

*THE STEWARDSHIP TRAIL*  
*AT*

*MAUMEE*  
*STATE FOREST*



## The Stewardship Trail at Maumee State Forest

Forests are dynamic ecosystems, constantly changing. Changes to the forest come from within the ecosystem, with trees dying and sprouting, and from outside sources like insects or humans. Emerald Ash Borer is a dramatic example of such changes threatening Ohio's forests. Since its discovery in Michigan in 2002, it has killed more than 15 million ash trees. The Stewardship Trail at Maumee State Forest is designed to inform private woodland owners about their options in dealing with EAB and to maintain healthy woodlands.

Forests help the environment by acting as an air filter for the earth, by improving water quality through filtration, and by preventing soil erosion by holding soil in place with their root systems. Trees reduce heating and cooling bills when planted as a windbreak or to provide shade.

Managed forests provide wildlife species a variety of habitats. Properly managed forests can make landowners money over time from sustainable harvests, and may save money at tax time. Managed forests are better prepared when threats from insects, pathogens, and human disturbances arise.

### What Exactly is Forestry?

According to *Forestry Terminology* published in 1944 by the Society of American Foresters, the definition of forestry is "The scientific management of forests for the continuous production of goods and services."

The Ohio Division of Forestry reflects that definition in its mission, "To promote and apply management for sustainable use and protection of Ohio's Private and Public Forest Lands." To accomplish this, the state applies sustainable forest management practices to Ohio's 20 state forests and offers assistance from state service foresters to private landowners statewide.

A self-guided walking tour of The Stewardship Trail at Maumee State Forest will reveal many aspects of what forest management can accomplish. This area shows a variety of forest management techniques and how implementation of these techniques has impacted the forest.

#### Self-Guided Walking Tour

1 mile, 30 minute easy hike  
2 mile, 1 hour easy hike  
Follow the yellow arrows  
Open from dawn to dusk daily

#### CAUTION

Beware of Poison Ivy  
Good shoes recommended  
Due to windy conditions, be aware of falling trees and branches  
Mosquito repellent is suggested from April to September  
This area will be open to hunting during public hunting seasons

Contacting a professional forester is another excellent way to increase your knowledge of forestry. Professional foresters have specialized training from accredited colleges and

universities, and they frequently attend workshops and training to keep current with the latest information. Private individuals can contact a forester to start learning about forestry and applying sustainable forest management techniques. Foresters can offer advice on dealing with insect problems, what trees will grow best on your land, how to best market and harvest trees, or how to attract a certain type of wildlife.

While on The Stewardship Trail at Maumee State Forest, you may be surprised to learn that the trail you are walking along is actually a form of forest management. The trail is a network of fire lines or firebreaks put in place to help firefighters more easily contain a wildfire.

### 1. Red and White Pine Stand Thinning

Planted in 1949

Harvested in January – April 2001

Acres: 24

**Goal:** Allow for optimum growth of current stand and encourage native species regeneration

**Definitions:** *Stand*—A grouping of trees occupying a specific area and sufficiently

uniform in composition, age arrangement, and condition as to be distinguishable from the forest on adjoining areas

*Overstocked*—A term applied to stands or forests with an excessive number of trees that may retard normal growth

*Thinning*—A cutting made in an immature stand for the purpose of increasing the rate of growth, health, or improving the form of the trees that remain and increasing the total production of the stand

*Regeneration*—The process by which the forest is replaced or renewed and may occur naturally, by natural seeding or sprouting, or may be done artificially, by seeding or planting seedlings

Prior to 1949, this land was a farm field. It was decided that white and red pine would be planted here to stabilize the sandy soil and prevent wind erosion.

In 2001, this red and white pine stand was thinned, removing about half of the trees. This management method was chosen because the stand was overstocked. Thinning the area released the remaining trees, allowing them to grow to their full potential. This type of management is common in stands where long term sustainable harvesting is a goal.

After the harvest, sunlight was able to reach the forest floor and a variety of hardwood species regenerated in the understory, or shrub layer, of this area. The remaining stand will continue to grow and ultimately another harvest will take place removing the remaining pine and allowing native hardwood species to inhabit this area.



Downy Woodpecker



Adult Emerald Ash Borer

### 2. Strip Clear Cut

Planted in 1949

Harvested in January – April 2001

Acres: 2

**Goal:** Reduce winter shading on roadway

**Definition:** *Clearcutting with natural regeneration*—An area on which the entire stand has been removed and the regeneration after cutting is obtained by seeds from the surrounding stand or from trees cut in the clearing operation

Good forest management requires the landowner to maintain a healthy, productive stand. Until 2001, this 50-foot wide strip clearcut looked like the stand at stop 1. This type of management was applied because during winter weather, the ever-present foliage of the tall white and red pine did not allow sunlight to reach the road surface, creating slick roads that seemingly never melted.

This area is naturally regenerating with a variety of tree and shrub species typical for northwest Ohio including oak, maple, and raspberry. The shrubby cover and tender young shoots and buds make this excellent wildlife habitat.

### 3. Ash Salvage

Planted in 1951

Salvaged in December 2004 – February 2005

Acres: 5

**Goal:** To take a proactive approach against emerald ash borer (EAB)

**Definition:** *Salvage*—A cutting made to remove trees killed or injured by fire, insect, fungi or other harmful agencies (and sometimes trees susceptible to such injuries), for the purpose of preventing the spread of insects or disease

*Merchantable*—Used to designate the portion of trees or stands, which can be profitably marketed under given economic conditions

This area is a prime example of how a threat to forest health changes forest management strategies. This area was planted as a plantation in 1951 with sycamore, ash, and sweetgum. In 2004, EAB, a non-native, invasive insect that is deadly to

ash trees, was found near and in Maumee State Forest. The ODNR Division of Forestry decided to take a proactive approach and lead by example. Rather than providing food for the insects and leaving an excess of dead ash trees in the forest to rot, the forest crew salvaged all the merchantable ash trees, over 400 in all, in turn slowing the spread of EAB to neighboring areas.

Due to the diversity of tree species planted, the removal of ash was not detrimental to this stand.

#### 4. Blue Creek Stream Corridor

**Goal:** To protect the stream from erosion

Best management practices (BMP's) for forestry are guidelines that are used on state land to prevent soil erosion and displacement in high traffic areas and during logging operations. This stream corridor along Blue Creek has been protected during logging operations by the thick grass layer holding the soil in place. Bridges allow machinery to cross without disrupting the streambed. The majority of timber harvesting has occurred in the winter when the ground is frozen and the least impact can occur.



Blue Creek Stream Corridor

Stream corridors are an excellent place for wildlife viewing. Wildlife prefer this area because the shrubby plants provide cover and there is a constant water source.

*If going on the 1-mile hike, do not cross the bridge. Continue to follow trail to the south. This will lead you to stops 15, 16, 17, and 18, then back to the parking lot.*

#### 5. Thinning and Prescribed Burn

**Planted in** 1949

**Harvested in** January – April 2001,

**Burned in** April 2004

**Acres:** 7.0

**Goal:** To promote the growth of native oak

**Definitions:** *Silviculture*—The art of producing and tending a forest

*Prescribed Burning*—The application of fire to land to accomplish specific silvicultural, wildlife, grazing or fire hazard reduction

*Release*—To free trees from competition by cutting or otherwise removing nearby vegetation and branches

Prescribed burning is becoming a common management tool. Historically, Native Americans used this important tool as a way of clearing land and controlling vegetation growth. Today, burning is used to control undesirable tree species, and to reduce the intensity and potential of wildfires.

This stand was thinned in 2001 using the same method as stop 2. As a follow-up form of understory management, this area was burned in 2004. The release of more fire resistant species such as oak, instead of the less desirable species such as red maple, can be seen here.

*\* Please note that prescribed burning is very dangerous if not done correctly. All prescribed burning in Ohio must be approved by the ODNR Division of Forestry prior to the event and must be performed by trained firefighters only.*

#### 6. Thinned Not Burned

**Planted in** 1949

**Harvested in** January – April 2001

**Acres:** 5.5

**Goal:** To provide a comparison for what prescribed burning can achieve

Look back at area 5, notice any difference? These areas were thinned at the same time but the understory in this management area was not burned, note that the red maple is much more prevalent in this area. This is less desirable because red maple is a fast growing species that overshadows many species that cannot tolerate shade. As a result, it is easy to lose species diversity in the stand, which can be devastating if a species-specific plant pest is

introduced. Oaks are an example of a species that needs full sunlight to produce the energy necessary to grow the strong root system that makes them more resistant to natural disturbances like fire or wind. Oaks also produce an excellent food source for wildlife ranging from deer to turkey, as well as high quality wood.

#### 7. Forest Pests in White Pine

**Planted in** 1949

**Acres:** 3.7

This area displays three separate threats to the white pine stand currently in place. Look up at the trunks of the trees and notice the fuzzy white patches. This is not mold; it is actually an insect called pine bark adelgid. This insect has long mouthparts that stick into the tree and suck out the sugary nutrients. While pine bark adelgid is not deadly in most circumstances, it can weaken the tree, allowing secondary pests and pathogens to attack. In the understory, non-native invasive species barberry and autumn olive are ready to emerge as soon as there is an opening in the canopy.

#### 8. Biodiversity

**Planted in** 1949

**Salvaged in** January – April 2001

**Acres:** 2.0

Look at this area on both sides of the trail. This is a very diverse area that is beneficial to many kinds of wildlife. Left of the post, large pieces of deteriorating red pine wood can be seen. These pieces of woody debris provide great habitat for many small mammals, amphibians, and insects, which in turn provide a good food source for larger animals that prey on these small creatures.

Right of the post, the stand was salvaged in early 2001 to remove the declining red pine. This opened up the stand allowing for a great deal of new growth. This kind of growth provides dense cover and protection.

A mature stand of red and white pine, on the other side of the trail, adds yet another habitat type. The pine provides year around shelter because of the ever-present foliage. Wildlife ranging from migratory birds to deer and squirrels can use this area to seek shelter from wind and storms. Many birds including turkey also feed on the seeds from the white pine.

This area is also a great place for wildlife to inhabit because Blue Creek runs along the east providing a constant water source.

#### 9. Ash Salvage

**Planted in** 1953

**Salvaged in** December 2004 – February 2005

**Acres:** 5.68

**Goal:** To prevent the further spread of EAB

This stand also had ash salvaged in the winter of 2004-2005. A few dozen small ash trees, marked with red paint, are trying to survive against this wood-boring beetle.

Knowing the signs and symptoms of EAB is vital to detecting a potential infestation. The signs and symptoms include the top of the ash tree dying back, an increase in woodpecker activity, D-shaped holes in the bark, new growth around the base of the tree, and a serpentine pattern under the bark.

It is a good idea to have your tree checked by the Ohio Department of Agriculture if you notice any of these signs or symptoms.



Emerald Ash Borer Serpentine Pattern

#### 10. Healthy White Pine

**Planted in** 1961

**Harvested in** January – April 2001

**Acres:** 8

**Goal:** To grow a healthy stand of white pine, with future potential for a timber sale

**Definition:** *Natural branch pruning*—The natural death and fall of lower branches on standing trees resulting from such causes as deficiency of light, decay, snow, and ice

Look at the hearty, green foliage on these white pines. This stand was planted in 1961 and thinned at the correct time, which led to the uniform appearance. Notice that while natural branch pruning occurs as a stand starts to mature, all the branches in this stand

start 7 to 8 feet off the ground. This is because these trees were pruned in 1975 and 1976. This technique is often applied to small pine to reduce the potential number of knots, thereby increasing the value of boards cut in the future. This is an excellent example of what good forest management can provide.



White Pine

## 11. Buttonbush Swamp

Acres: 0.34

**Definition:** *Indicator plant*—

Any tree or plant which by its presence denotes some change in site and soil condition

Buttonbush is an excellent wetland indicator plant. The wetland provides a distinct habitat and these shrubby plants provide great cover for species such as frogs, salamanders, and migratory birds.

## 12. Area Marked for Sale

**Established as** native woodlands—previously pastured prior to 1947

Acres: 61.5

**Goal:** To show an area marked for a sale, to give landowners an idea of what a marked stand can look like

## 13. Group Opening and Prescribed Burn

**Planted in** 1949

**Harvested in** January – April 2001

**Burned in** April 2004

Acres: 0.29

**Goal:** Remove declining red pine and allow natural regeneration

Group openings are another type of small clearcut usually less than 3 acres in size. This area is approximately 1/3 acre and was composed mostly of red pine that was declining because it was planted south of its natural growing range. After the area was cut, it was burned to reduce undesirable species.

Wildlife benefit greatly from this type of management. Small openings in the forest create diversity in habitat. Many animals find refuge hiding in the shrubby growth.

## 14. Prescribed Fire Area

**Planted in** 1949

**Harvested in** January – April 2001

**Burned in** April 2004

Acres: 3.3

**Goal:** To control understory growth and reduce future fire hazard

Prescribed fire was also applied to this area in 2004. This fire burned at a higher temperature than at stop 5, because hotter burning oak leaves were on the forest floor and the canopy opened to the south. This allowed the winds to come in and add more oxygen to fuel the flames. White pine and sassafras are



Main Fire Lane

regenerating in this area because there is no competition from red maple or raspberry.

## 15. Wildlife

**Established as** native woodlands—previously pastured prior to 1947

Acres: 114.72

This area is unique compared to the surrounding forest. The large American elm tree on your right is a rare sight in the aftermath of Dutch Elm Disease. This area contains many sassafras which the woodpeckers seem to be boring into, creating potential dens for other woodland creatures. Scouring rush, the bamboo-looking plant along the trail edge, is commonly found in poorly drained areas.



Buttonbush

## 16. Site Variation

**Planted in** 1949

**Harvested in** January – April 2001

Acres: 24

This stand is the south side of the stand seen at stop 1, and from this view many declining red pine can be seen. To determine the difference between the red and white pine from this view, notice that the red pine have a redder bark than the white pine.

This area is a good example of how site conditions can affect trees. The red pine in this area are declining in health, most likely because these trees are standing in a slightly depressed area where the water cannot easily drain off. This helps show the importance of choosing the correct species for a site.

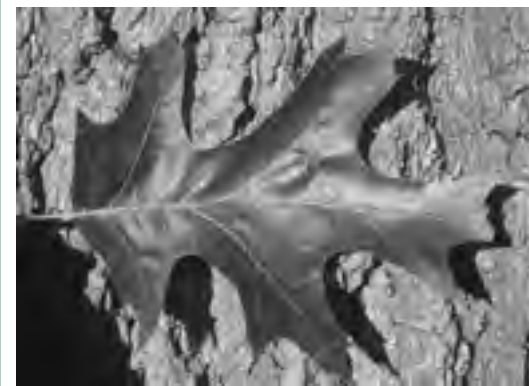
## 17. Pipeline Right of Way

**Pipe laid in** the 1940's

Acres: 0.42

This underground pipeline was laid through this area in the 1940's, prior to state ownership. In 1994, this corridor was cleared of trees to allow the gas company access to maintain the line. The trees cut from this corridor were given to the state and were subsequently sold. Revenue from this sale as well as all other timber harvests on Ohio State Forest lands, are divided among the local school district, township, county, and state.

The edge along this corridor provides brushy habitat that is widely used by songbirds, small mammals and other woodland creatures for cover, food, and nesting. This type of corridor provides open ground for birds to catch prey and free movement of ground dwelling wildlife.



Black Oak Leaf

## 18. Forest Cycle

This and many of the other 20 state forests began in very different circumstances than we see today. This land was planted by hand with seedlings from Ohio's state nurseries, showing that as these lands go full circle from being planted, growing to maturity and being harvested, the forest continues to grow naturally with gentle assistance from man.



Wild Turkey

If you have questions or would like more information, please contact the Ohio Division of Forestry at 1-877-247-8733 or on the web at [ohiodnr.com/forestry](http://ohiodnr.com/forestry).

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