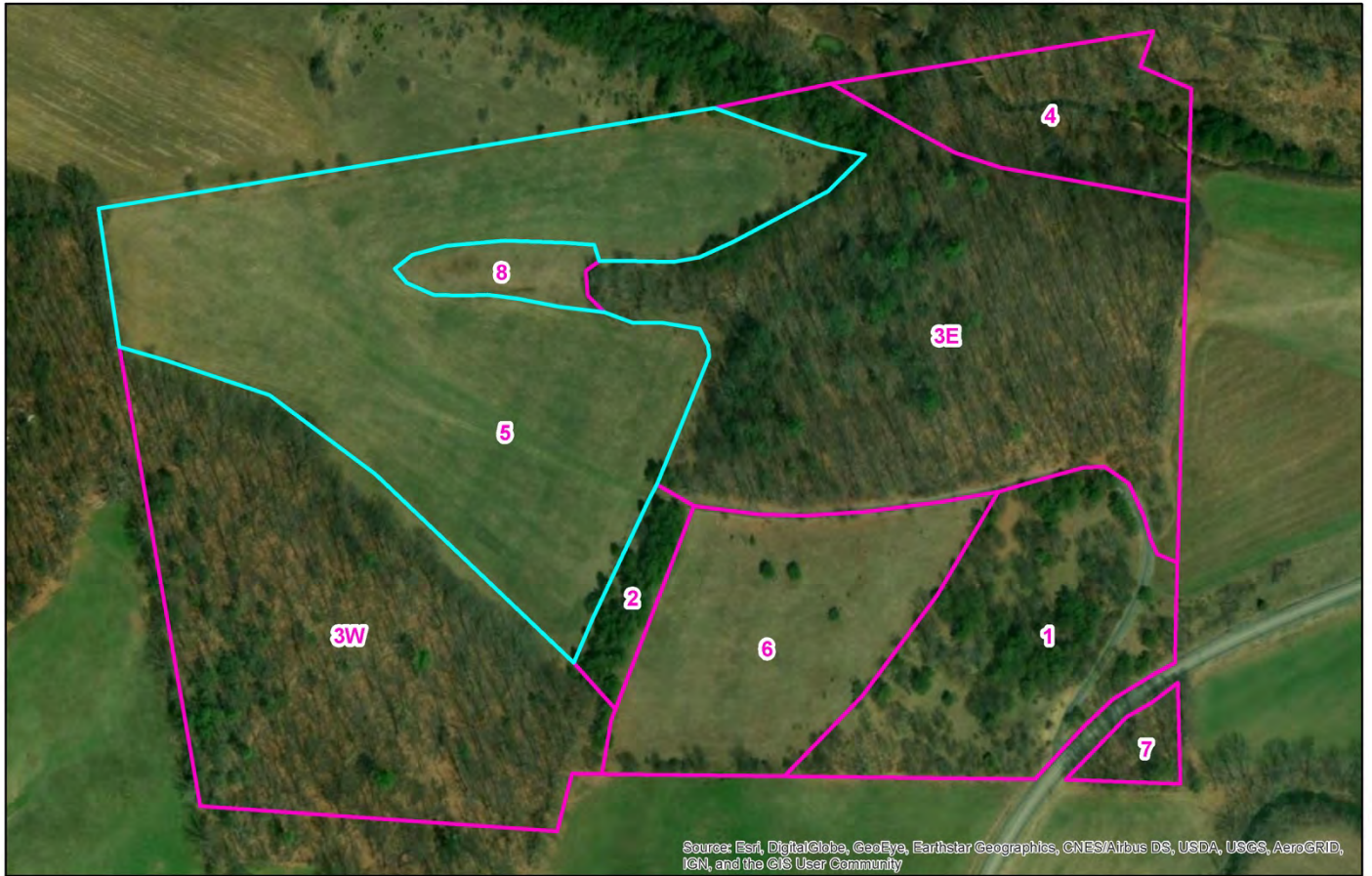
Plant willows, alders, and dogwood or other native trees or shrubs to stabilize streambank.

Remove trash that has washed there from upstream.



# Stand 5 Memorial Grove/Future Forest Hayfield: 10 acres

## Sulzbacher Demonstration Forest Stand Map



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 62.5 125 250 375 500 Feet





**Stand 5 Memorial Grove/Future Forest  
Hayfield: 10 acres**



A panoramic view of the 10-acre Future Forest and Memorial Grove

**Management History:**

This stand was a crop field ever since European settlement, as far as we can tell, except the far west end which was an orchard on the 1939 aerial photo (**see Appendix 6**, p.83). Under Mr. Sulzbacher's ownership, through an arrangement with the neighboring farmer, it would be cultivated, fertilized and harvested by them. This arrangement has now been formalized by the WOSA Board and the current neighboring farmer, Mr. Wayne Shatzer, by a three-year lease agreement starting in 2018. **See Appendix 7**, p. 84.

In 2015, shortly before his death, Mr. Sulzbacher was asked what he wanted to see happen with this field. Without hesitation, he said, "Trees!"

**Stand Description:**

The soil of this stand is Berks channery silt loam with varying slopes from 3 to 25%. This is described as moderately deep, and well drained. Erosion hazard is moderate to severe and suitability for roads is moderate to poor.

**Management Objectives for the Unit:**

Slowly turn this field into a diverse, upland forest.

Education of sustainable forestry.

**Stand 5 Memorial Grove/Future Forest  
Hayfield: 10 acres**

**Recommendations:**

Plant seedlings, starting in northern finger of field. Protect vulnerable seedlings.

Control invasive plants in coordination with neighboring stands. Your service forester is available to help with this.

Hold workshops to teach others how to plant and care for seedlings in such an environment.

Compare tree growth of the same tree species by using tree tubes, wire cages, and no protection at all.

Locate Memorial Grove in this stand.



**“Your woodlot is in fact, a historical document which faithfully records your personal philosophy. Let it tell a story of tolerance toward living things, and of skill in the greatest arts: how to use the earth without making it ugly.”**

**Aldo Leopold  
A Fierce Green Fire**

# Stand 6 The Old Field

## Field: 3 acres

### Sulzbacher Demonstration Forest Stand Map



0 62.5 125 250 375 500 Feet



## Stand 6 The Old Field

### Field: 3 acres

#### Management History:

In recent years, this field has been used for hay production and storage, but hay bales will no longer be stored in the field after 2018.

#### Stand Description:

Once used as a hayfield, this stand was allowed to go fallow. The soil of this stand is Berks channery silt loam with varying slopes from 3 to 15%. This is described as moderately deep, and well drained. Erosion hazard is moderate to severe and suitability for roads is moderate to poor.



Mike Jackson ponders the location of a future pavilion in The Old Field

#### Management Objectives for the Stand

- Build a pavilion or similar structure and have room for parking
- Manage for old field habitat
- Plant native pollinator plots

#### Recommendations

Plant native warm-season grasses, native wildflowers and pollinator friendly species. After establishment, this habitat should be maintained through prescribed fire or mowing to prevent woody succession.

Control invasives, in coordination with neighboring stands.

**Stand 7 The Triangle**  
**Small lot of mixed hardwoods: .5 acre**  
**Sulzbacher Demonstration Forest Stand Map**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 62.5 125 250 375 500 Feet



**Stand 7 The Triangle**  
**Small stand of mixed hardwoods: .5 acre**

**Management History:**

This piece of forest is a good example of an oak-hickory stand, but it is on the east side of Big Creek Road, so it is disconnected from the rest of the property.

**Stand Description:**

Trees and shrubs were removed along Big Creek Road in order to establish a “line of sight” for vehicles entering the driveway from the south.

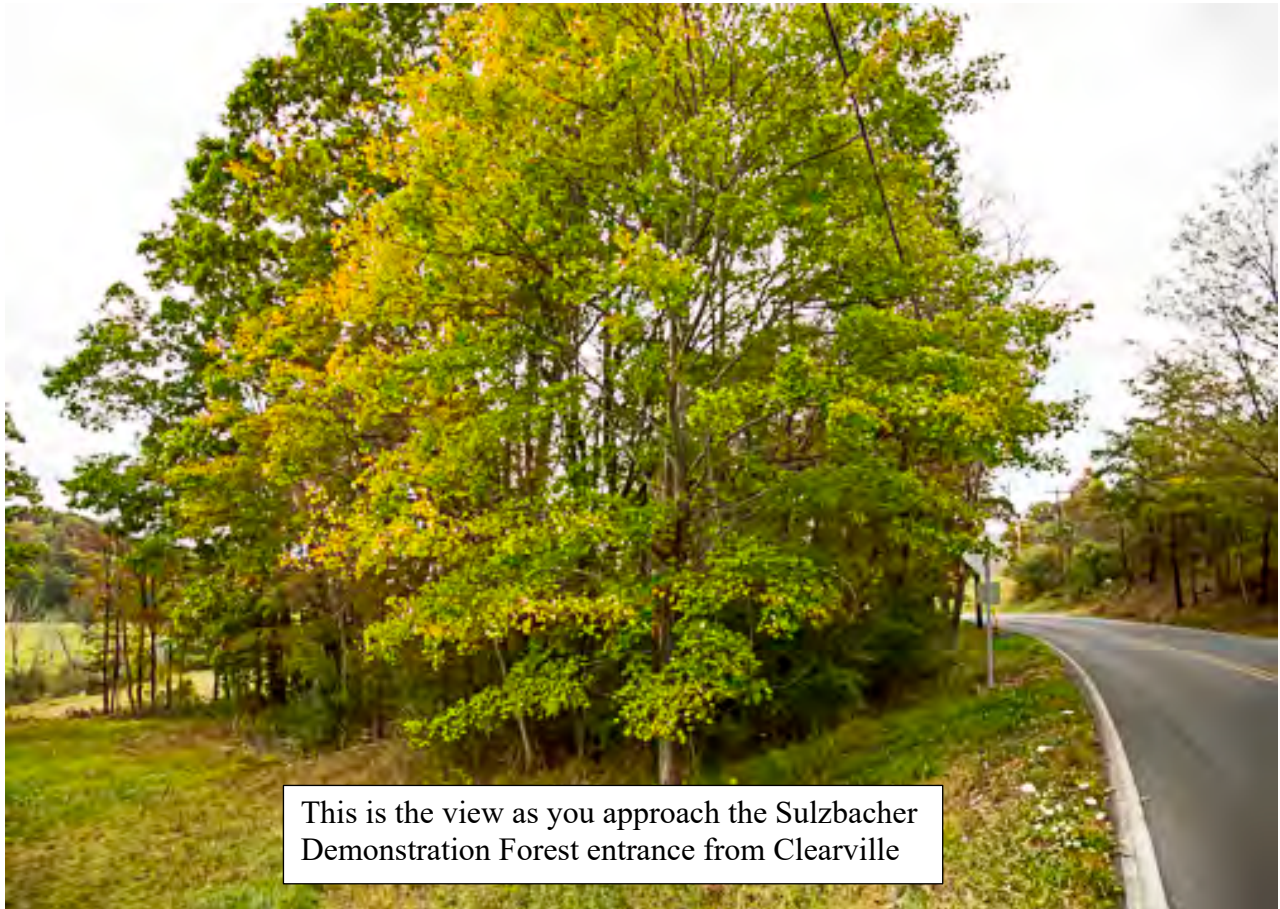
**Management Objectives for the Stand:**

Education of sustainable forestry. Manage for wildlife habitat.

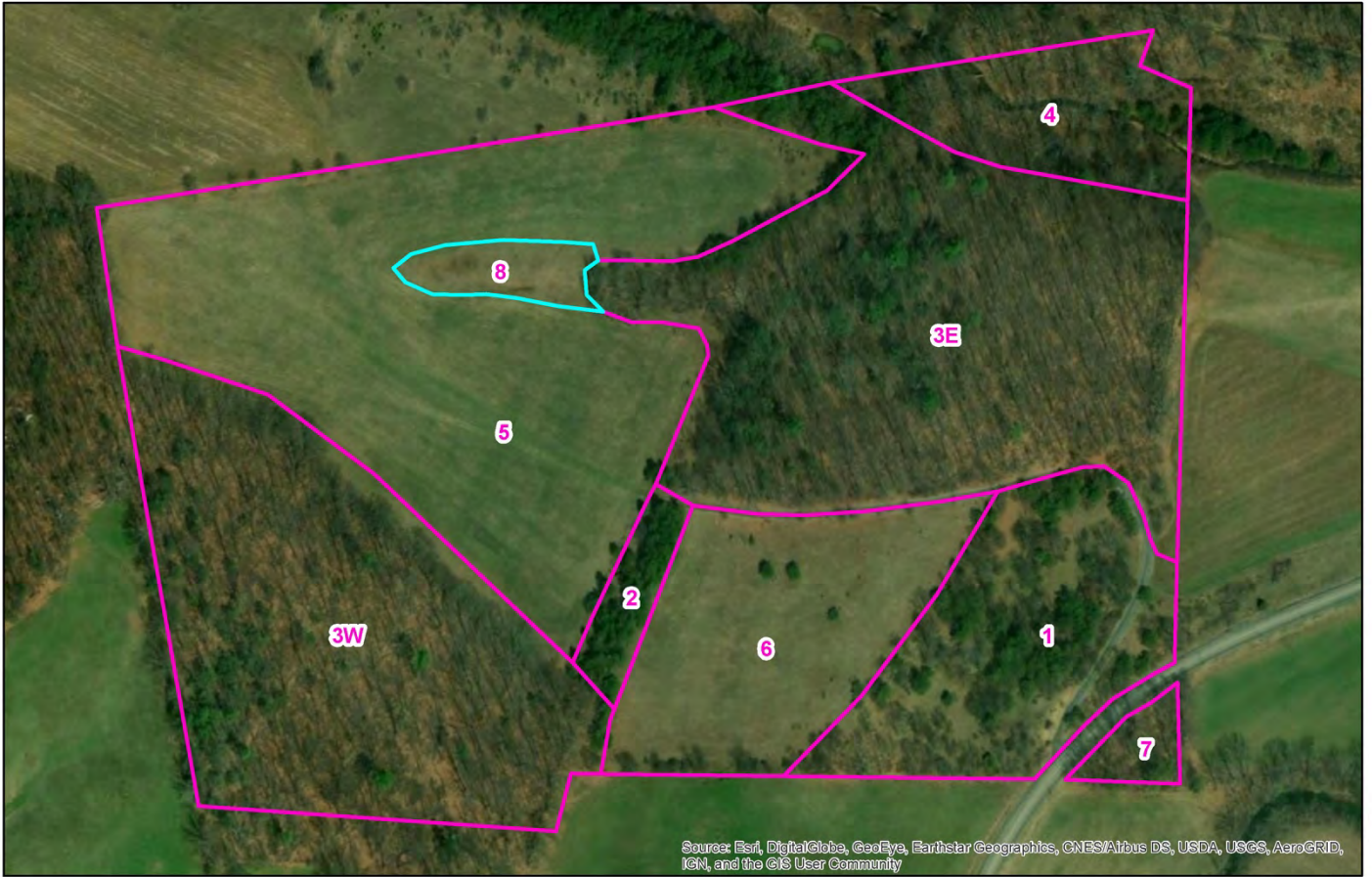
**Recommendations:**

Control invasives, in coordination with neighboring stands across the road.

We can keep thinking about how this might be used in the future.



**Stand 8 The Swale**  
**(A sloped section of Stand 5): .5 acre**  
**Sulzbacher Demonstration Forest Stand Map**



0 62.5 125 250 375 500 Feet



**Stand 8 The Swale  
(A sloped section of Stand 5): .5 acre**

**Management History:**

Most recently, part of an agricultural field that was too steep to farm

**Stand Description:**

A drainage area of wildflowers including goldenrod and common milkweed, plus invasive species of multiflora rose and autumn olive

**Management Objectives for the Stand:**

To have a forest eventually. In the meantime, encourage native milkweed and goldenrod for pollinators.

**Recommendations:**

Plant native trees and shrubs.

Control invasives, in coordination with neighboring stands.



The Swale is an area of native wildflowers including goldenrod and common milkweed



## Recommendations Schedule

<u>Year &amp; Season</u>	<u>Priority</u>	<u>Activity</u>	<u>Stand</u>	
<b>2019</b>	high	paint boundary	all	
	high	measure crop trees	3E	
	medium	control invasive plants	1	
	medium	remove stakes and cages from trees	2	
	medium	plant and protect one acre of seedlings	5	
	low	install two nest boxes (barred owl & bluebird)	3E	
<b>2020</b>	high	release, measure crop trees	3E	
	high	monitor for invasive plants	1	
	medium	control invasive plants	3W	
	medium	build brush piles	3E	
	winter	medium	maintain two nesting boxes	3E
		low	remove trash from stream	4
		medium	plant and protect one acre of seedlings	5
		low	install two nesting boxes	2

## Recommendations Schedule

<u>Year &amp; Season</u>	<u>Priority</u>	<u>Activity</u>	<u>Stand</u>	
<b>2021</b>	high	remeasure crop trees	3E	
	high	monitor for invasive plants	1, 3W	
	medium	paint boundary	all	
	medium	site prep to develop regeneration	3W	
	medium	plant and protect one acre of seedlings	5	
	medium	control invasive plants	2	
	winter	medium	maintain four nesting boxes	2 & 3E
	low	install two nesting boxes	3E	
<b>2022</b>	high	monitor for invasive plants	1, 2, 3W	
	medium	plant and protect one acre of seedlings	5	
	medium	control invasive plants	6	
	medium	release crop trees and uncommon species	1	
	winter	medium	maintain six nesting boxes	2 & 3E
		low	hold demo workshop about planting in field	5
<b>2023</b>	high	monitor for invasive plants	1, 2, 3W, 6	
	medium	control invasive plants	8	
	medium	plant and protect one acre of seedlings	5	
	medium	plant pollinator plot	6	
		low	develop hiking trail	3E and 4
	winter	low	prune red pines	2

## Recommendations Schedule

<u>Year &amp; Season</u>	<u>Priority</u>	<u>Activity</u>	<u>Stand</u>	
<b>2024</b>	medium	paint boundary	all	
	medium	monitor for invasive plants	1, 2, 3W, 6, 8	
	medium	control invasive plants	3E	
	medium	plant and protect one acre of seedlings	5	
	low	develop hiking trail	1	
	spring	low	plant willows on streambank	4
<b>2025</b>	medium	monitor for invasive plants	1, 2,3E,3W, 6, 8	
	medium	control invasive plants	4	
	spring	medium	plant and protect one acre of seedlings	5
<b>2026</b>	medium	monitor for invasive plants	1,2,3E,3W,4,6,8	
	medium	control invasive plants	7	
	spring	medium	plant and protect one acre of seedlings	5
	spring or fall	low	conduct prescribed burn	2
<b>2027</b>	medium	paint boundary	all	
	medium	monitor invasive plants	entire property	
	spring	medium	plant and protect one acre of seedlings	5
<b>2028</b>	medium	monitor invasive plants	entire property	
	spring	medium	plant and protect one acre of seedlings	5
<b>2045</b>	medium	conduct regeneration cut	3E	

002967  
No Tax

210T - Deed Guardian's, Trustee's, Executor's or Administrator's (Corporate or Individual)

# This Indenture,

MADE THE <sup>15<sup>th</sup></sup> of <sup>June</sup> in the year  
of our Lord two thousand seventeen.

BETWEEN **Kenneth Doria**, as Personal Representative of the Estate of **Louis Sulzbacher**, late of Howard County, Maryland, deceased;

**Grantor,**

and **Woodland Owners of Southern Alleghenies, Inc.**, a corporation created and existing under the laws of the Commonwealth of Pennsylvania, having its principal place of business at 311 Oakview Road, Bedford, Pennsylvania 15522;

**Grantee,**

*Whereas*, Louis Sulzbacher, died testate on the 7<sup>th</sup> day of December, 2015, a resident of Howard County, Maryland; and

*Whereas*, the Last Will and Testament of the said Louis Sulzbacher, was duly probated in the Office of the Register of Wills of Howard County, Maryland, on December 28, 2015, at Estate No. 26812, and an exemplified copy of the record was filed in the Office of the Register of Wills, Bedford County, Pennsylvania, at File No. 2017-\_\_\_\_\_; and

*Whereas*, by the terms of his Last Will and Testament the said Louis Sulzbacher, appointed Kenneth Doria, as Personal Representative of his Estate and Letters of Administration were granted to Kenneth Doria, on December 28, 2015; and

*Whereas*, at the time of his death the said Louis Sulzbacher, was seized of an undivided interest in certain real estate situate in the Township of Monroe, Bedford County, Pennsylvania; and

*Whereas*, by the terms of his Last Will and Testament the said Louis Sulzbacher, devised said real estate to Woodland Owners of the Southern Alleghenies, a non-profit charitable organization.

NOW THIS INDENTURE WITNESSETH, that the said Grantor,  
*for and in consideration of the sum of - - One and 00/100 - - - (\$1.00) - - - - Dollar  
lawful money of the United States, to him in hand paid by the said Grantee, at and  
before the sealing and delivery hereof, the receipt whereof is hereby acknowledged, has  
granted, bargained, sold, aliened, released and confirmed, and by these presents, does  
grant, bargain, sell, alien, release and confirm unto the said **Woodland Owners of  
Southern Alleghenies, Inc.**, its successors and/or assigns,*

All that certain parcel of land situate in the **Township of Monroe**, County of Bedford and Commonwealth of Pennsylvania, more fully bounded and described as follows:

**Beginning** at a post and stones (formerly a white oak), thence by lands now or formerly of Kenneth Miller, South 28 degrees 0' West 11 rods to a white oak (dead); thence by the same, South 53 degrees 30' East 10 rods to a hickory; thence by the same, South 1 degree 30' West 54 rods to a stone; thence by lands now or formerly of Frederick Needham, North 85 degrees 30' West 58 rods to a hickory; thence by the same, South 20 degrees 0' West 9 rods to a post; thence by the same, North 85 degrees 30' West 29.3 rods to a pine root; thence by the same, North 6 degrees 15' West 62.3 rods to stones; thence by a new division line and lands now or formerly of Carl B. Hanlin, et ux., North 84 degrees 40' East 95 rods to the place of **Beginning**. **Containing** 37 acres and 21 perches, more or less.

**Being** the same certain parcel of land title to which became vested in Louis Sulzbacher, by Deed of Dennis W. Hobbs and Barbara A. Hobbs, his wife, said Deed dated the 26<sup>th</sup> day of June, 1978, and recorded in the Office of the Recorder of Deeds in and for Bedford County, Pennsylvania, in Record Book 337, page 820.

**Under and Subject** to the provisions of the Clean and Green program as more fully set forth at instrument dated July 21, 2009, and recorded in Bedford County Record Book 1290, page 361.

**Under and Subject** to a right-of-way granted to New York State Natural Gas Corporation by instrument dated July 26, 1961, and recorded in Bedford County Miscellaneous Book 52, page 345.

TOGETHER with all and singular ways, waters, water-courses, rights, liberties, privileges, hereditaments and appurtenances whatsoever thereunto belonging, or in anywise appertaining and the reversions and remainders, rents, issues and profits thereof; and also, all the estate, right, title, interest, use, trust, property, possession, claim and demand whatsoever, in law, equity or otherwise howsoever, of, in, to or out of the same.

TO HAVE AND TO HOLD, the said hereditaments and premises hereby granted and released, or mentioned and intended so to be, with the appurtenances, unto the said Grantees, their heirs and assigns, to and for the only proper use and behoof of the said Grantees, their heirs or assigns, forever.

And the said Grantors covenant, promise and agree, to and with the said Grantees, their heirs and assigns, by these presents, that the said Grantors have not done, committed, or knowingly or willingly suffered to be done or committed, any act, matter or thing whatsoever whereby the premises hereby granted, or any part thereof, is, are, shall or may be impeached, charged or incumbered, in title, charge, estate, or otherwise howsoever.

WITNESS the due execution hereof the day, month and year first above written.

WITNESS:

[Signature]

Estate of Louis Sulzbacher

By [Signature] (Seal)  
Kenneth Doria, personal representative (Seal)

State of Florida

County of Duval, ss:

On this, the 1st day of June, 2017, before me, the undersigned officer, personally appeared Kenneth Doria, as Personal Representative of the Estate of Louis Sulzbacher, late of the State of Maryland, County of Washington, known to me (or satisfactorily proven) to be the person described in the foregoing instrument, and acknowledged that he executed the same in the capacities therein stated and for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

[Signature] (Seal)  
Notary Public

BK 1597PG0020




Sean McNally  
Notary Public  
State of Florida  
MY COMMISSION # FF 193838  
Expires: January 28, 2019

*CERTIFICATE OF RESIDENCE*

I do hereby certify that the precise residence and complete post office address of the within named grantee c/o Woodland Owners of Southern Alleghenies, Inc., 311 Oakview Road, Bedford, Pennsylvania 15522.

6/13/17

  
\_\_\_\_\_  
Attorney for Grantee

**Dean A. Crabtree, Esquire**  
**Koontz and Crabtree**  
**130 West Penn Street**  
**Bedford, PA 15522**

NOTE

WOSA  
address is  
WOSA  
PO Box 178  
Everett, PA  
15537

BK1597PG0021

# BEDFORD COUNTY

Faith A. Zembower  
Register of Wills and Recorder of Deeds  
200 South Juliana Street  
Bedford, PA 15522  
(814) 623-4836

Instrument Number: 2017-002967

Instrument Type: DEED

Indexed Party: SULZBACHER LOUIS

Receipt Date: 6/13/2017

Receipt Time: 11:02:54

Receipt No.: 287309

### Receipt Distribution

Fee/Tax Description	Payment Amount
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DEED	13.00
DEED - WRIT	.50
DEED - RTT STATE	.00
EVERETT AREA S D	.00
MONROE TOWNSHIP	.00
J.C.S. / A.T.J.	35.50
CO IMPROVEMENT FND	2.00
REC. IMPRVMT FUND	3.00

Check# 1041 \$54.00

Total Received..... \$54.00

Book#: 1597

Page#: 18

Paid By Remarks: DEAN CRABTREE



I hereby CERTIFY that this document is  
Recorded in the Recorder of Deeds Office  
of Bedford County, Pennsylvania

Faith A. Zembower  
Recorder of Deeds

Certification Page  
DO NOT DETACH

This page is now part of this legal document.

NOTE: Some information subject to change during the verification process and may not be reflected on this page.

BK1597 Pg 28







A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Bedford County, Pennsylvania



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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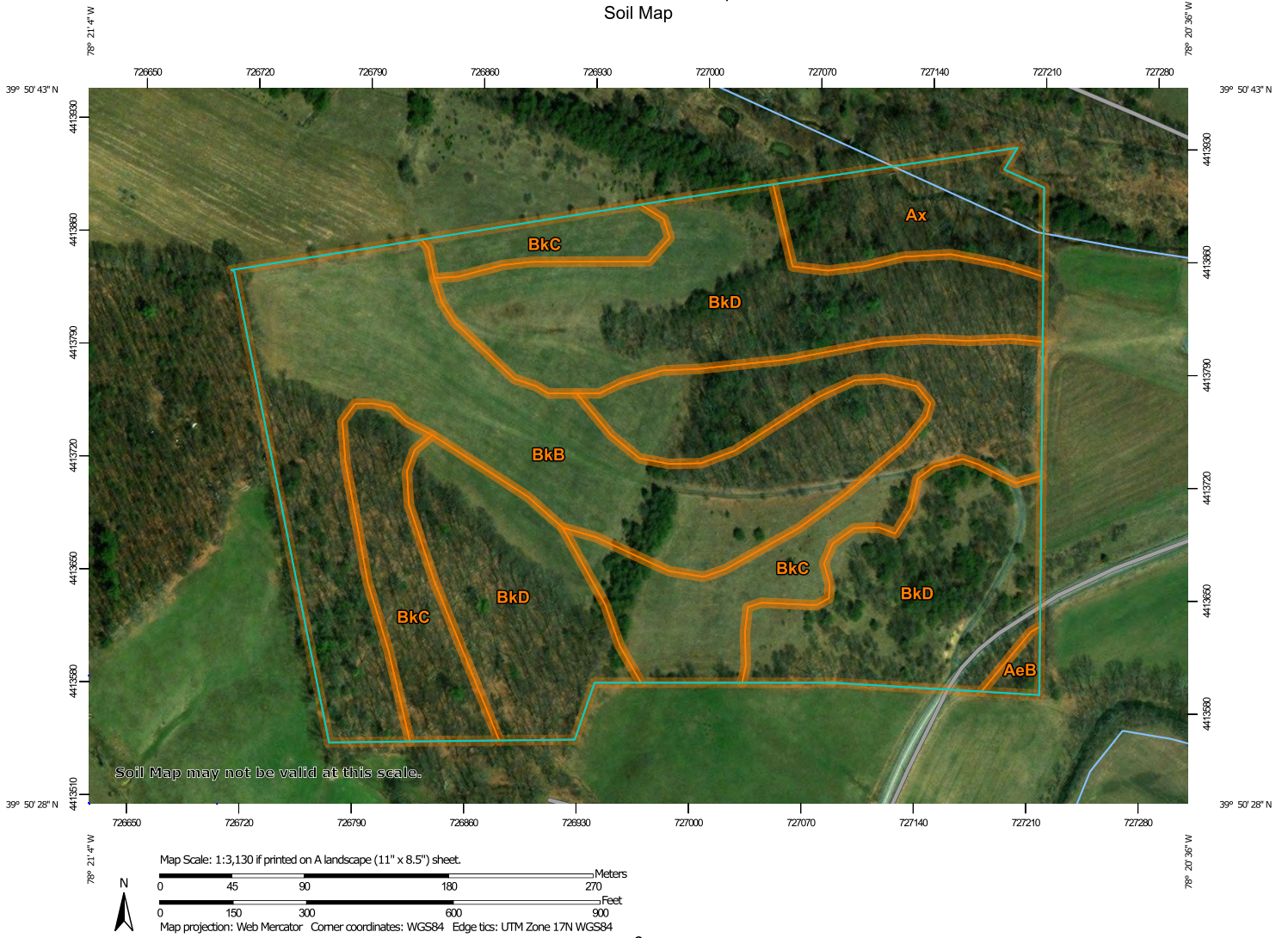
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# Soil Map

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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report  
Soil Map



Custom Soil Resource Report

**MAP LEGEND**

<b>Area of Interest (AOI)</b>	 Area of Interest (AOI)	 Spoil Area
<b>Soils</b>	 Soil Map Unit Polygons	 Stony Spot
	 Soil Map Unit Lines	 Very Stony Spot
	 Soil Map Unit Points	 Wet Spot
<b>Special Point Features</b>	 Blowout	 Other
	 Borrow Pit	 Special Line Features
	 Clay Spot	<b>Water Features</b>
	 Closed Depression	 Streams and Canals
	 Gravel Pit	<b>Transportation</b>
	 Gravelly Spot	 Rails
	 Landfill	 Interstate Highways
	 Lava Flow	 US Routes
	 Marsh or swamp	 Major Roads
	 Mine or Quarry	 Local Roads
	 Miscellaneous Water	<b>Background</b>
	 Perennial Water	 Aerial Photography
	 Rock Outcrop	
	 Saline Spot	
	 Sandy Spot	
	 Severely Eroded Spot	
	 Sinkhole	
	 Slide or Slip	
	 Sodic Spot	

**MAP INFORMATION**

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bedford County, Pennsylvania  
 Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 23, 2010—Mar 10, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AeB	Allegheny loam, 3 to 8 percent slopes	0.2	0.6%
Ax	Atkins-Ernest complex, 0 to 8 percent slopes	2.4	6.5%
BkB	Berks channery silt loam, 3 to 8 percent slopes	10.4	28.3%
BkC	Berks channery silt loam, 8 to 15 percent slopes	9.4	25.5%
BkD	Berks channery silt loam, 15 to 25 percent slopes	14.4	39.1%
<b>Totals for Area of Interest</b>		<b>36.8</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

## Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Bedford County, Pennsylvania

### AeB—Allegheny loam, 3 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 15qt  
*Elevation:* 500 to 3,000 feet  
*Mean annual precipitation:* 36 to 55 inches  
*Mean annual air temperature:* 46 to 59 degrees F  
*Frost-free period:* 120 to 214 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Allegheny and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Allegheny

##### Setting

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Old fine-loamy alluvium

##### Typical profile

*H1 - 0 to 8 inches:* loam  
*H2 - 8 to 42 inches:* silt loam  
*H3 - 42 to 65 inches:* gravelly loam

##### Properties and qualities

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* High (about 9.1 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

#### Minor Components

##### Monongahela

*Percent of map unit:* 8 percent  
*Hydric soil rating:* No

##### Tyler

*Percent of map unit:* 3 percent

## Custom Soil Resource Report

*Hydric soil rating:* No

### **Blairton**

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

### **Philo**

*Percent of map unit:* 1 percent

*Hydric soil rating:* No

### **Hustontown**

*Percent of map unit:* 1 percent

*Hydric soil rating:* No

## **Ax—Atkins-Ernest complex, 0 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 15r1

*Elevation:* 480 to 3,000 feet

*Mean annual precipitation:* 30 to 65 inches

*Mean annual air temperature:* 46 to 59 degrees F

*Frost-free period:* 120 to 214 days

*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Atkins and similar soils:* 45 percent

*Ernest and similar soils:* 35 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Atkins**

#### **Setting**

*Landform:* Flood plains

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Parent material:* Acid alluvium derived from sedimentary rock

#### **Typical profile**

*H1 - 0 to 6 inches:* silt loam

*H2 - 6 to 40 inches:* silty clay loam

*H3 - 40 to 60 inches:* gravelly silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* 60 to 99 inches to lithic bedrock

*Natural drainage class:* Poorly drained

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high  
(0.06 to 2.00 in/hr)

*Depth to water table:* About 0 to 12 inches

*Frequency of flooding:* Frequent

## Custom Soil Resource Report

*Frequency of ponding:* None

*Available water storage in profile:* High (about 9.1 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3w

*Hydrologic Soil Group:* B/D

*Hydric soil rating:* Yes

### **Description of Ernest**

#### **Setting**

*Landform:* Hillslopes

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Head slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Parent material:* Local fine-silty colluvium derived from sedimentary rock

#### **Typical profile**

*H1 - 0 to 10 inches:* silt loam

*H2 - 10 to 31 inches:* silty clay loam

*H3 - 31 to 63 inches:* channery silty clay loam

#### **Properties and qualities**

*Slope:* 3 to 8 percent

*Depth to restrictive feature:* 18 to 36 inches to fragipan

*Natural drainage class:* Moderately well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)

*Depth to water table:* About 18 to 36 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 4.6 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### **Minor Components**

#### **Tyler**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### **Philo**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## **BkB—Berks channery silt loam, 3 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2sgb5

*Elevation:* 320 to 3,570 feet

*Mean annual precipitation:* 37 to 50 inches

*Mean annual air temperature:* 47 to 56 degrees F

*Frost-free period:* 148 to 192 days

*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Berks and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Berks**

#### **Setting**

*Landform:* Ridges, mountain slopes

*Landform position (two-dimensional):* Summit, shoulder, backslope

*Landform position (three-dimensional):* Upper third of mountainflank, side slope

*Down-slope shape:* Convex

*Across-slope shape:* Convex, linear

*Parent material:* Residuum weathered from shale and siltstone and/or fine grained sandstone

#### **Typical profile**

*Ap - 0 to 7 inches:* channery silt loam

*Bw1 - 7 to 15 inches:* channery silt loam

*Bw2 - 15 to 28 inches:* very channery silt loam

*C - 28 to 36 inches:* extremely channery silt loam

*R - 36 to 46 inches:* bedrock

#### **Properties and qualities**

*Slope:* 3 to 8 percent

*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock

*Natural drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 1 percent

*Gypsum, maximum in profile:* 1 percent

*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 1.0

*Available water storage in profile:* Very low (about 2.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* Dry Uplands (DU2)  
*Hydric soil rating:* No

**Minor Components**

**Weikert**

*Percent of map unit:* 10 percent  
*Landform:* Ridges  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Other vegetative classification:* Droughty Shales (SD2)  
*Hydric soil rating:* No

**Brinkerton**

*Percent of map unit:* 5 percent  
*Landform:* Ridges  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Linear, concave  
*Hydric soil rating:* Yes

**BkC—Berks channery silt loam, 8 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2sgcg  
*Elevation:* 320 to 3,570 feet  
*Mean annual precipitation:* 37 to 50 inches  
*Mean annual air temperature:* 47 to 56 degrees F  
*Frost-free period:* 148 to 192 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Berks and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Berks**

**Setting**

*Landform:* Mountain slopes, ridges  
*Landform position (two-dimensional):* Backslope, summit, shoulder  
*Landform position (three-dimensional):* Upper third of mountainflank, side slope  
*Down-slope shape:* Convex

## Custom Soil Resource Report

*Across-slope shape:* Convex, linear

*Parent material:* Residuum weathered from shale and siltstone and/or fine grained sandstone

### Typical profile

*Ap - 0 to 8 inches:* channery silt loam

*Bw1 - 8 to 14 inches:* very channery silt loam

*Bw2 - 14 to 26 inches:* very channery silt loam

*C - 26 to 36 inches:* extremely channery silt loam

*R - 36 to 46 inches:* bedrock

### Properties and qualities

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock

*Natural drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 1 percent

*Gypsum, maximum in profile:* 1 percent

*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 1.0

*Available water storage in profile:* Very low (about 3.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Other vegetative classification:* Dry Uplands (DU2), Dry Uplands (DU3)

*Hydric soil rating:* No

### Minor Components

#### Weikert

*Percent of map unit:* 10 percent

*Landform:* Ridges

*Landform position (two-dimensional):* Shoulder, backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Other vegetative classification:* Droughty Shales (SD2)

*Hydric soil rating:* No

#### Brinkerton

*Percent of map unit:* 5 percent

*Landform:* Ridges

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave, linear

*Across-slope shape:* Linear, concave

*Hydric soil rating:* Yes



## **BkD—Berks channery silt loam, 15 to 25 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2sgb7  
*Elevation:* 320 to 3,630 feet  
*Mean annual precipitation:* 37 to 50 inches  
*Mean annual air temperature:* 47 to 56 degrees F  
*Frost-free period:* 148 to 192 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Berks and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Berks**

#### **Setting**

*Landform:* Ridges, mountain slopes  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Upper third of mountainflank, side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex, linear  
*Parent material:* Residuum weathered from shale and siltstone and/or fine grained sandstone

#### **Typical profile**

*Ap - 0 to 7 inches:* channery silt loam  
*Bw1 - 7 to 14 inches:* very channery silt loam  
*Bw2 - 14 to 21 inches:* extremely channery silt loam  
*C - 21 to 36 inches:* extremely channery silt loam  
*R - 36 to 46 inches:* bedrock

#### **Properties and qualities**

*Slope:* 15 to 25 percent  
*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock  
*Natural drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 1 percent  
*Gypsum, maximum in profile:* 1 percent  
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 1.0  
*Available water storage in profile:* Very low (about 2.9 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* B

*Other vegetative classification:* Dry Uplands (DU2)

*Hydric soil rating:* No

### Minor Components

#### Weikert

*Percent of map unit:* 10 percent

*Landform:* Ridges

*Landform position (two-dimensional):* Shoulder, backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Other vegetative classification:* Droughty Shales (SD2)

*Hydric soil rating:* No

#### Brinkerton

*Percent of map unit:* 5 percent

*Landform:* Ridges

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave, linear

*Across-slope shape:* Linear, concave

*Hydric soil rating:* Yes

## Appendix 4 PNDI

### 1. PROJECT INFORMATION

Project Name: **Sulzbacher Demonstration Forest Stewardship Plan**

Date of Review: **10/17/2018 10:22:21 AM**

Project Category: **Forest Stewardship Plan**

Project Area: **40.37 acres**

County(s): **Bedford**

Township/Municipality(s): **MONROE**

ZIP Code: **15535**

Quadrangle Name(s): **AMARANTH**

Watersheds HUC 8: **Cacapon-Town**

Watersheds HUC 12: **West Branch Sideling Hill Creek**

Decimal Degrees: **39.843322, -78.347149**

Degrees Minutes Seconds: **39° 50' 35.9597" N, 78° 20' 49.7348" W**

This is a draft receipt for information only. It has not been submitted to jurisdictional agencies for review.

### 2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

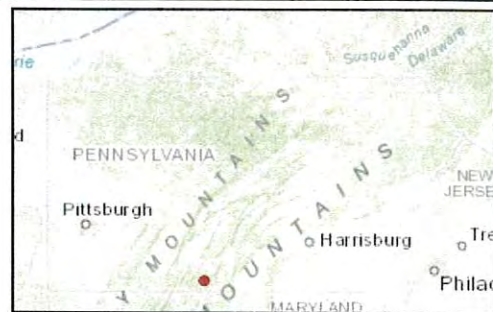
As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

## Sulzbacher Demonstration Forest Stewardship Plan



- Project Boundary
- Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community  
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community



### Sulzbacher Demonstration Forest Stewardship Plan



- Project Boundary
- Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community  
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,



### 3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

#### PA Game Commission

##### RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

#### PA Department of Conservation and Natural Resources

##### RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

#### PA Fish and Boat Commission

##### RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

#### U.S. Fish and Wildlife Service

##### RESPONSE:

No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

### 4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <https://conservationexplorer.dcnr.pa.gov/content/resources>.

## 5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page ([www.naturalheritage.state.pa.us](http://www.naturalheritage.state.pa.us)). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

DRAFT  
NOT FOR ACTUAL USE

## Invasive Plants in Pennsylvania

# Tree of Heaven

*Ailanthus altissima*



Photo: Jessica Sprajcar, DCNR

### Background:

Also known as Chinese sumac, stinking sumac and tree of hell, this tree is native to China. It was brought to Philadelphia in 1784 by an amateur gardener. By 1840 it was commonly available from nurseries. *Ailanthus* is the subject of the well known book, "A Tree Grows in Brooklyn," by Betty Smith.

### Range:

Tree of heaven is very common in the northeast and Midwest, through parts of the southeast, southwest and west coast.



### Description:

This rapidly growing tree can reach a height of 80 feet, with up to a six-foot diameter trunk. Leaves are pinnately compound with 10 to 41 leaflets with smooth leaf margins. When crushed, the leaves and other plant parts have a rancid smell like cat urine or burnt peanut butter.



Photo: Chuck Barger, U. Of Georgia, [www.invasive.org](http://www.invasive.org)

Flowering occurs in early summer, when large clusters of yellowish flowers develop above the leaves. Fruit produced on the female trees are tan to reddish, single winged, papery seeds, called samaras. They may remain on the tree throughout late fall.

### Habitat:

*Ailanthus* is extremely tolerant of poor soils and will even grow through cracks in pavement. Trees are not shade tolerant. They will quickly colonize forest edges, fields and roadsides.

### Biology and Spread:

Tree of heaven spreads by hundreds of thousands of seeds per tree and through vegetative sprouting. A cut or injured *ailanthus* tree may send up dozens of root suckers and resprouts, creating large clonal colonies.

### Ecological Threat:

This tree produces chemicals in its roots that prevent the establishment of other plant species nearby. Its fast growth limits habitat for other species. Its root system may be extensive and has been known to cause damage to sewer lines and building foundations.



Photo: Leslie Mehrhoff, U. of Connecticut, [www.invasive.org](http://www.invasive.org)



## Look-A-Likes:

The native trees most likely to be confused with ailanthus are the sumacs (*Rhus* spp.). One way to tell them apart is the small glands on the underside of ailanthus leaves (see photo below). Staghorn sumac leaves do not have this gland, but have toothed leaf margins, while ailanthus' leaf edges are smooth. Sumac fruits are fuzzy and red.



Photo: James Miller, USDA Forest Service, [www.invasive.org](http://www.invasive.org)

Young ailanthus may also be confused with black walnut (*Juglans nigra*) because of the compound leaves and shield-shaped leaf scars. However, the flowers, seeds and smell of ailanthus should give it away.



Photo: John Cardina, The Ohio State University, [www.forestryimages.org](http://www.forestryimages.org)

## How to Control this Species:

Elimination of this species is difficult and time consuming, due to its abundant seed, high germination rate, and frequent root sprouts.

### Manual and Mechanical

While young seedlings could be pulled or dug up, the chance of getting all root fragments is difficult and can lead to re-sprouts. Seedlings can be confused with root suckers, which would be nearly impossible to remove effectively by hand.

Cutting is not recommended, as the trees will send up large numbers of root sprouts and suckers, creating a bigger problem than before.

### Chemical

The most effective way to treat ailanthus is with herbicides. Foliar application of triclopyr or glyphosate, mixed with water and a non-ionic surfactant, is effective on smaller trees when applied between June and late August.

For larger trees, application of triclopyr or glyphosate with the basal bark, hack and squirt, injection or cut stump method should work effectively. Application rates may vary – see the references below for more specific information.

Follow-up monitoring and treatment are very important. Regardless of the control method used, treated areas should be checked one or more times a year.

## References:

*Plant Conservation Alliance's Least Wanted List:*

<http://www.nps.gov/plants/alien/fact/aial1.htm>

*Center for Invasive Species and Ecosystem Health:*

<http://www.invasive.org/browse/subinfo.cfm?sub=3003>

*Virginia Cooperative Extension:*

[http://pubs.ext.vt.edu/420/420-322/420-322\\_pdf.pdf](http://pubs.ext.vt.edu/420/420-322/420-322_pdf.pdf)

## For More Information:

*Penn State University Vegetation Management Publications:*

<http://horticulture.psu.edu/research/labs/vegetative-management/publications>

# Invasive Plants in Pennsylvania

## Russian and Autumn Olive

*Elaeagnus angustifolia* and *E. umbellata*



James H. Miller, USDA Forest Service  
[www.forestryimages.org](http://www.forestryimages.org)

### Background:

Both Russian and autumn olive were introduced into the United States in the 1800s. Prized for their silvery foliage, hardiness and plentiful berries, these shrubs were planted as ornamentals, for erosion control and wind-breaks, and in wildlife food plots.

### Range:

Russian olive, native to Eurasia, can be found scattered throughout the eastern U.S. and is a problem further west. Native to east Asia, autumn olive has naturalized extensively throughout the eastern half of the United States. Autumn olive is the more common of the two species in Pennsylvania.



### Description:

Russian and autumn olive are large, multi-stemmed shrubs that can reach upwards of 20 feet in height. Their most distinctive characteristic is a dusting of silvery scales covering young stems, leaves, flowers and fruit. Small yellow or white flowers become edible fruits in late summer and fall, which are red in autumn olive and orange in Russian olive.



Leslie J. Mehrhoff, U. of Connecticut  
[www.forestryimages.org](http://www.forestryimages.org)

### Habitat:

Both species are found along streams, fields, roadsides, sparse woodlands, disturbed sites and open areas. Russian olive does particularly well in sandy floodplains. Neither species does well in densely forested areas.

### Biology and Spread:

Both species are spread by birds and other wildlife that feed on the fruit. These shrubs grow rapidly and are able to produce fruit as early as three years of age.

### Ecological Threat:

These shrubs are highly competitive against native species, shading out shorter plants. Their nitrogen-fixing capabilities may adversely affect the nitrogen cycle of native communities that depend on infertile soils. Although Russian and autumn olive provide a plentiful source of berries for birds, their fruits are actually quite low in nutrients. Ecologists have found that bird species richness is higher in riparian areas dominated by native vegetation.



Leslie J. Mehrhoff, U. of Connecticut  
[www.forestryimages.org](http://www.forestryimages.org)

## How to Control this Species:

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### Physical

Young seedlings can be pulled by hand when the soil is moist enough to ensure complete removal of the root system.

Small saplings can be pulled sufficiently with a weed wrench. Larger individuals can be cut at ground level or girdled.

Cutting is an initial control measure and should be followed by herbicidal treatment to prevent re-sprouting.

### Look-A-Likes:

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Russian and autumn olive may be confused with invasive bush-honeysuckles (*Lonicera* spp.) or native deciduous hollies (*Ilex* spp.)



The Dow Gardens Archive  
[www.forestryimages.org](http://www.forestryimages.org)

### Chemical

Use a systemic herbicide, such as glyphosate or triclopyr.

Herbicide should be applied immediately to cut stumps to prevent regeneration. It can also be applied to girdle wounds or directly to the lower bark using the basal bark method.

Large thickets, where risk to non-target species is minimal, can be controlled by the foliar spray method.

## Native Alternatives:

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Many native shrubs are available for re-vegetation projects. Native plants are the best option for wildlife food plots.



Jerry A. Payne, USDA ARS  
[www.forestryimages.org](http://www.forestryimages.org)



The Dow Gardens Archive  
[www.forestryimages.org](http://www.forestryimages.org)

## References:

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*Global Invasive Species Database*: <http://www.issg.org/database/species/ecology.asp?fr=1&si=262>

*Plant Conservation Alliance's Alien Plant Working Group*:  
<http://www.nps.gov/plants/alien/fact/elan1.htm>

## For More Information:

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*DCNR Invasive Species Site*: <http://www.dcnr.state.pa.us/conservationscience/invasivespecies/index.htm>

*DCNR Invasive Exotic Plant Tutorial for Natural Lands Managers*:  
[http://www.dcnr.state.pa.us/forestry/invasivetutorial/russian\\_autumn\\_olive.htm](http://www.dcnr.state.pa.us/forestry/invasivetutorial/russian_autumn_olive.htm)

# Invasive Plants in Pennsylvania

## Japanese and European Barberry

*Berberis thunbergii* and *B. vulgaris*



Leslie J. Mehrhoff, U. of Connecticut  
[www.forestryimages.org](http://www.forestryimages.org)

### Background:

Japanese barberry was introduced into the United States as an ornamental plant in 1875. It was promoted as a substitute for European barberry, the latter which was found to be a host for the black stem grain rust. European barberry was originally planted by settlers for hedge-rows, dye and jam-making. Japanese barberry is still widely planted for landscaping and hedges.

### Range:

Japanese and European barberry, native to Japan and Europe respectively, can now be found throughout the northern half of the U.S., particularly the Northeast.



### Description:

Both species are dense, spiny shrubs with oval leaves, which are serrate in European barberry and often red-tinged in Japanese barberry. The spines of European barberry are three-pronged. In mid-spring to early summer, drooping clusters of pale yellow flowers develop, turning into bright red berries.



Leslie J. Mehrhoff, U. of Connecticut  
[www.forestryimages.org](http://www.forestryimages.org)

### Habitat:

Barberry is shade tolerant, drought resistant and adaptable to a variety of wooded habitats, wetlands and disturbed areas. Japanese barberry is a more pressing problem than its European relative.

### Biology and Spread:

Barberry produces a large number of seeds that have a high germination rate. Seeds are dispersed by birds and small mammals, which feed on the berries. Barberry can spread vegetatively by rooting from branches touching the ground.

### Ecological Threat:

Barberry forms dense stands in natural habitats including forests, open woodlands, wetlands and meadows. Once established, it displaces native plants and reduces wildlife habitat and forage, increasing pressure on natives by white-tailed deer. It has been found to alter the pH and biological activity of soil. Barberry is also a human health hazard, not only because it has sharp spines, but also because it acts as a nursery for deer ticks, which can transmit Lyme disease.



Leslie J. Mehrhoff, U. of Connecticut  
[www.forestryimages.org](http://www.forestryimages.org)

## How to Control this Species:

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### Physical

Barberry is easy to identify in spring because it is one of the first shrubs to leaf out.

Using thick gloves, small plants can be pulled by hand, while larger plants should be dug up. Be sure to remove the entire root system and to bag and dispose of any plant material, including fallen fruits.

Mowing or cutting is not advisable except to make removal easier.

This plant is sensitive to fire; prescribed burns and weed torches are good options.

### Look-A-Likes:

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American barberry (*Berberis canadensis*), an uncommon plant of open hillside slopes thought to be extirpated from Pennsylvania, could be mistaken for an invasive barberry.



Will Cook, Duke University  
[www.duke.edu](http://www.duke.edu)

### Chemical

Systemic herbicides, such as glyphosate and triclopyr, are effective in managing barberry.

Herbicide can be applied as a basal bark or cut stump application. Late summer during fruiting may be the best time to apply herbicide, but early spring applications may avoid non-target impacts.

Large thickets of barberry can be controlled with foliar spray applications. Triclopyr only targets broadleaf species, but glyphosate is non-selective.

## Native Alternatives:

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Many attractive native shrubs are available for purchase:



Julie Makin

[www.wildflower.org](http://www.wildflower.org)



Sally & Andy Wasowski

[www.wildflower.org](http://www.wildflower.org)



James H. Miller & Ted Bodner, SWSS

[www.forestryimages.org](http://www.forestryimages.org)

## References:

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Global Invasive Species Database: <http://www.issg.org/database/species/ecology.asp?si=592&fr=1&sts=>

Wisconsin Department of Natural Resources:  
<http://dnr.wi.gov/invasives/fact/barberry.htm>

## For More Information:

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DCNR Invasive Species Site: <http://www.dcnr.state.pa.us/conservationscience/invasivespecies/index.htm>

DCNR Invasive Exotic Plant Tutorial for Natural Lands Managers:  
[http://www.dcnr.state.pa.us/forestry/invasivetutorial/japanese\\_euro\\_barberry.htm](http://www.dcnr.state.pa.us/forestry/invasivetutorial/japanese_euro_barberry.htm)

# Invasive Plants in Pennsylvania

## Japanese Honeysuckle

*Lonicera japonica* Thunb.



Photo: Chuck Barger, U. of Georgia, [www.invasive.org](http://www.invasive.org)

### Description:

This evergreen to semi-evergreen woody vine can grow up to 80 feet in length. It has opposite leaves that are typically oval in shape, although the leaves close to the ground may be lobed (see photo below). Fragrant white to yellow flowers appear from the leaf axils between April and July. Small, shiny black fruits develop in the fall.



Photo: Charles Bryson, USDA, [www.invasive.org](http://www.invasive.org)

### Background:

Also known as Chinese honeysuckle, this Asian plant was first introduced into Long Island, NY in 1806. It has been planted as an ornamental, for wildlife habitat and for erosion control, especially on farms.

### Range:

Japanese honeysuckle is very common on the eastern third of the U.S. from Southern Maine to Florida. Isolated patches can also be found from Texas west to California, in Washington state and Hawaii.



Photo: James Miller & Ted Bodner, Southern Weed Science Society, [www.invasive.org](http://www.invasive.org)

### Habitat:

This vine can be found in a variety of habitats including forests, wetlands and disturbed habitats like farm fence rows, roadsides and rights-of-way.

### Biology and Spread:

This vine spreads both vegetatively through runners and roots as well as by seeds within the black fruits. Birds and other wildlife readily consume the fruits.

### Ecological Threat:

The vines can girdle and kill small saplings and form dense mats in tree canopies, shading native vegetation below.



Image courtesy of [EDDMapS](http://EDDMapS)

## How to Control this Species:

---

### Manual and Mechanical

For small patches, repeated pulling of entire vine and root system may be effective, especially when the soil is moist. Mowing is NOT recommended, as it stimulates growth and leads to denser mats of vegetation.

Prescribed burning will remove the above-ground growth but will not kill the rhizomes, leading to re-sprouts. Grazing by goats has been used in the past but has a similar effect as mowing does, increasing the chance of root sprouts.

### Chemical

There are several systemic herbicides that will work on Japanese honeysuckle including glyphosate and triclopyr. Apply a two percent glyphosate or triclopyr and water mix to the vine's leaves from spring through fall (fall is best). A 25 percent solution of herbicide and water can be applied using the cut stump method.

Regardless of the chosen control method, repeated monitoring and sprout removal may be necessary.

## References:

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*Center for Invasive Species and Ecosystem Health:*

<http://www.invasive.org/browse/subinfo.cfm?sub=3039>

*Invasive Exotic Plant Tutorial for Natural Lands Managers:*

[http://www.dcnr.state.pa.us/forestry/invasivetutorial/Japanese\\_honeysuckle.htm](http://www.dcnr.state.pa.us/forestry/invasivetutorial/Japanese_honeysuckle.htm)

*USDA Forest Service Weed of the Week:*

[http://www.na.fs.fed.us/fhp/invasive\\_plants/weeds/japanese\\_honeysuckle.pdf](http://www.na.fs.fed.us/fhp/invasive_plants/weeds/japanese_honeysuckle.pdf)

## For More Information:

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*Plant Invaders of Mid-Atlantic Natural Areas, National Park Service:*

<http://www.nps.gov/plants/alien/pubs/midatlantic/midatlantic.pdf>

*Invasive Plants Field and Reference Guide, U.S. Forest Service:*

[http://na.fs.fed.us/pubs/misc/ip/ip\\_field\\_guide.pdf](http://na.fs.fed.us/pubs/misc/ip/ip_field_guide.pdf)

## Native Alternatives:

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Many native vines can be used in place of Japanese honeysuckle:

**Virginia creeper**  
(*Parthenocissus quinquefolia*)



Photo: Theodore Webster, USDA,  
[www.forestryimages.org](http://www.forestryimages.org)

**Cross vine**  
(*Bignonia capreolata*)



Photo: Rebekah Wallace, U. of Georgia,  
[www.forestryimages.org](http://www.forestryimages.org)

**Trumpet creeper**  
(*Campsis radicans*)



Photo: Charles Bryson, USDA,  
[www.forestryimages.org](http://www.forestryimages.org)

# Invasive Plants in Pennsylvania

## Japanese Stilt Grass

*Microstegium vimineum*



James H. Miller, USDA Forest Service  
[www.forestryimages.org](http://www.forestryimages.org)

### Background:

Japanese stilt grass was first documented in Tennessee in 1919. Its introduction into the United States was accidental, likely a result of its use as a packing material for porcelain.

### Range:

Native to Asia, this successful invasive has colonized most of the eastern United States, as far west as Texas.

### Description:

Japanese stilt grass is an annual that typically grows one to three feet in height. Despite its branching, sprawling, mat-like manner, it resembles a small, delicate bamboo. Leaves are narrow and lance-shaped with a distinctive, pale, silvery stripe of reflective hairs on the upper surface. Flower spikes appear in September.



James H. Miller & Ted Bodner, SWSS  
[www.forestryimages.org](http://www.forestryimages.org)

### Habitat:

Japanese stilt grass occurs in a variety of habitats, including moist ground of open woods, floodplain forests, wetlands, uplands, fields, thickets, roadsides, and ditches. It readily invades areas subject to regular disturbance. Stilt grass appears to prefer moist, acidic to neutral soils that are high in nitrogen.

### Biology and Spread:

Stilt grass reproduces exclusively by seed. One plant may produce 100 to 1,000 seeds that typically fall close to the parent plant. Seeds may be carried by water during heavy rains or move about in contaminated hay, soil or mud stuck in footwear. Stilt grass seeds remain viable in the soil for five or more years and germinate readily.

### Ecological Threat:

When Japanese stilt grass invades a site, it can quickly crowd out native plant species. Invasions can also change soil nutrient cycling processes, inhibit tree survival and growth, and reduce light availability. After it dies back in late fall, it forms a thick layer of smothering thatch that is slow to decompose. Because stilt grass is relatively unpalatable, it may encourage heavier deer browsing on native plant species.



Chris Evans, River to River CWMA  
[www.forestryimages.org](http://www.forestryimages.org)



## How to Control this Species:

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### Physical

Japanese stilt grass is quite shallow-rooted and can be easily pulled by hand, especially when the soil is moist. Pulling is easiest in late summer when plants are mature. Stilt grass can also be mowed. Follow up monitoring and treatment will be necessary for years.

Hand pulling and mowing should be done in late summer when the plants are just about to flower. Performing these activities earlier in the summer months encourages flowering and early seed dispersal.

### Chemical

For extensive infestations, a systemic herbicide can be used quite effectively. Using an herbicide leaves the plants and soil in place, minimizing the likelihood of additional germination of stilt grass seed.

Grass-specific herbicides, such as quizalofop, limit damage to native plants.

Be careful when treating stilt grass in wetland sites. Make sure you use an herbicide suitable for wetlands.



Chris Evans, River to River CWMA  
[www.forestryimages.org](http://www.forestryimages.org)

## Look-A-Likes:

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The native perennial Virginia cutgrass (*Leersia virginica*) is quite similar. Japanese stilt grass may also be confused with some smartweeds (*Persicaria* sp.).



Leslie Mehrhoff, U. of Connecticut  
[www.discoverlife.org](http://www.discoverlife.org)

## References:

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Plant Conservation Alliance's Alien Plant Working Group:  
<http://www.nps.gov/plants/alien/fact/miv11.htm>

Purdue University Cooperative Extension Service: <http://www.btny.purdue.edu/weedscience/2011/Microstegium-01.pdf>

Wisconsin Department of Natural Resources:  
<http://dnr.wi.gov/invasives/fact/japanstgrass.htm>

## For More Information:

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DCNR Invasive Species Site: <http://www.dcnr.state.pa.us/conservationscience/invasivespecies/index.htm>

DCNR Invasive Exotic Plant Tutorial for Natural Lands Managers:  
[http://www.dcnr.state.pa.us/forestry/invasivetutorial/Japanese\\_stiltgrass.htm](http://www.dcnr.state.pa.us/forestry/invasivetutorial/Japanese_stiltgrass.htm)

# Invasive Plants in Pennsylvania

## Multiflora Rose

*Rosa multiflora*



Leslie J. Mehrhoff, U. of Connecticut  
[www.forestryimages.org](http://www.forestryimages.org)

### Background:

Multiflora rose was introduced into the United States as ornamental rootstock from Japan in 1866. Beginning in the 1930s, the U.S. Soil Conservation Service promoted it for use in erosion control and livestock fencing. It was also encouraged in wildlife plantings and as a crash barrier along highways. Recognition of its tenacious and unstoppable growth habit came too late, and it is now considered a noxious weed in many states.

### Range:

Native to Asia, multiflora rose now occurs throughout most of the United States, especially the eastern half.



### Description:

Multiflora rose is a dense, thorny shrub, reaching up to 15 feet in height, with arching canes (stems) that are capable of rambling up trees. Its leaves are pinnately compound, divided into seven to nine leaflets, and finely serrate. Clusters of fragrant white to pink flowers appear in May or June. Small bright red hips (fruit) develop during the summer and remain on the plant through winter.



James H. Miller, USDA Forest Service  
[www.forestryimages.org](http://www.forestryimages.org)

### Habitat:

This invasive shrub has a wide tolerance for various soil, moisture and light conditions. It can be found in dense woods, along stream banks and roadsides, and in open fields and prairies.

### Biology and Spread:

It is estimated that a single plant may produce a million seeds per year, which may remain viable in the soil for up to 20 years. The hips are readily eaten by birds, which are the primary seed dispersers. New plants can also be formed by rooting from the tips of canes touching the ground.

### Ecological Threat:

Multiflora rose forms impenetrable thickets that exclude native plant species. This shrub grows very prolifically in riparian areas, where its inedible leaf litter can change the composition of the aquatic macroinvertebrate community. Its occasional habit of climbing can weigh down trees, making them susceptible to breakage.



James H. Miller, USDA Forest Service  
[www.forestryimages.org](http://www.forestryimages.org)

## How to Control this Species:

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### Physical

Frequent cutting or mowing, three to six times per growing season, for two to four years, is effective in achieving high mortality. Be careful – the strong thorns have been known to puncture rubber tires.

Scattered populations may be eliminated by complete removal of the plants. Be sure to remove all root material because this shrub readily re-sprouts.

In areas where multiflora rose is detected early, prescribed fire may limit its establishment.

### Chemical

Application of herbicides, such as glyphosate or triclopyr, on freshly cut stems is an effective control method since it destroys the root system and prevents re-sprouting. This may be done during the dormant period, which reduces the likelihood of damaging desirable species.

A foliar spray of fosamine can be used from July through September, but die-back will not be apparent until the following summer. Fosamine will only affect woody species.

### Biological

Biological control is currently under investigation. Rose-rosette disease, a native viral pathogen, is spread by a mite, and is slowly spreading eastward from the west. The European rose chalcid, a seed-infesting wasp, promises to reduce seed viability. Unfortunately, both of these measures have the potential to impact native rose species.



Leslie J. Mehrhoff, U. of Connecticut  
[www.forestryimages.org](http://www.forestryimages.org)

## Look-A-Likes:

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Multiflora rose could easily be confused with other rose species (both native and non-native), especially when not in bloom. This is a concern, since some native species are of conservation interest.



Carolina Rose

Catherine Herms, Ohio State University  
[www.forestryimages.org](http://www.forestryimages.org)

## References:

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*Plant Conservation Alliance's Alien Plant Working Group:*  
<http://www.nps.gov/plants/alien/fact/romu1.htm>

*Wisconsin Department of Natural Resources:*  
<http://dnr.wi.gov/invasives/fact/rose.htm>

## For More Information:

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*DCNR Invasive Species Site:* <http://www.dcnr.state.pa.us/conservationscience/invasivespecies/index.htm>

*DCNR Invasive Exotic Plant Tutorial for Natural Lands Managers:*  
[http://www.dcnr.state.pa.us/forestry/invasivetutorial/Multiflora\\_rose.htm](http://www.dcnr.state.pa.us/forestry/invasivetutorial/Multiflora_rose.htm)

# Invasive Plants in Pennsylvania

## Oriental Bittersweet

*Celastrus orbiculatus* Thunb.



Photo: Jessica Sprajcar, DCNR

### Background:

Also known as round-leaved and Asiatic bittersweet, this vine was introduced from China into the U.S. around 1860 as an ornamental.

### Range:

Oriental bittersweet can be found throughout New England and the Mid-Atlantic states, down to Louisiana and up through the Midwest as far north as Wisconsin. It is not known to occur further west than that.

### Description:

Oriental bittersweet is a deciduous, climbing, woody vine that can grow up to 60 feet in length. Vines can grow up to four inches in diameter. The alternate, elliptical leaves are light green in color, finely toothed and two to five inches in length. Fruits are round and yellow, splitting to reveal bright red berries through the fall and winter months.



Photo: Leslie Mehrhoff, U. of Connecticut, [www.invasive.org](http://www.invasive.org)

### Habitat:

Commonly found on old home sites, in fields and forest edges, and along roadsides and train tracks. While it prefers open, sunny sites it can tolerate shade.

### Biology and Spread:

Birds and other wildlife readily consume the large number of berries, spreading seeds far and wide. Humans also spread the seed through the use of bittersweet vines and berries for craft projects. The plant also spreads vegetatively through rhizomes and root suckers.

### Ecological Threat:

This vine is able to girdle and kill trees or break their branches off from the weight of the vines. When it grows into the canopy it can shade out natives. Oriental bittersweet has also been shown to hybridize with the American bittersweet, leading to a loss of genetic identity.



Photo: Nancy Loewenstein, Auburn U., [www.invasive.org](http://www.invasive.org)

## How to Control this Species:

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### Manual and Mechanical

Because the seeds of bittersweet are so numerous and can remain viable in the soil for several years, all control efforts will require multiple years to be effective.

Small populations, especially of vines not high up in canopy, can be pulled by hand or dug out prior to fruiting. If fruits are present, all material should be bagged and disposed of.

Vines in trees can be cut close to the ground. The vines will re-sprout, however, unless herbicide is immediately applied to the cut stump.

Weekly mowing will prevent the vines from fruiting, but less frequent mowing will promote root sprouts.

### Chemical

Because Oriental bittersweet looks so much like the native American bittersweet, be absolutely sure you have properly identified the species before doing any control work.

Systemic herbicides like glyphosate and triclopyr can successfully manage bittersweet. It is most effective when stems are cut or mowed and the herbicide is applied to the cut area immediately.

For cut stump applications, a 50% solution of glyphosate and water can be applied as long as the air temperature is above 40 degrees F. A 25 percent solution of triclopyr and water can be applied when the air temperature is above 60 degrees F.

For foliar application, a two percent solution of glyphosate or triclopyr and water, plus a 0.5 percent non-ionic surfactant, can be sprayed on the leaves when the air temperature is above 65 degrees F.

### Look-A-Likes:

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Oriental bittersweet closely resembles the native American bittersweet (*Celastrus scandens*), but American bittersweet has flowers and fruits at the ends of its branches, rather than in the axils of the leaves, like the Oriental variety.



Photo: Chris Evans, River to River CWMA,  
[www.forestrymages.org](http://www.forestrymages.org)

### References:

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*Center for Invasive Species and Ecosystem Health:*

<http://www.invasive.org/browse/subinfo.cfm?sub=3012>

*Invasive Exotic Plant Tutorial for Natural Lands Managers:*

[http://www.dcnr.state.pa.us/forestry/invasivetutorial/Oriental\\_bittersweet.htm](http://www.dcnr.state.pa.us/forestry/invasivetutorial/Oriental_bittersweet.htm)

### For More Information:

---

*Plant Invaders of Mid-Atlantic Natural Areas, National Park Service:*

<http://www.nps.gov/plants/alien/pubs/midatlantic/midatlantic.pdf>

*Invasive Plants Field and Reference Guide, U.S. Forest Service:*

[http://na.fs.fed.us/pubs/misc/ip/ip\\_field\\_guide.pdf](http://na.fs.fed.us/pubs/misc/ip/ip_field_guide.pdf)

# Invasive Plants in Pennsylvania

## Privets (Japanese, Border, Chinese and Common)

*Ligustrum japonicum*, *L. obtusifolium*, *L. sinense* and *L. vulgare*



Photo: Troy Evans, [www.bugwood.org](http://www.bugwood.org)

### Background:

These four species of privets were originally imported for use in landscaping around 1860. They are still often used in hedges and landscaping.

### Range:

The various privets are originally from Japan, China and Europe. They have spread through the eastern United States, from New Hampshire and Michigan in the north to Florida and Texas in the south.

### Description:

Privets are deciduous or semi-evergreen shrubs that often form dense thickets. They have opposite or whorled stems that are brown to gray with slightly rough bark. Privets produce white flowers from April to June, which are followed by green drupes from July to March. These fruit gradually ripen to a dark purple or black color in the winter. It is often difficult to differentiate between the four privets to the species level, particularly when they are not flowering.



Photo: Rebekah Wallace, U. of Georgia, [www.invasive.org](http://www.invasive.org)

### Habitat:

Privets are often found in bottom-land forests, fence-rows, fields and rights-of-way. They seem to prefer disturbed areas with rich soil.

### Biology and Spread:

Privets mainly spread to new areas via their seeds. Often-times, these are distributed by birds, which have eaten the fruit. Once introduced to an area, privet can regenerate from root and stump sprouts, making it difficult to eradicate.

### Ecological Threat:

Privets can form dense thickets, which reduce light and moisture availability for native shrubs and wildflowers. This decreases plant diversity and impacts the animals which depend on them for food and shelter.



Photo: Leslie Mehrhoff, U. of Connecticut, [www.invasive.org](http://www.invasive.org)

## How to Control this Species:

---

Once established in an area, privet can be difficult to control or remove.

With smaller populations, hand removal can be used. However, fragments of root that are left behind in the ground can re-sprout.

Larger areas can also be treated with herbicides such as glyphosate. Herbicide can be applied to the leaves, or painted on cut stems or stumps. Once the herbicide is applied, disturbances to the privet should be avoided for approximately one year, in order for the herbicide to travel through the privet's root systems.

No biological controls are currently known for privet. Studies show that controlled burning does not appear to have a lasting effect on privet populations, so it is not recommended as a control option.

## Look-A-Likes:

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There are a large variety of shrub-sized, berry-producing, deciduous alternatives to privets for landscaping purposes. These include species such as spicebush (*Lindera benzoin*), dogwoods (*Cornus* spp.) and chokeberry (*Aronia* spp.). These species will all provide food and cover for wildlife.



Photo: Jessica Sprajcar, DCNR



Photo: Chris Vans, River to River CWMA,  
[www.forestryimages.org](http://www.forestryimages.org)



Photo: Richard Webb, [www.forestryimages.org](http://www.forestryimages.org)

## References:

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USDA Plant Guide:

[http://plants.usda.gov/plantguide/pdf/pg\\_lisi.pdf](http://plants.usda.gov/plantguide/pdf/pg_lisi.pdf)

University of Connecticut Plant Database:

<http://www.hort.uconn.edu/plants/index.htm>

Center for Invasive Species and Ecosystem Health: [www.invasive.org](http://www.invasive.org)

## For More Information:

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*Plant Invaders of Mid-Atlantic Natural Areas*, National Park Service:

<http://www.nps.gov/plants/alien/pubs/midatlantic/midatlantic.pdf>

*Invasive Plants Field and Reference Guide*, U.S. Forest Service:

[http://na.fs.fed.us/pubs/misc/ip/ip\\_field\\_guide.pdf](http://na.fs.fed.us/pubs/misc/ip/ip_field_guide.pdf)




## sawtooth oak

*Quercus acutissima* Carruthers

**USDA PLANTS Symbol:** QUAC80  
**U.S. Nativity:** Exotic  
**Habit:** Hardwood Trees

**Jump to:** [Resources](#) | [Images](#) | [Distribution Maps](#) | [Sources](#)

**Taxonomic Rank:** Magnoliopsida: Fagales: Fagaceae

**Native Range:** Japan, Korea, China, Himalaya (REHD);

### Appearance

*Quercus acutissima* is a large, up to 50 ft. (15.2 m) in height, deciduous tree that has been invading forests in the eastern United States.

### Foliage

The leaves are alternate, broadly lance-shaped, 4-7.5 in. (10.2-19 cm) long, up to 2.5 in. (6.4 cm) wide with bristly teeth along the margin.

### Flowers

Flowers bloom in May and are small and inconspicuous.

### Fruit

Fruit are large acorns with spreading, curved scales on the involucre. Trees produce large amounts of acorns.

### Ecological Threat

*Quercus acutissima* has been found in recent years to escape plantings and establish in nearby forests, potentially displacing native vegetation. It is native to Asia and has been widely planted in the United States as an ornamental and as food for wildlife. It is no longer recommended for planting in the United States because of its potential impact on native ecosystems.

## Identification, Biology, Control and Management Resources

[Plant Invaders of Mid-Atlantic Natural Areas](#) - National Park Service and U.S. Fish and Wildlife Service

## Selected Images from Invasive.org

[View All Images at Invasive.org](#)



**Fruit(s); Acorns in September**  
 Chuck Bargeron, University of Georgia, Bugwood.org  
[Additional Resolutions & Image Usage](#)



**Foliage;**  
 Karan A. Rawlins, University of Georgia, Bugwood.org  
[Additional Resolutions & Image Usage](#)



**Foliage;**  
 Karan A. Rawlins, University of Georgia, Bugwood.org  
[Additional Resolutions & Image Usage](#)



**Fruit(s); Developing acorn in September**  
 Chuck Bargeron, University of Georgia, Bugwood.org  
[Additional Resolutions & Image Usage](#)

**Tree(s);**  
 USDA NRCS, USDA NRCS, Bugwood.org  
[Additional Resolutions & Image Usage](#)



**Flower(s);**  
 Chris Evans, University of Illinois, Bugwood.org  
[Additional Resolutions & Image Usage](#)



**Flower(s);**  
 Chris Evans, University of Illinois, Bugwood.org  
[Additional Resolutions & Image Usage](#)



**Bark; Bark and foliage**  
 David J. Moorhead, University of Georgia, Bugwood.org  
[Additional Resolutions & Image Usage](#)





Flower(s);

Dow Gardens , Dow Gardens, Bugwood.org  
Additional Resolutions & Image Usage



Fruit(s);

Steve Hurst, USDA NRCS PLANTS Database, Bugwood.org  
Additional Resolutions & Image Usage



Foliage; Foliage

David Stephens , Bugwood.org  
Additional Resolutions & Image Usage



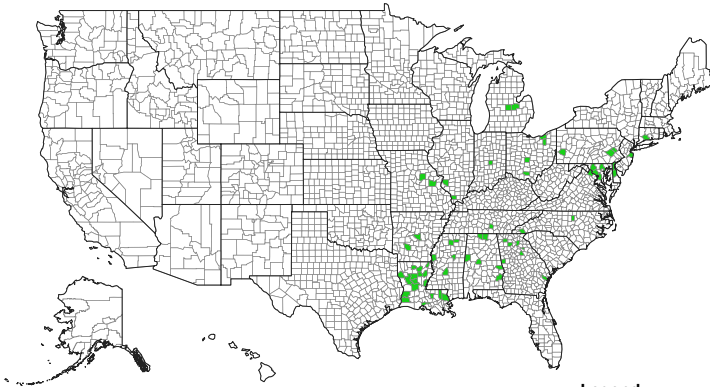
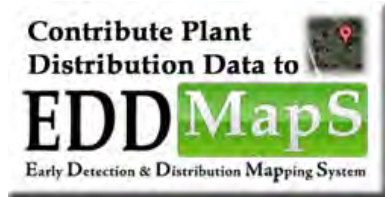
Fruit(s);

David Stephens , Bugwood.org  
Additional Resolutions & Image Usage

### EDDMaps Distribution:

This map is incomplete and is based only on current site and county level reports made by experts and records obtained from USDA Plants Database. For more information, visit [www.eddmaps.org](http://www.eddmaps.org)

**sawtooth oak (*Quercus acutissima*)** [Share](#) [Download](#) [Flag](#) [FullScreen](#)



#### Legend

- No Data
- Species Reported



### State(s) Where Reported Invasive.

Based on state level agency and organization lists of invasive plants from WeedUS database.



### Invasive Listing Sources:

- Georgia Exotic Pest Plant Council
- Jil Swearingen, personal communication, 2009-2017
- John Randall, The Nature Conservancy, Survey of TNC Preserves, 1995.
- Kentucky Exotic Pest Plant Council
- Maryland Cooperative Extension Service. 2003. Invasive Plant Control in Maryland. Home and Garden Information Center, Home and Garden Mimeo HG88. 4 pp.
- Non-Native Invasive Plants of Arlington County, Virginia
- Non-Native Invasive Plants of the City of Alexandria, Virginia
- Reichard, Sarah. 1994. Assessing the potential of invasiveness in woody plants introduced in North America. University of Washington Ph.D. dissertation.
- South Carolina Exotic Pest Plant Council



Website developed by [The University of Georgia - Center for Invasive Species and Ecosystem Health](#) and the [National Park Service](#) in cooperation with the [Invasive Plant Atlas of New England](#), [Invasive Plant Control, Inc.](#), [USDA Forest Service](#), [USDA NRCS PLANTS Database](#), [Lady Bird Johnson Wildflower Center](#), [National Association of Exotic Pest Plant Councils](#), [Plant Conservation Alliance](#), and [Biota of North America Program](#).

Questions and/or comments to the [Bugwood Webmaster](#)  
Last updated October 2018 / [Privacy](#)

# Invasive Plants in Pennsylvania

## Shrub Honeysuckles

(Amur, Morrow's, Bells, Standish, and Tartarian)

*Lonicera maackii*, *L. morrowii*, *L. x bella*, *L. standishii*, and *L. tatarica*



Chuck Bargeron, University of Georgia,  
[www.bugwood.org](http://www.bugwood.org)

### Description:

Nonnative bush honeysuckles grow to heights of six to 20 feet. Their stems are thornless with a hollow brown pith. Their leaves are opposite and egg-shaped. Their flowers, which bloom from May to June, are fragrant, tubular and less than an inch long. They range in color from white to yellow to pink to red. The berries are small and red or yellow.

### Biology and Spread:

Nonnative bush honeysuckles produce large numbers of small fruits, particularly when growing in open sunlight. These are eaten by birds, which then spread the seeds in their droppings. Once a population establishes, vegetative sprouting continues the spread of these plants.

### Background:

Shrub or bush honeysuckles were introduced to North America for use in landscaping, erosion control and wildlife cover. Unfortunately, these plants then spread throughout much of the country.

### Range:

The nonnative bush honeysuckles are native to eastern Asia, Europe and Japan. Currently, they can be found in a variety of habitats from the Great Plains to southern New England, and south to Tennessee.



Leslie J. Merhoff, University of Connecticut,  
[www.bugwood.org](http://www.bugwood.org)

### Ecological Threat:

These invasive species compete with native plants for sunlight, moisture and pollinators. And while birds eat the fruit, it is poorer in fats and nutrients than fruits from native plants, so the birds do not get enough nutrients to help sustain long flights during migrations.

### Habitat:

Nonnative bush honeysuckles are relatively shade-intolerant, and often occur in disturbed woods or edges, roadsides and abandoned fields where more light is available. Morrow's and Bell's honeysuckles are capable of invading bogs, fens, lakeshores and sandplains.



Leslie J. Merhoff, University of Connecticut,  
[www.bugwood.org](http://www.bugwood.org)

## How to Control this Species:

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The two main methods of controlling nonnative bush honeysuckles are mechanical and chemical. Smaller populations can be removed by hand, making sure to include the roots. Larger populations should be cut to ground level at least once per year, in either early spring or late fall.

Glyphosate can be sprayed onto the leaves, or could also be applied to cut stems in order to kill the root system.

No biological controls are known that would target solely nonnative bush honeysuckle species. In open areas, prescribed fire may help to eradicate this species. In order to optimize this approach, however, the burn should be conducted prior to late summer in order to prevent seed dispersal.

## Look-A-Likes:

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Native bush honeysuckles exist throughout North America. The natives generally have solid stems, as opposed to the hollow pith of the invasive ones. Be very cautious when buying so-called “native” honeysuckles from a nursery or online.

## Native Alternatives:

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There are a large variety of shrub-sized, berry-producing, deciduous alternatives for landscaping purposes. These include species such as spicebush (*Lindera benzoin*), dogwoods (*Cornus* spp.) and chokeberry (*Aronia* spp.). These species will all provide food and cover for wildlife.



Photo: Jessica Sprajcar, DCNR



Photo: Chris Vans, River to River CWMA, [www.forestryimages.org](http://www.forestryimages.org)

## References:

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*Invasive Exotic Plant Tutorial for Natural Lands Managers:*

[http://www.dcnr.state.pa.us/forestry/invasivetutorial/bush\\_honeysuckles.htm](http://www.dcnr.state.pa.us/forestry/invasivetutorial/bush_honeysuckles.htm)

*University of Wisconsin, Invasive Plants of Wisconsin:*

[http://www.uwgb.edu/biodiversity/herbarium/invasive\\_species/lonxbe01.htm](http://www.uwgb.edu/biodiversity/herbarium/invasive_species/lonxbe01.htm)

*Plant Conservation Alliance's Least Wanted List:*

<http://www.nps.gov/plants/alien/fact/loni1.htm>

*University of Connecticut Plant Database:*

<http://www.hort.uconn.edu/plants/index.html>

*Robert W. Freckmann Herbarium:* <http://wisplants.uwsp.edu/scripts/detail.asp?SpCode=LONTAT>



Photo: Richard Webb, [www.forestryimages.org](http://www.forestryimages.org)

**Appendix 6 Historic Aerial Photos**



## Appendix 7

### 2018 - 2021 FARM LEASE

*State of Pennsylvania*

This Lease Agreement (hereinafter the "Lease") is entered into and made effective as of the date set forth at the end of this document by and between the following Landlord: WOODLAND OWNERS OF THE SOUTHERN ALLEGHENIES (the "Landlord")

and the following Tenant: WAYNE SHATZER (the "Tenant"). Landlord and Tenant may be collectively referred to as the "Parties" in regards to the property.

In consideration of the obligations and covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties do contract and agree as follows:

#### I) PREMISES

1. Landlord leases to Tenant the following property (the "Premises") described below:

The field (approximately 10 acres) for growing hay; no corn is to be planted.

2. The Premises is located along Big Creek Road, Clearville, PA 15535. Tax map no. G.13-0.00-024-A and is referred to as the Sulzbacher Demonstration Forest.

#### II) LEASE TERM

3. This Lease shall commence on the date of August 31st, 2018 and shall continue until its natural termination under this part on the date of October 30th, 2021 at 11:59 PM.

- There will be an Annual Review to discuss maintenance tasks.

4. After the date of termination, this Lease shall NOT automatically renew, but may continue if the Landlord or Tenant extend this Lease in writing.

#### III) POSSESSION

5. Tenant shall be entitled to possession on the first day of the term of this Lease, and shall yield possession to Landlord on the last day of the term of this Lease, unless otherwise agreed by all Parties in writing.

6. At the expiration of this term, Tenant shall remove their goods and effects and peaceably yield up the Premises to the Landlord in as good condition as when delivered to Tenant, ordinary wear and tear excepted.

#### IV) LEASE PAYMENTS

7. NO lease payments are required.

#### V) EXISTING CROPS

8. Tenant is to have the crops now planted and growing, and on leaving tenant is to leave the field as a hay field.

#### VI) NO PARTNERSHIP

9. Nothing in this Lease shall create a Partnership, joint venture, contractor, employment, or any other relationship between the Landlord and the Tenant, than that of Landlord and Tenant. No Parties shall be liable, except as otherwise expressly provided herein, for the other Party's obligations or liabilities. Tenant shall indemnify and hold Landlord and their property, including the Premises, free and harmless from all obligations and liabilities incurred by Tenant in conducting farming or other operations on the Premises, whether under this Lease or otherwise.

#### VII) USE OF PREMISES

10. The Premises shall be used for the purposes of planting, growing, and harvesting of hay only. The Premises shall not be used for any other purpose without Landlord's prior written consent. Tenant shall carry on all of the activities specified above in accordance with good husbandry and the best practices of the local farming community in which the leased Premises are situated.

11. Tenant shall, at Tenant's cost and expense, comply with any and all laws, ordinances, rules, regulations, requirements, and orders present or future, of any federal, state, county, or municipal governments which may in any way apply to the use, maintenance, operations, or production of crops on the leased Premises, or the sale or disposition of those crops.

12. Tenant agrees not to apply pesticides, insecticides, fungicides, herbicides, or other chemical treatments that will have a residual effect beyond the term of this Lease except without the express prior written consent of the Landlord.

13. Tenant agrees that hay bales shall NOT be stored on the premises after the spring of 2019. Permission from WOSA must be obtained prior to cutting any overhanging branches or trimming any trees. No trees or shrubs may be cut down or removed without written permission.

#### VIII) MAINTENANCE

14. The Landlord shall be responsible for performing the following maintenance tasks on the Premises during the length of the Lease: All tasks except the road maintenance

15 . The Tenant shall be responsible for performing the following maintenance tasks on the Premises during the length of the Lease: Basic road and field upkeep and removal of any trees that fall across the road or into the field.

#### IX) TERMINATION OF LEASE

16. Either party has the right to terminate the lease upon sixty (60) days' written notice to the other party.

#### X) LANDLORD ACCESS TO PREMISES

17. Subject to Tenant's consent (which shall not be unreasonably withheld), Landlord shall have the right to enter the Premises to make inspections, provide necessary services, or show the unit to prospective buyers, mortgagees, tenants, or workers. However, Landlord does not assume any liability for the care or supervision of the Premises.

18. As provided by law, in the case of an emergency, Landlord may enter the Premises without Tenant's consent. During the last three months of this Lease, or any extension of this Lease, Landlord shall be allowed to display the standard "For Rent" signs and show the Premises to prospective Tenants.

#### XI) HAZARDOUS MATERIALS

19. Tenant shall not keep or have on Premises any article or thing of a dangerous, flammable, or explosive character that might substantially increase the danger of fire on the Premises, or that might be considered hazardous by a responsible insurance company, unless the prior written consent of Landlord is obtained and proof of adequate insurance protection is provided by Tenant to Landlord.

#### XII) SUBLETTING/ASSIGNATION

20. Tenant may not assign or sublease any interest in the Premises, nor assign, mortgage, or pledge this Lease, without the prior written consent of Landlord, which shall not be unreasonably withheld.

#### XIII) ENTIRE AGREEMENT

21. This Lease Agreement contains the entirety of the agreement between the parties and there are no other promises, conditions, understandings, or other agreements, written or oral, relating to the subject matter of this Lease. This Lease may be modified or amended in writing if the writing is signed by the party obligated under the Amendment.

XIV) NO WAIVER

22. If Landlord fails to enforce strict performance of any part or sub-part of this Lease, this shall not be construed as a waiver of Landlord's right to enforce the same part or sub-part later in time or to enforce any other part or sub-part.

XV) BINDING

23. The provisions of this Lease shall be binding upon and inure to the benefit of both parties.

**IN WITNESS WHEREOF**, this Lease has been executed and delivered in the manner prescribed by law as of the Effective Date written below.

**WOODLAND OWNERS OF THE SOUTHERN ALLEGHENIES**

**Signature of President or Board Member:**

David J. Scamardella President

**Date:**

8/24/2018

**WAYNE SHATZER**

**Signature:**

Wayne R Shatzer

**Date:**

8/24/2018

**Third Party Witness Signature:** Laura L Jackson





# Appendix 8 PENNSYLVANIA GAME COMMISSION HUNTER ACCESS PROGRAM COOPERATIVE AGREEMENT

Form PGC-PAP 04-2007

PGC INTERNAL USE ONLY			
FG <input type="checkbox"/> Project No. _____ SZ <input checked="" type="checkbox"/> Farm No. _____ FO <input type="checkbox"/> Property No. _____ Acres <u>37</u> District No. _____	<div style="border: 1px solid black; padding: 5px;">             Restrictions On Species              Open To Public Hunting. If              Yes, Detail In Item 1              Below.              YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> </div>	<div style="border: 1px solid black; padding: 5px;">             Owner <input checked="" type="checkbox"/>              New Owner <input type="checkbox"/>              Tenant <input type="checkbox"/>              Identifier # or Code: _____           </div>	<div style="border: 1px solid black; padding: 5px;">             LATITUDE:  <u>39.842554</u>              LONGITUDE:  <u>78.345981</u> </div>

THIS AGREEMENT made this 7th day of February, 2019, between Woodland Owners of Southern Alleghenies - Dave Scamardella President his, her or their heirs, executors, administrators and assigns, hereinafter called the Cooperator, and the COMMONWEALTH OF PENNSYLVANIA, by the PENNSYLVANIA GAME COMMISSION, hereinafter called the Commission;

WHEREAS, under provisions 34 Pa. C.S. Sections 101-2965, the Commission is authorized to cooperate with land owners who desire to aid in the conservation of game and other wildlife including hunting and trapping.

NOW, THEREFORE, this Agreement witnesseth that the Cooperator in consideration of the conditions herein set forth and the mutual advantages derived therefrom, does hereby grant to the Commission all hunting rights, in, to and upon all that certain tract of land, situated in the Township of Monroe County of Bedford Commonwealth of Pennsylvania, containing 37 acres, more or less, and with an address listed on the attached form if different from the above listed residence address, and described as listed, or as revised in future addendums made a part hereof and approved under established commission guidelines.

Landowner Contact Information:	Property Address (if different from residence):
Name: <u>Woodland Owners of Southern Alleghenies - Dave Scamardella President</u>	_____
Address: <u>P.O. Box 253</u> <u>Everett, PA 15537</u>	<u>857 Big Creek Road</u> <u>Clearville, PA 15535</u>
Phone: <u>(717) 485-3148</u>	_____
Email: <u><del>XXXXXXXXXXXXX</del> dscamardel@pa.gov</u>	_____

**IT IS MUTUALLY AGREED THAT:**

1. **Public Hunting.** Any part or parts of said land not set apart as Safety Zone shall remain open to hunting by the public in accordance with all established annual seasons and bag limits, and laws of the Commonwealth. This right subject to species hunting restrictions as requested by the Cooperator herein.
- RESTRICTIONS: Big Game \_\_\_\_\_ Small Game \_\_\_\_\_ Turkey \_\_\_\_\_ Trapping No trapping
2. **Right of Entry.** The Commission may, with the consent and approval of the Cooperator, develop or enhance wildlife food and habitat conditions on the area, (provided such improvements shall not interfere with normal operations of the tract).
  3. **Protection.** The Commission shall furnish such protection as lies within its powers and abilities, to the lands, fences, livestock and other property of the Cooperator.
  4. **Food and Cover Seedlings.** If suitable planting sites are available, the Commission may furnish food and cover seedlings beneficial to wildlife as agency funding permits.
  5. **Habitat Enhancements.** If the Cooperator is willing, the Commission may implement wildlife habitat improvement projects to enhance wildlife habitat as agency funding permits.
  6. **Game News.** The Commission may supply Cooperator with a subscription to the Game News as agency funding permits.
  7. **Access.** A Cooperator may reasonably limit the number of users on the property in addition to the type of vehicles (if any) permitted on the property. Access may be denied on an individual basis under such conditions or circumstances, which in the view of a reasonably prudent person, would result in undue likelihood of accident or damage to property. The cooperator agrees not to place or post any type of signage indicating "No Trespassing" or that hunting is prohibited other than restrictions listed in item number 1.
  8. **Identification.** The cooperator agrees to post appropriate signage, as determined by the Commission, on the property identifying such property is enrolled in the Game Commission Hunter Access Program with a Commission generated identifying number on such signage. The cooperator also agrees to allow the Commission to provide property location information on such mapping as the Commission develops in the future and makes available to the public. No detailed cooperator name or mailing address information will be provided on such mapping.

**Cancellation.** This agreement may be cancelled upon thirty (30) days written notice if the Cooperator becomes dissatisfied, or when in the judgment of the Commission, the use of the land is no longer needed or desired, or if the owner or owners desire to sell the property

**Renewal.** It is further agreed that the Commission shall extend the period of this agreement indefinitely, on a year to year basis beyond the expiration date of this agreement, until either party shall give thirty (30) days previous notice in writing to the other of an intention to terminate the agreement.

IN WITNESS WHEREOF, the Cooperator and the Commission have caused this agreement to be duly executed.

*Jonathan S. Zuck*  
 COMMISSION WITNESS (TITLE):  
JONATHAN S. ZUCK  
STATE GAME WARDEN - LMO

COOPERATOR:  
*David F. Scamardella*  
WOSA President

\* Attach Sheet Listing Additional Required Signatories

COOPERATOR COPY