Species | Size | Type | Price per 1000
--- | --- | --- | ---
Spicebush | 12-18" | Seedlings | $580.00
American Arborvitae | 8-15" | Seedlings | $250.00
Silver Maple | 18-24" | Seedlings | $590.00
Black Walnut | 18-24" | Seedlings | $630.00
Silky Dogwood | 12-18" | Seedlings | $430.00
River Birch | 18-24" | Seedlings | $650.00
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On the Cover:
A mature female Ailanthus tree can produce over 350,000 seeds annually, and they often persist on the parent tree into the winter. The background is a dense carpet of Ailanthus seeds on the forest floor. Photos courtesy of ODNR and US Forest Service Northern Research Station.

盟树苗圃

ALPHA NURSERIES

Species Size Type Price per 1000
--- --- --- ---
Spicebush 12-18" Seedlings $580.00
American Arborvitae 8-15" Seedlings $250.00
Silver Maple 18-24" Seedlings $590.00
Black Walnut 18-24" Seedlings $630.00
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On the Cover:
A mature female Ailanthus tree can produce over 350,000 seeds annually, and they often persist on the parent tree into the winter. The background is a dense carpet of Ailanthus seeds on the forest floor. Photos courtesy of ODNR and US Forest Service Northern Research Station.
H ere we are in the fall of the year, the beautiful colors of the goldenrod, ironweed, and chicory now fading to be replaced by brilliant fall leaf colors. Time once again to gather and stack the last of the winter fuel wood supply, and prepare for the fall deer hunt.

We recently attended an event sponsored by the Lake County Soil and Water Conservation District (SWCD) at their annual meeting held at the Holden Arboretum, one of the largest arboreta in the country. It has easy access from I-90 and State Route 615, near Cleveland, Ohio.

Holden has 3,500 acres, with 600 acres comprised of gardens and a collection of numerous ponds, bogs, and a lake. There are 15 trails, including the Corning Lake Trail through both a young forest and deep woods. Bole Woods has a sugarbush, rhododendron garden, and waterfowl observation blind. Bole Woods Trail is a National Natural Landmark with a mature beech-maple forest and associated plant and animal life. The Conifer Collection Trail provides stunning vistas and views of meadow nesting birds.

The annual event is open to the public and always well-attended. Local chefs prepare appetizers and meals from locally produced vegetables and meat at the food event called Farmafare. The meat is from grass-fed cattle, turkey, chicken, and lamb, all cooked on firewood. Coffee and cheese are local as well, and wine is offered from locally grown grapes. The public was well fed and educated on all steps of healthy, sustainable foods and local as well, and wine is offered from locally grown grapes. The public was well fed and educated on all steps of healthy, sustainable foods and local as well, and wine is offered from locally grown grapes. The public was well fed and educated on all steps of healthy, sustainable foods and local.

The event ended with each participant receiving an eastern redbud tree, and some of us lucky participants won a beautiful centerpiece donated by Lake County Nursery.

Stephen Rist, of Athens, has been named southern regional coordinator for the division’s Service Forestry Program. As many of you already know, Stephen is an experienced forester who will make a great leader. His enthusiasm and talent will significantly aid the division in serving woodland owners throughout southern Ohio.

Stephen gained experience while working as a service forester in southeast Ohio, and he was previously a crew leader for one of the division’s Ohio Woodlands Job Corps crews. He also served as a consulting forester in Michigan and has assisted with research at the Ohio Agricultural Research and Development Center. In his new leadership position, Stephen will be based out of the ODNR Division of Forestry’s southern district office in Chillicothe. He will continue to serve woodland owners as well as assisting the division’s Service Forestry Program administrator in directing program activities throughout southern Ohio.

Stephen obtained an Associate degree in Forest Management from Hocking College, a Bachelor of Science degree in Forestry, Fisheries, and Wildlife from The Ohio State University, and a Master of Science degree from The Ohio State University in Natural Resources Management. He is currently working toward a Doctorate in Plant Biology at Ohio University. He has been a member with the Society of American Foresters for 11 years and currently serves as the Ohio Chapter Chair.

Micah Pace was selected to direct the division’s nationally recognized community forestry assistance program. He will lead a staff of six regional urban foresters in the division’s Urban Forestry Program. Micah brings a wealth of experience that will be important as we work with communities to care for and enhance their valuable tree resources.

Micah has a diverse background in forestry and outreach programs. A northern Ohio native, he has work experience most recently as an urban forester for the Texas Forest Service in the Dallas Metro region. Prior to that, Micah worked with the Florida Division of Forestry in urban forestry, grant administration and education, and has volunteered with the Peace Corps in Ecuador as an agroforestry specialist. He taught landscape and soils classes as an adjunct instructor at Tarrant County College, Ft. Worth, Texas, taught English while in Ecuador, and was a teaching assistant as a graduate student at the University of Maine.

Micah holds a Bachelor of Science degree in Natural Resource Management from The Ohio State University and a Master of Science degree in Forestry from the University of Maine. He is also a Certified Arborist with the International Society of Arboriculture.

On October 10, a ceremony was held to honor the 2013 inductees into the ODNR Division of Forestry Forest of Honor. Wayne Lashbrook and Walt and Donna Lange were inducted and two trees were planted in their honor. An additional tree was planted in the Employee’s Grove as part of a ceremony held in honor of ODNR Division of Forestry retirees.

Best wishes to you all as we head into the holiday season and the cold winter months.
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By Martin Michel, Consulting Forester

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(419) 424-5004
john.mueller@dnr.state.oh.us
joe.pupeni@dnr.state.oh.us

Ohio Woodland Journal
By Martin Michel, Consulting Forester

Southern Ohio Forestland Owners Association
Pat Maglusich
ODNR Division of Forestry
777 Columbus Avenue
Lebanon, Ohio 45036
(513) 932-6386
pat.migliozzi@dnr.state.oh.us

Southwest Ohio Woodland Owners Association
John Michel
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FORESTER
John Michel

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Activity 14: Renewable or Not?
Children often do not know which resources are renewable and nonrenewable. Use this activity to learn what these terms mean and discover why sustainable use of natural resources is so important.

Background:
Natural resources are the raw materials used for housing, clothing, transporting, heating, cooking, and so on. They include the air we breathe, the water we drink, the land we farm, and the space we use for living and recreation. We can organize them into two categories: renewable and nonrenewable resources.

Renewable resources are naturally occurring raw materials - or forms of energy - which can be replenished through ecological cycles and/or sustainable management practices. Examples include the sun, wind, falling water, and trees.

Nonrenewable resources are those raw materials supplied by the Earth and its processes that exist in finite, or limited, amounts. Once used, they cannot be replaced. Examples include oil, gas, and coal.

Doing The Activity
Review the vocabulary terms above by first having children try to come up with their own definitions. Then together, try to categorize the resources below as either renewable (R) or nonrenewable (N):

<table>
<thead>
<tr>
<th>Renewable</th>
<th>Nonrenewable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>Oil</td>
</tr>
<tr>
<td>Tides</td>
<td>Coal</td>
</tr>
<tr>
<td>Trees</td>
<td>Coal</td>
</tr>
<tr>
<td>Sunshine</td>
<td>Gold</td>
</tr>
<tr>
<td>Tuna</td>
<td>Water</td>
</tr>
<tr>
<td>Geothermal/Hot springs</td>
<td>Sand</td>
</tr>
<tr>
<td>Wind</td>
<td>Geothermal/Hot springs</td>
</tr>
</tbody>
</table>

To apply this knowledge, go for a short walk outside; consider a walk around the neighborhood or even a visit to your own backyard. List as many items as you can that are made from renewable natural resources. Make a separate list of all the items made from nonrenewable natural resources. Use the chart in the sidebar to record your findings.

Looking at your 2 lists, answer the following:

- What renewable resources could be used to replace nonrenewable ones?
- What advantages and disadvantages might there be for using renewable resources in place of nonrenewable ones?
- Under what circumstances, if any, would a renewable resource not be renewable?

Adapted from Activity 14: Renewable or Not? from Project Learning Tree's PreK-8 Environmental Education Activity Guide.

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Try this activity in the outdoors—a natural place to learn!
For over 35 years, Project Learning Tree® has used the forest as a “window” to help young people gain an awareness of the world around them and their place within it. Blending a walk in the forest with a fun and engaging PLT activity creates a powerful learning experience for children of all ages. Here’s one idea in PLT’s “Connecting Kids to Nature” series that introduces the concept of sustainability.

PLT.org

Renewable
Nonrenewable

Activity 14: Renewable or Not?

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Contact your Ohio PLT State Coordinator: Sue Wintering, plt@dnr.state.oh.us or 614-265-6657.

Try this activity in the outdoors—a natural place to learn!
As a forester, there is not much worse than walking through a beautiful stand of timber——and finding that it is full of Ailanthus (Ailanthus altissima). Also known as tree-of-heaven, stink tree, and stinking sumac, it is an exotic invasive tree becoming more commonly found in Ohio's forests. It establishes on disturbed sites and can quickly spread.

Native to central China, Ailanthus was brought into the United States both shores. It was brought into Pennsylvania in 1748 by a gardener and into California by Chinese immigrants during the gold rush. The Chinese thought the tree to have medicinal purposes, but those cases are not well documented. It has since spread over most of the United States.

Ailanthus belongs to the Simaroubaceae family, known to be mostly tropical and subtropical. Ailanthus is an extremely quick growing deciduous tree. One-year-old seedlings can grow 3-6 feet tall. Adult trees are typically 80-100 feet tall. Leaves are pinnately compound, containing 11 to 41 leaflets on a rachis that is up to four feet long. The leaflets are unique in that they have a small tooth on either side near the leaf base.

Ailanthus bark is very thin and generally gray-brown in color with yellow or gold colored streaks running vertically down the bark. Twigs are very thick; light brown in color, and somewhat smooth. The heart-shaped leaf scar is very large. The wood is very soft, weak, light in color, and has few uses.

Ailanthus is late to leaf-out in the spring. Typically showy bronze-colored leaves emerge in early May. With the long spreading leaves, some people think the tree is rather beautiful. Ailanthus is dioecious, meaning that there are separate male and female trees. It produces clusters of showy white flowers in the summer.

The seeds take on vibrant shades of orange, red, and yellow. Seeds are flat, twisted, winged samaras. These are dispersed by wind and water, and amazingly, a mature tree can produce 350,000 seeds. Unfortunately, these seeds have a very high germination rate, helping the tree to spread rapidly.

If you have never smelled an ailanthus tree you should really go out and find one. Break off a twig or rub some leaves together and take a deep breath. It doesn’t get its reputation as a stink tree for its coloring. The smell is often likened to rotten peanut butter.

So why is ailanthus such a problem? It is a non-native invasive tree that can quickly take over an area and displace native species, often forming dense thickets. Though it is usually classified as intolerant of shade, it can be very persistent in the understory. If an opening is created in the canopy, it will overtake the site.

Most people do not realize that ailanthus is allelopathic, meaning it produces a chemical that will inhibit seed germination and the growth of other plants. It also spreads rapidly from stump and root sprouts, which resprout up to eight feet each year, and can produce seed again in two to three years. Ailanthus will grow on a wide variety of sites, from dry to wet, rocky to silty, on a wide variety of pH ranges.
Because of all these problems, landowners should take steps to eliminate it from their woods. Keep in mind that controlling any invasive species is not a one-step process. Some plants will not be killed, and will resprout, often with more vigor and stem density than the cut-off plant.

**Control Methods**

Anyone attempting to control Ailanthus should use an herbicide. Without it, this tree will stump and root sprout so prolifically after being cut that the area may become impenetrable with new sprouts. The joke is that 1000 of them will show up for the funeral.

Repeated cuttings show some success, but this will be an ongoing process for many years until the stems and roots finally die off. No matter what method you use, follow up treatments are necessary, as it is very hard to get a complete kill.

When using herbicides, it is imperative to read chemical labels to be sure they are used properly and all safety precautions are taken. If a label is lost, most chemical labels can be found at [http://www.cdms.net/manuf/manuf.asp](http://www.cdms.net/manuf/manuf.asp). Small variations in application method or chemical mixing can have large effects on results. Incorrect applications and improper timing are often the reasons why people have ineffective treatments.

Research proves that Ailanthus has some resistance to certain chemicals. According to OSU Extension Fact Sheet F-51-06, *Relative Effectiveness of Herbicides Commonly Used to Control Woody Vegetation in Forest Stands*, Ailanthus shows the least resistance to imazapyr, which is the chemical in trade products such as Arsenal, Stalker, or Chopper. Mixed with water, it is best used in the hack-n-squirt method on trees larger than 1 inch in diameter. Care needs to be taken not to apply too much chemical, as this chemical can kill non-target species.

My preferred method is a basal spray application of Garlon 4 mixed with diesel fuel or basal oil. The constant changing of diesel fuel formulations is posing some issues, and this has been removed from some labels. With the basal spray method, spray the stem 18 inches high and down to the ground, all the way around the stem, until chemical run off. Basal bark treatments can be done most anytime with the exception of early spring, during sap flow, or extreme freezing conditions.

For small seedlings, foliar applications of glyphosate are also effective. The best time for foliar treatments is during the summer months, typically June through August. It is important to monitor the weather. For the most effective control, do not treat during drought conditions because plants are slow to take up herbicides.

For stem injection treatments, such as hack-n-squirt, it is best to treat in late August through October, as the tree growth begins to slow down and shut-down for the upcoming dormant season. This is the most effective time for herbicides to be translocated to the root systems and reduce root sprouting the following spring.

If possible, treat and kill young Ailanthus before they mature and start producing seeds. This proactive tactic eliminates future seed crops.

I prefer to follow up my treatments every six months. At this point, if it is showing any sign of life, retreat the stem. By doing this, you will be treating a weakened tree, and have a much better chance of getting a full kill. Only treating the plant once and walking away from it for a few years will allow it to grow new roots and become vigorous again.

**Summary**

Because Ailanthus is such an invasive and prolific tree, consider controlling it in the woods before it becomes a widespread problem. This approach will save both time and money. Dividing up the problem areas and working with them one at a time makes the job more manageable.

It is important to be persistent for a good kill, and follow up when necessary. Targeting the seed-producing trees first will slow this aggressive tree’s spread through the woods. One thing is for sure, doing nothing will mean the problem will continue to get worse. For more information, contact your ODNR Service Forester, or your local OSU Extension Specialist.

**References**


**Ohio is home to the National Champion Ailanthus altissima!** The dubious tree grows on a residential property in Marion. It has a circumference of 254 inches, measures 54 feet high, and has a crown spread of 53 feet.

Ailanthus, or tree-of-heaven, has the largest pinnately compound leaves of any tree found in Ohio. They are similar in appearance to black walnut and sassafras, but much longer and with many more leaflets.

Green Ailanthus seeds. Seeds are primarily wind dispersed summertime, but can easily be transported along water courses. Photo courtesy of Ohio State University. Photos courtesy of ODNR unless otherwise noted.

Ailanthus is a non-native invasive tree that can quickly take over an area and displace native species, often forming dense thickets.

For stem injection treatments, such as hack-n-squirt, it is best to treat in late August through October, as the tree growth begins to slow down and shut-down for the upcoming dormant season.

Jeremy Scher provides woodland stewardship assistance to landowners in Jefferson, Harrison, Guernsey, Belmont, and Monroe counties. A previous version of this article appeared in the Spring 2005 Ohio Woodland Journal.
Dr. W.J. Lavelle and Family: Ohio’s 2013 Tree Farm of the Year

Photos courtesy of ODNR.
Ailanthus Management in Ohio Woodlands and Forests – Emerging Options for Better Control?

Over the past several years, I have been studying *Ailanthus altissima*. I have studied its biology - life cycle, reproduction and growth habits; its ecology - how it competes with other plants and interacts with its growing environment; and its response to forest management practices such as harvesting and prescribed fires.

I can still recall my surprise and near shock of my first “forest” encounter with *Ailanthus* at Tar Hollow State Forest in Ross and Vinton counties. Being a New Jersey native, I immediately thought: what is *Ailanthus* doing in the woods? It’s not supposed to be growing here! It’s an urban tree, a problem along highways, railroads, and rights-of-way. A few years later, I observed first-hand a blanket of *Ailanthus* seedlings covering the forest floor shortly following a timber harvest and a prescribed burn. To say that it was a scary sight is an understatement. I was watching an invasion, an invasion that caught the attention of many foresters and scientists alike. Thus began my study of *Ailanthus*.

As I scoured the literature, I found that experimental studies were scarce; instead, much of the information on *Ailanthus* responses to forest management practices was anecdotal. Thus there were numerous information gaps that needed to be filled before effective management recommendations could be developed to minimize the impacts of this invasive tree in forests. In this article, I provide research highlights and management insights on the control of *Ailanthus*.

After reading Jeremy Scherf’s “Leafing Out” article in this same issue, you should have a greater appreciation for the challenges of controlling *Ailanthus*. You have learned of its many attributes - prolific seeding, fast growth, vigorous sprouting of stumps, roots, and shoots, and the creation of dense thickets which outcompete native vegetation. While *Ailanthus* is considered shade intolerant, did you know that clonal sprouts attached to a parent tree can persist in a shaded forest understory for up to 20 years? It survives through an extensive root system receiving carbohydrates from trees growing in full sun. Vigorous sprouts can develop 50-90 feet from a parent tree.

Even root fragments as small as a few millimeters in diameter can sprout and establish a new tree or even be moved on vehicles and logging equipment, becoming established in previously uninfected areas. Sanitation of equipment, use of clean gravel, and proactive control are critical to minimizing its spread.

*Ailanthus* is already considered a “Least Wanted” tree by most public natural resource agencies and invasive plant control groups throughout the United States. I advocate that it not be called tree-of-heaven, as it does not deserve such an endearing name; but instead, simply called “Ailanthus.” Or better yet, use a more appropriate common name, such as “stink tree” after its pungent-smelling foliage.

Michael Loos, OSU Extension Agent so aptly wrote in his Cleveland Plain Dealer column in August 2008 - “Beware the infernal tree of heaven… I liken it to a caged rattlesnake that happens to reproduce like a rabbit. In this case, the snake is loose and outlives everything in its path… this is not a plant to be maintained or tended.”

**Seed production and germination**

Not only do individual female trees produce a tremendous amount of seeds, often exceeding 350,000 seeds annually, but they become sexually mature at a very young age (3-5 years old). Assuming a female tree can live 50-70 years, approximately 18-25 million seeds would be produced in the lifetime of that tree. The dense clusters of winged seeds can persist on trees well into the next spring, ready for wind dispersal without restrictions imposed by other vegetation.

No one is quite sure how far *Ailanthus* seeds travel, but scientists suspect they move great distances. West Virginia University researchers reported they exceeded distances of 700 feet. To make matters worse, seeds are also known to be blown across bare ground and snow, and float along streams and rivers. Researchers recommend that invasive trees with winged seeds such as *Ailanthus* should be eradicated along streams and river areas to prevent spread by water.

It is also not clear how long *Ailanthus* seeds can persist in the soil. Reports suggest that seeds can remain viable for at least 1 year. Because I found no studies that demonstrated they can live longer, I established a 6-year project to test seed germination rates. Freshly collected mature *Ailanthus* seeds had germination rates averaging 87 percent. These represent very high rates relative to other native wind-dispersed seeds such as yellow-poplar, which typically average 10-35 percent viability.

After being incubated on the forest floor for 1-2 years in either oak litter or forest soil, little decline in viability was observed. After 3 years, germination rates did start to decline for seeds incubated in leaf litter. However, germination rates of those seeds buried in the soil were still fairly high. These preliminary results suggest that it may be best to wait at least 3 years after treating a seed-bearing *Ailanthus* with herbicides before implementing a timber harvest, prescribed burn, or some other planned activity that disturbs the soil.

I was watching an invasion; an invasion that caught the attention of many foresters and scientists alike.
Aerial mapping of seed producers

Capitalizing on the prominent and persistent seed clusters of Ailanthus that are visible during the winter months, we are improving the detection, mapping, and subsequent chemical control of this species. Through a partnership with the ODNR Division of Forestry and the Wayne National Forest, we have successfully developed a tool to map Ailanthus infestations in Ohio public forests from helicopters using digital sketch mapping technology. Coordinates from these surveys are downloaded to hand-held GPS units to be used by field crews to quickly locate Ailanthus trees for chemical treatment or to produce infestation maps across large areas. This information can be used to delay a planned harvest or prescribed burn until after seed sources are eliminated from a stand.

A typical helicopter survey costs approximately $0.40 per acre. This method is most useful in delaying a planned harvest or prescribed burn until after seed sources are eliminated from a stand. Aerial surveys will be conducted in the fall of 2013 and 2014.

Alternative methods for controlling Ailanthus

Ailanthus is a prolific sprouter, making it very challenging to control by mechanical and chemical means. However, there may be an alternative control method for Ailanthus in the near future. Penn State Forest Pathologist Don Davis and graduate students identified a wilt-causing fungus as a potential biological control agent of Ailanthus. In 2002, they isolated Verticillium nonalfalfae from dead and dying Ailanthus trees within forested areas in Pennsylvania. After much searching, we found and isolated the same fungus in several forest stands in Virginia. After much searching, we found and isolated the same Ailanthus-killing fungus in Ohio during 2012.

This past summer 1 began testing this potential biocontrol agent. Stems were injected with a solution containing the fungal spores in water comparable to a hack-n-squirt herbicide treatment. Greenhouse inoculation studies are underway to verify that native tree species are not susceptible to the fungus. Preliminary greenhouse results on native Ohio seed sources of ash, beech, elm, and oak (black, chestnut, northern red oak and white) seedlings are encouraging - no signs of wilt have been observed. We hope to begin inoculation trials in Ohio forests as early as summer 2014.

The fungus is native to North America, so we are not introducing a new exotic organism. Once introduced into a stand, the fungus can spread from tree to tree through root grafting and naturally build up in the forest. That makes work easier - not every Ailanthus stem in a stand needs to be treated. Ambrosia beetles may also be vectors of the fungus. Since the fungus specifically kills Ailanthus and it can survive in the soil for many years, it has great potential as a biological herbicide. This bioherbicide will not be the magic bullet that will completely kill all Ailanthus from our forests. However, it will improve the chance for successful restoration of native vegetation as Ailanthus dies out.

I am still looking for naturally infected Ailanthus wilt stands in Ohio. If you observe large areas of rapidly wilting and dying Ailanthus trees, please investigate further then contact me at jrebbeck@fs.fed.us. A downloadable factsheet showing symptom development is available at http://www.nrs.fs.fed.us/units/sustainingforests/local-resources/downloads/wilt_handout.pdf.

Here are symptoms of Ailanthus wilt to be looking for next summer:

1. Rapid or sudden wilting foliage through the entire tree, followed by defoliation as leaves die.
2. Vascular discoloration of infected trees. Check for an orange-brown color compared with a white to cream color in healthy vascular tissue by peeling away the bark on the stem.
3. Large distinct areas of declining, dying, and dead trees. It is uncommon to find isolated single infected or dead trees. Tree death is rapid. Areas increase over time as infection spreads, typically through root-to-root transmission from infected to healthy trees.

Like what you are reading? Share The Ohio Woodland Journal with your local high school or public library, and help others to learn about Ohio’s woodlands! Discover sponsorship opportunities on page 30.

References


Goods from the Woods

What Are Ohio’s Timber Price Trends Telling Us?

Timber price trends provide information for making forest and business management decisions, as price expectations play a key role in timber management. For example, the long term effect of a price trend can either lengthen the optimal rotation period with increasing prices or shorten it with decreasing prices. In the near term, rising prices support allowing timber to continue to grow, as long as the growth in expected value exceeds the landowner’s anticipated rate of return. However, exceptional tree growth is needed to delay harvest and exceed the required rate of return in a period of falling prices.

Timber price trend analyses have been conducted in neighboring Pennsylvania and Indiana, with Indiana’s trend line updated annually by Purdue University. A wealth of data is contained in the Ohio Timber Price Report, which dates to 1960, but surprisingly little trend information has been made available to Ohio forestry clientele.

This article summarizes the major finding from one trend analysis conducted on Ohio stumpage prices. In that study the rates at which oak prices have been changing were found to be slowing, and this has significantly affected the price trends. First, the overall average annual percentage rates of change (APRs) from 1960-2011 for both red and white oak will be presented. Then, the inflation-adjusted prices for two 26-year eras, 1960-1985 and 1986-2011, will be discussed, with the trend lines compared for APRs. The 1985/1986 period was where Ohio stumpage prices were observed to become more volatile, beginning an overall large increase and then decline.

The Data

The stumpage data used here were Ohio average prices (dollars per thousand board feet (MBF), Doyle) for red and white oaks (Quercus spp.) compiled from semi-annual surveys mailed in May (Spring) and November (Fall), respectively. Nominal and real price APRs were determined. Nominal prices were then adjusted for inflation to 2011 constant dollars. This allows us to directly compare the prices between years and determine the true change in prices.

What was found

A summary of the species’ APRs are presented in Figure 1. Overall nominal changes were 5.28 percent for white oak and 5.41 percent for red oak, and these prices were increasing at statistically significant APRs. When adjusted for inflation, the gains ranged from 1.71 percent for white oak to 1.86 percent annually for red oak. Long term, oak sawtimber has been generating an acceptable real rate of return for landowners.

Prices for oak stumpage generally followed a pattern of steady increase from 1960 to 1991, then a large increase followed by an equally large decrease from 1991 to 2011. The price peaks observed in the mid- and late-1970s were similar to those observed in other states of the central hardwood region. Three peaks in red oak price occurred in the second era, 1994 ($740) and two nearly identical peaks in 1998 ($784) and 2004 ($782) (Figure 2). White oak stumpage reached an all-time high of $622 in 1996, and was almost equaled in 2004 ($608) (Figure 3). Prices fell rapidly for red oak following 2004 and less so for white oak. Oak prices at the end of 2011 were similar to those at the beginning of the second era in 1986. Remember, these are real prices and differ from the nominal prices actually occurring in those years.

The long term trends for red oak and white oak have been slowing since 1986 (Figures 2 and 3). In the second era, red oak prices have declined at a real annual rate of -0.28 percent. This has caused the overall APR to decline from 3.51 percent from 1960-1985 to 1.86 percent from 1960-2011. White oak prices were still increasing at 0.36 percent APR in the second era, but this was much slower than the 1.95 percent realized in the first era. This has caused the overall APR from 1960-2011 to be less than that received from 1960-1985.

What does this mean?

While final consumption is a fundamental driver, Ohio oak stumpage prices have historically followed the Appalachian hardwood lumber market, as hardwood sawmills are the primary purchasers of Ohio roundwood. Overall, Ohio’s sawtimber stumpage prices have closely followed that of #1 common lumber.

Generally, stumpage prices increase at a greater rate than lumber prices, as research has shown an increase in the worth of the end product accumulates at the source. Conversely, lumber prices are impacted to a greater degree than stumpage prices during economic downturns, as landowners will store their timber on the stump using a “wait and see” approach.

Red and white oak have historically been of higher quality and played leading roles in Ohio’s forest products industry, and this is expected to continue. However, from the 2004 price peak to the price low in 2009, red oak sawtimber inventory increased 11 percent. As the economy continues its gradual improvement, both red oak prices and harvest levels have improved from their 2009 lows.

Currently, exports are the primary market for hardwood lumber, with East Asia being the chief destination for Ohio hardwood logs and lumber. Industrial forest products manufacturers, which consume lower grade logs, have increased their consumption of late as railroads have invested in line maintenance and energy exploration drives the need for mats and board road. Given their wide species distributions and long-held preferred statuses in consumer and industrial products, red and white oak will likely continue to maintain comparative price advantages in the timber markets.

Oak still predominates in the sawtimber size diameter classes in Ohio. However, continued removal of oak coupled with limited forest management will likely maintain the recent trend of maple growth in sawtimber trees surpassing that of the other commercial hardwood species. Since the 1979 US Forest Service report on Ohio forests, soft maple inventories have doubled, while white oak inventories have halved. The long term implications of a hardwood sawtimber supply shift could be far reaching for forest ecosystems, Ohio’s forest products industry, and its economic impacts on communities.

Oak is a stable form of wealth. Encouraging responsible forest management in favor of crop trees from the more economically and ecologically valued species, such as oak where applicable, can capitalize in the short term on sawtimber growth, enhanced tree quality, improving forest products industry demand, and the environmental and financial capacity of the land.

Final Note

These decisions are linked to the caveat that an immediate need for cash is not present.

Suggested Readings


Eric McConnell, Ph.D.
Assistant Professor and Extension Specialist
School of Environment and Natural Resources
The Ohio State University

Fall 2013 | 23
With the powerful Derecho storm of June 29, 2012 and other destructive windstorms last summer, many of us woodland landowners experienced significant and widespread tree damage. This presented landowners with a dilemma: Should we risk cutting possibly dangerous wind damaged trees to make our woods safer, or just leave well enough alone and hope that no large “widow makers” fall on someone?

Before we answer this question and make a decision to cut or not to cut, each tree should be evaluated on an individual basis. We should also examine the extent of the damage and the location of the individual tree in regards to human traffic and the likelihood of a large branch falling on someone.

I, along with several other Southeast Ohio Woodland Interest Group members, attended the Storm Damaged Woodlands seminar in August of 2012 at the ODNR headquarters in Athens. The seminar, sponsored by OSU Extension, had numerous slides of wind damaged trees, and the presenters gave attendees guidelines for cutting trees that are severely damaged by wind.

As a rule of thumb, if a tree has lost more than half of its crown, then it would be wise to cut the entire tree and salvage it for logs or firewood. According to the seminar, woodland owners have up to two years to salvage severely damaged trees for use, however, for safety reasons, I prefer other options. When major branches are broken by strong winds and left hanging, I recommend closely examining the extent of wood fibers that are still attached to the tree or branch, using binoculars and circling the damaged tree to view it from all directions. If deemed reasonably safe, and it is concluded that the tree should be cut and salvaged, I would highly recommend cutting that tree, soon! If left for months or years, insects and decay are going to weaken the intact wood fibers and eventually it will fall – guaranteed! I don’t want to be chain sawing under a very risky hazard tree.

Because of this very real possibility, I take a proactive approach to removing severely wind damaged trees, instead of taking the popular, hopeful wait-and-see attitude. I finished cutting and removing all of my severely storm damaged trees in August, 2012, less than two months after they were damaged. I sold one large truck load of logs and have many cords of firewood to sell that will be seasoned for next winter.

Lastly, I think it is wise to evaluate the likelihood of a large branch falling on someone. Is that particular tree located directly over a well-used hiking trail, or on the edge of a field where farm machinery is often used? If so, it may be prudent to cut that particular tree, even if less than half of its crown was damaged. Otherwise, I think it would be safer to leave well enough alone and let nature take its course. We can avoid being in the woods on windy days and should always be watchful and aware of suspect tree branches that could fall at any time. Safety consciousness and awareness go a long ways!

Jeff Latta lives and works on his 96-acre farm in Meigs County. He has completed several timber stand improvement projects on his 70 acres of woodland since his retirement from ODNR seven years ago.

Jeff Latta live on his 96-acre farm in Meigs County. He has completed several timber stand improvement projects on his 70 acres of woodland since his retirement from ODNR seven years ago.

Questions to Ask Yourself

Landowners must know their own comfort and skill level before evaluating any hazard tree. Do you have proper training? Do you have sufficient experience? Do you have the right equipment for the job, including chaps, hardhat, and hearing and eye protection? Do you have the option of leaving the hazard tree, cordoning off or marking the hazard so others are aware of it, or letting a professional sawyer tackle the job?

Never attempt felling a tree, hazard or not, if you are unsure of your skills, have not taken proper safety precautions, or lack equipment. The average tree farmer probably takes unnecessary risks simply due to lack of experience and training.

Don’t forget to use the buddy system when operating a chainsaw — make sure someone is on site to assist you or call for emergency help if you should become injured.

The Ohio Forestry Association offers excellent classes by certified experts covering chainsaw safety, maintenance, and cutting techniques. Check with your local woodland owner group or association (see ad on page 8), or contact OFA at www.ohioforest.org or 888-388-7337 for class information.
the occasional encounter with a dead shrew lying atop the leaves or along a trail. But there is more to the small, unimposing, and rarely detected shrew than meets the eye, as is so often the case with wild animals. The northern short-tailed shrew has several impressive tricks up its furred sleeve which merit some attention… and perhaps even recognition as a woodland wild wonder.

The life of a short-tailed shrew

Shrews, along with moles, are classified as insectivores, which credits their insectivorous diet of centipedes, beetles, and other invertebrates such as snails and earthworms. Enter the first of the short-tailed shrew’s impressive talents. Shrews belonging to the genus Blarina produce a toxin in their salivary glands that is similar in some ways to the genus Blarina’s impressive talents. Shrews belonging to the genus Blarina have a toxic ability to aid in the capture prey, it also has an ability to avoid becoming prey. Glands on the belly and side of a short-tailed shrew exude a musky smelling and apparently distasteful substance that may cause predators to leave a freshly killed shrew behind. This may be the answer to the occasional shrew found untouched on the forest floor.

Some biologists think these glands are also used for scent communication with other shrews. The short-tailed shrew is a solitary and territorial animal, and will defend its territory and tunnels using scent marking, but more often using aggression. The short-tailed shrew is a surprising force to be reckoned with in defense of its territory. Exceptions to shrews’ solitary and defensive nature can be found during the breeding season when territories will occasionally overlap with the opposite sex.

Signs to look for

The impressive talents of the short-tailed shrew continue as we examine signs it leaves behind. Perhaps the most common sign of a shrew is the elaborate tunnels left behind at the surface of the soil, under leaves, grass, or snow. Shrew tunnels are similar in appearance to vole tunnels, yet are smaller in diameter (about ½ in. – 1½ in.). Voles tend to neatly clip the grasses and leaves as they create a tunnel, while the grass and leaves in shrew tunnels are flattened out and pushed to the side. However, it is the navigation through these tunnels that is impressive, especially considering the fact that the short-tailed shrew has poor eye-sight. The solution? The short-tailed shrew uses echolocation in much the same way as bats do. After emitting series of ultrasonic clicks, the information decoded from the returning echoes allows a shrew to “see” its surroundings without actually seeing its surroundings!

The short-tailed shrew is active year-round, so look for their tunnels during the winter as well. To help keep warm in the cold winter months, the short-tailed shrew has brown adipose fat tissue, which produces heat when burned off. This tissue is in the back of a shrew, and acts almost like a warm, electric blanket to vital organs.

The Northern short-tailed shrews are a uniform slate gray, with small eyes and ears, a long snout, and short tail. They weigh roughly one ounce and are 2-4 inches long, excluding the tail. Photos courtesy of Phil Myers and Jamie McCarthy, University of Michigan-Ann Arbor, the Animal Diversity Web (online).

Given their abundance and presence in a variety of habitats, shrews have a significant impact on invertebrate abundance. The short-tailed shrew is both predator and prey, and just as it has a toxic ability to aid in the capture prey, it also has an ability to avoid becoming prey. Glands on the belly and side of a short-tailed shrew exude a musky smelling and apparently distasteful substance that may cause predators to leave a freshly killed shrew behind. This may be the answer to the occasional shrew found untouched on the forest floor.

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Through our woodland management programs, we have planted more than 60 million trees on company land, enhanced wildlife habitats and maintained clean waterways. Our 42,000-acre ReCreation Land in southeastern Ohio features more than 350 lakes and ponds and offers 380 no-cost campsites for public use.

Our long-standing partnerships with the Ohio Department of Natural Resources Division of Wildlife and other groups help AEP fulfill its mission of caring for our customers, supporting business and commerce, building strong communities and protecting the environment.

To learn more, visit www.AEP.com/environmental
If you can't see the forest for the trees, work with a Glatfelter forester to get a clearer picture.

Glatfelter's Landowner Assistance program. Working with private landowners to provide good forestry practices.

888-609-TREE