

Illinois Forests



"The Voice for Illinois Forests"

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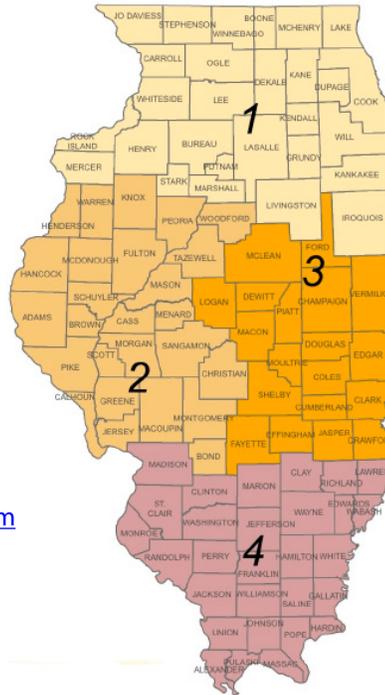
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Our Mission...

"to act on issues that impact rural and community forests and to promote forestry in Illinois."

Our Goals...

- Promote forest management and help landowners manage their forests
- Educate members and the general public about rural and community forestry
- Advocate for favorable legislation and policies to benefit/protect landowners managing their forests
- Understand and engage our members, and increase IFA membership
- Govern the IFA efficiently and effectively to better serve our charitable mission

<https://ilforestry.org>

Message From the IFA President



Fellow IFA Members –

Our 15th year is now in the history book! I will date myself a little by saying “We’ve come a long way Baby!” but that is ok. The fact of the matter is – we have! There was a significant difference in this year’s annual conference because of our concerns about the virus but the results were very good overall. There was a full week of highly educational webinars leading up to the actual Annual Meeting on Friday. We had over 100 registrations for the webinars – a great number when you consider our in-person events did well to have 30 people attend in the past. The effective approach Zach used to these webinars was tying a couple of shorter presentation together to give multiple perspectives on the same topic. The discussions on fire prescribed or otherwise, was one that I thoroughly enjoyed personally.

The Meeting itself was also very informative. The only negative was participation but it still was useful for those that were involved. There were four topics discussed during the meeting that I would like to briefly reflect on.

First was the Budget – bottom line is we are having to dip into savings for the first time. It is a concern for all of us. We do have some significant funds outstanding from IDNR, which will hopefully be released to us in the near future.

On the opposite end of the spectrum was the Program Coordinator Report. Zach has done a great job for us over the last year and his report summed it all up quite well. So well, in fact, the meeting participants recommended he consider developing a promotional “ad” for future use. Additionally, Dave Gillespie awarded the “Special IFA Annual Achievement Award” to Zach. This was a well-deserved recognition to be sure! The master plaque with the names of all past recipients will be sent to the University of Illinois, Dixon Springs office for public display.

Next was the Gift Membership Campaign. I addressed our progress thus far. We have had over 30 Gift memberships donated by current IFA Members! We have time for a lot more – the campaign runs until the New Year. This would make a great Christmas gift!

Give the gift of IFA this holiday season!

[Gift Membership Form](#)

Last but certainly not least was our election of officers. We have two new Board members to include Tricia Bethke in Region 1, and Jeff Biethman in Region 4. We also say “Thank You” to John Edgington and Lydia Scott for their past service.

In closing, I would like to express my personal “Thank You” to each and every IFA member. Without you and your support, we simply would not exist. In the next issue of our Newsletter, I hope to have an update on the tree-planting effort on my property here in Vienna. Thus far, it has been VERY educational for me personally and I would like to share what I have learned.

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Even without the specifics, it’s easy to search for the Illinois Forestry Association as your preferred charitable organization. Just remember to enter “smile dot” before amazon dot com. At no cost to you, Amazon will donate 0.5% of eligible purchase totals to the IFA.

Every little bit helps.
Thanks for your support!



IFA Holds Virtual 15th Annual Conference

Tricia Bethke - Region 1



Tricia Bethke is the Illinois Forest Pest Outreach Coordinator. Tricia's responsibilities include statewide training of key stakeholders on the USDA APHIS Hungry Pests program for forest pest identification, high-risk pathways, regulations and quarantines, and reporting protocols. Tricia also coordinates and instructs public and private audiences on forest pest detection, tree identification, and tree health monitoring. We are very excited to add Tricia to the board of directors.

Jeff Biethman - Region 4



Jeff and his wife Janis are lifelong residents of Randolph County and have the privilege of owning a couple parcels of land with significant old growth timber. After observing widespread foliage damage and abnormal tree mortality in 2017, Jeff and Janis joined the IFA in an effort to bring awareness to this issue. Jeff's educational background includes a BS in Engineering Technology from SIUC and an MBA from Washington University in St. Louis. Jeff is passionate about the health of Illinois trees. Jeff will make an excellent addition to the IFA board.

On October 19th, the IFA kicked off its 15th Annual Conference with a virtual webinar series. Overall, the virtual webinar series was a success! Expert in their respective specializations gave presentations by using the virtual meeting app "Zoom". While we decided to go with a virtual format this year because of the need for responsible social distancing, we plan to utilize these virtual webinars in the future to provide more educational content for members.

If you missed our virtual webinar series, please see the list of topics below.

- **Urban Forestry, Trees and Natural Disasters**
Debbie Fluegel, Trees Forever
- **Fire on the Mountain**
Troy Evans, Great Smoky Mountains National Park
- **A Land Built by Fire**
Chris Evans, University of Illinois Extension
- **Raising Mushrooms for Fun and Profit**
Mike Hatfield, Flyway Family Farm
- **Timber Buying**
Stan Curtis, Carbondale Veneer
- **Leasing Woodland for Recreational Hunting**
Chris Shores, River to River Outfitters
- **Release, Recovery... Regeneration? EAB Biocontrol in Illinois**
Nick Furlan, USDA-APHIS-PPQ

- **Managing EAB, Where We Have Been and What Lies Ahead**
Fredric Miller, IDNR & Joliet Junior College

These webinar presentations have been recorded and will be available on the IFA website at the link below.

<https://www.ilforestry.org/Videos>

On October 23rd, the IFA held its Annual Business Meeting where multiple topics were discussed. IFA Secretary, Dave Gillespie took time to discuss the previous Annual Meeting's Minutes.

President Mike McMahan discussed the treasurer's report. From a financial standpoint, the IFA has struggled like many organizations during the pandemic. For this reason, the IFA continues to push its gift membership campaign, which thus far has brought new members to the organization.

Program Coordinator, Zach DeVillez presented his report on membership numbers, and reviewed projects accomplished throughout the year. These projects included the IFA website updates, the development of educational materials, a landowner webinar series, and a woody invasive plant removal project at Touch of Nature Environmental Center.

New Faces on the Board of Directors

There will be some changes to the IFA board this year. We will be adding two new directors to the association. Their new terms will officially begin on November 15th, 2020.

The Importance of Riparian Buffers to Mitigate Nutrient Runoff

by Zach DeVillez

You may have heard that forests have an important role in the water cycle. This is absolutely true. Forests regulate flow discharge, evaporation as well as precipitation. But did you know about the role that trees and vegetation have in helping to mitigate the amount of pollutants entering our major waterways? This article will explore the role that riparian buffers have in reducing pollution in Illinois waterways, as well as water systems farther away to our south.

The Mississippi River Basin

Let's first explore some Geography. You may have heard this information in grade school, but if you're like me, a refresher never hurts. Illinois obviously sits between two major rivers, the Mississippi, and the Ohio. The Mississippi River is 2,350 miles long, flowing from Lake Itasca to the Gulf of Mexico. The river discharges approximately 600,000 cubic feet of water per second into the Gulf. That's quite an impressive amount of water. Even more impressive is the amount of area that drains into the Mississippi River. The Mississippi drains an area of 1.2 million square miles of the United States. This leads us to the Ohio River. The Ohio River is 981 miles long, running from Pittsburgh, Pennsylvania to Cairo, Illinois where the river reaches confluence with the Mississippi. Many of our Illinois rivers and smaller stream systems flow into the Ohio or the Mississippi. Therefore, it is safe to say that much of Illinois' stream discharge ends up in the Gulf of Mexico. Why is this important? We'll get to that soon.



© Brian Lockhart, USDA Forest Service, Bugwood.org
Figure 1: The Mississippi River running through Baton Rouge, Louisiana. Just upstream from where the river empties into the gulf.

Agriculture in the Mississippi River Basin

The Mississippi River Basin watershed is a vitally important region for America's agriculture. The river acts as a commercial super highway for transporting goods. In the Mississippi River drainage basin, agriculture dominates the landscape. If you live in this region, odds are you live close to cropland being used to produce corn, soybeans, or wheat.

Growing Water Quality Concerns

While agriculture is an absolutely necessary land use practice in Illinois, as well as the rest of the "bread basket", there have been growing concerns about pollution affecting the water quality of the Mississippi River. Much of this pollution has been attributed to agricultural products; specifically nutrient enrichment products, more commonly known as fertilizer.

Eutrophication and the Gulf of Mexico Hypoxic Zone

When nutrient fertilizers runoff into streams and rivers, such as the waterways of the Mississippi Drainage Basin, the waterways carry large amounts of nutrients such as phosphorous and nitrogen down river. As you might expect, much of these nutrients flow down river all the way to the Gulf of Mexico where these nutrients build up in large amounts. This creates a major environmental concern called Eutrophication.

Eutrophication is a fancy word for the occurrence of nutrient loading entering an ecosystem. This nutrient overload stimulates excessive algal bloom growth. Algae is a perfectly natural part of estuarial ecosystems. However, when these algal blooms grow in excess they cause a big issue for the entire ecosystem as a whole. The overabundant algae eventually dies and decomposes. During the process of bacterial decomposition, oxygen is used. This leads to less dissolved oxygen in the water, which leads to hypoxia.

Hypoxia means oxygen depletion. When it is used in relation to bodies of water, it means dissolved oxygen levels falling below 2 mg/L. This creates "dead zones" that cannot sustain life. When this dramatic depletion of oxygen occurs in an ecosystem, the ecosystem no longer supports abundant life. The food webs in these hypoxic zones eventually become desiccated.

Continued on the next page -



Figure 2: Sediment and nutrient buildup off the coast of Louisiana, leading to a hypoxic ecosystem.

mitigate nutrient runoff and control erosion from overland flow. Not only do these areas mitigate water quality issues, but they also provide excellent habitat for wildlife.

for the stream, which can help protect aquatic life from intense sunlight which can overheat stream habitat. The trees closest to the stream should be species that are well adapted to tolerate flooding, such as willow, sycamore, maples, river birch, and cottonwood. Beyond these trees, oaks and hickories are perfectly suitable as well as beneficial to wildlife.

The next zone should consist of shrublike species. Like trees, shrub species provide excellent uptake of nutrients and erosion control. These zones can also be very beneficial to wildlife. Native shrubs such as dogwoods, hawthorne, spicebush, common elderberry, eastern wahoo, and button bush are ideal to plant.

The final zone, and the furthest away from the stream should be a buffer zone of grasslike vegetation. The dense growth of grasses help to break up overland flow of runoff from crop fields. Some great species options include big blue stem and switch grass.

Extent of the Issue

The Gulf Hypoxia zone fluctuates in size, usually depending on hurricane activity in the Gulf. The Hypoxic zone was most recently measured to be 2,116 square miles in area, but in the past five years it has averaged out to be 5,408 square miles in area (NOAA). This hypoxic dead zone has had a major impact on the coastal ecosystems of the Gulf, and has negatively affected a very important fishery.

What Can We Do to Mitigate Agricultural Sourced Pollution?

At the beginning of this article, we introduced the idea that vegetation can mitigate nutrient runoff. Just as the algal blooms in the Gulf feed on these nutrients, so do vegetation, such as trees, shrubs, and even grass. Due to this fact, one of the ways we can help mitigate agricultural pollution is by encouraging riparian buffers between the interphase of agricultural land and our Illinois waterways.

What is a Riparian Zone?

A riparian zone is an area of vegetation of various species composition that borders a body of water. This zone is also referred to as a riparian buffer. It's called a riparian buffer because of the zone's ability to



© Gillian Allard, FAO of United Nations, Bugwood.org
Figure 3: Riparian buffer bordering a stream.

The Optimal Vegetation Structure of Riparian Buffers

Riparian buffers are best at mitigating nutrient runoff when the buffer consists of forest. Trees are quite efficient at uptaking nutrients like nitrogen and phosphorous. However, grasslike plants and shrub species also have a role to play. Using these three vegetation types together can optimize the benefits associated with riparian buffers.

The buffer zone closest to the stream should consist of trees. There are a couple reasons for this. One reason is that the roots from trees help stabilize stream banks, which helps minimize erosion into the stream. The "tree zone" also provides shade

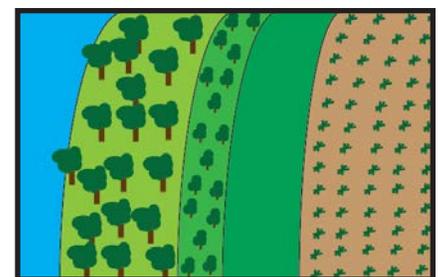


Figure 4: An illustration showing the zones of a riparian buffer. Zones of forest, shrubs, and grass between the crop field and the stream.

The Next Step

If you have land that would benefit from riparian buffer creation, there are programs that encourage the creation of this management tool. Speak with your local NRCS office, and be a part of the solution to a growing environmental concern.

Dead Wood Brings a Forest to Life

By Chris Evans
University of Illinois Extension Forester

Dead wood, either standing as a snag or laying on the ground as logs or slash, isn't trash that should be cleaned out of your forest. Dead wood, also called coarse woody debris, is full of life and vital to the health of a forest.

Trees die, even in a perfectly healthy forest. It is a natural process. As a forest matures and the trees get larger, there may not be enough space and resources for all of them. Some win and take their place in the canopy. Others lose and may die from lack of sun or succumb to insects or pathogens. As such, tree death, as long as it does not occur in extreme amounts, is a natural and desirable part of the forest ecology. In fact, as trees die, they create a center for activity through snags or downed coarse woody debris.



Figure 1: A standing snag

Downed coarse woody debris includes fallen logs, wind throws, larger dead roots, and tree tops left from logging operations. Woody debris returns organic matter and nutrients back to the soil and can serve as important nurse sites for developing tree seedlings, especially in sites with low-fertility soils. In addition, woody debris provides habitat for an amazing amount of animals, such as insects, salamanders, lizards, and small rodents.



Figure 2: A downed log on the forest floor



Figure 3: Windthrow; a tree uprooted by wind

Snags are dead (or partially dead) standing trees. Snags provide cavities for nesting birds, such as pileated woodpeckers, wood duck, barred owls, and bluebirds. Snags are also preferred roosting and perching sites for mourning doves, and many hawks. As the snags decay, they become host to many different insects that provide a buffet for insect-eating birds. In Midwestern hardwood forests, it is estimated that nearly 40 different species of birds and over 20 species of mammals utilize snags.



Figure 4: A pileated woodpecker

How long a snag will remain standing or how long it takes downed wood to rot away depends upon a lot of factors, including temperature, moisture, size of the snag, and the species. As a tree starts to die, it loses its defenses against pathogens and insects. As such, they are quickly colonized by fungi and other decomposing organisms. If you are a mushroom hunter, you already know



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to focus in on dead wood to look for oyster mushrooms, chicken-of-the-woods, and lion’s mane mushrooms. Insects, primarily beetles but also ants, bees, and even moths move into feed either on the dead wood or on the fungi growing on the wood. This feeding breaks down the wood and facilitates decay and decomposition. Higher temperatures and more moisture speeds up this process significantly.



Figure 5: Lion’s mane growing on coarse woody debris



Figure 6: Chicken-of-the-woods growing on rotting wood

The wood of some trees are naturally more resistant to decay than others. For example, in many places you can find eastern red cedar fence posts that were placed 60-80 years ago still standing and as solid as ever. In contrast, it is said that if you cut a hickory down, it may be rotten by the time it hits the ground! Snags of species like ash, cottonwood, basswood, hickory, and boxelder will start to lose small and medium branches almost immediately and the entire snag may fall within 3-7 years. More resistant species, like oak, locust, osage orange, and coffeetree will retain smaller branches much longer and the entire snag may last well over a decade.

It is important to note if you see large patches of dead or dying trees or entire groups of trees of one species dying, then that may indicate a larger forest health problem, such as an outbreak of an invasive insect, such as the emerald ash borer or a serious tree pathogen, such as oak wilt. Those instances should be looked at and taken serious as they can have big impacts to a forest.



Figure 7: A green ash killed by emerald ash borer

If you are just seeing an occasional dead or dying tree or see light accumulation of downed logs or some storm damage in your woods, look for all of the different ways that dead wood is bringing life to your forest! Leaving this woody debris in place or dead snags standing is a great way to improve wildlife habitat on your land. In fact, many landowners are intentionally creating snags by girdling a few trees when conducting a thinning or even harvest.

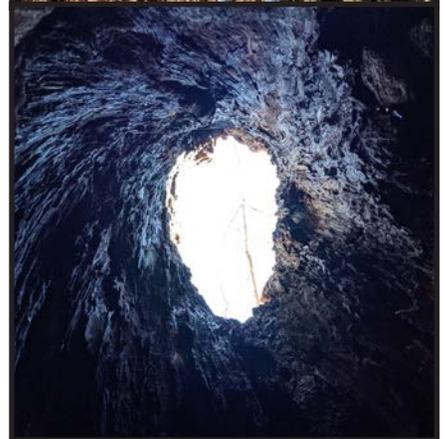
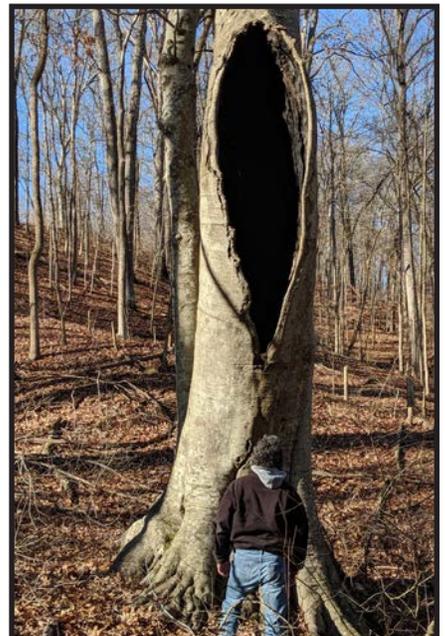


Figure 8 and 9: A massive cavity in a living American beech tree, perfect for wildlife habitat

Forest Health Pest Alert Bur Oak Blight

By Fredric Miller
IDNR Forest Health Specialist



Bur Oak Blight, as the name suggests, is a foliar disease of Bur Oak (*Quercus macrocarpa*). The disease was first observed in the mid-1990's in Iowa, Minnesota, Wisconsin, and Nebraska and was discovered in Illinois in 2012. Initial reports were in northern Illinois, but the disease has since spread southward.

B.O.B. affects only Bur Oak, particularly the small-acorned variety *Quercus macrocarpa* var. *oliviformis* that grows on dry upland sites. It has also been observed in Swamp White Oak (*Quercus bicolor*) but occurrence in this species is rare.

Symptoms

B.O.B. is caused by the fungal pathogen *Tubakia iowensis*. The fungus overwinters in pustules in diseased leaf petioles which remain on the trees through the winter (this can be a good way to find B.O.B.) (Figure 1d). Fungal spores are released in spring when the new leaves begin to expand, and wet springs can encourage the growth of the pathogen. A latent period follows with few symptoms in between infection and when symptoms begin to appear in June. Symptoms progress from the lower branches to the crown and get worse year to year. In July, necrotic tissue can be seen as leaf vein turn purple and become noticeable (Figure 1a). As the veins are killed, wedge shapes areas of brown necrotic tissue appear between the leaf veins, and lesions merge causing leaves to die (Figure

1b). Severely affected trees may have significant leaf mortality (Figure 1c). Several years of leaf mortality can make trees susceptible to other diseases and insects and lead to tree death.

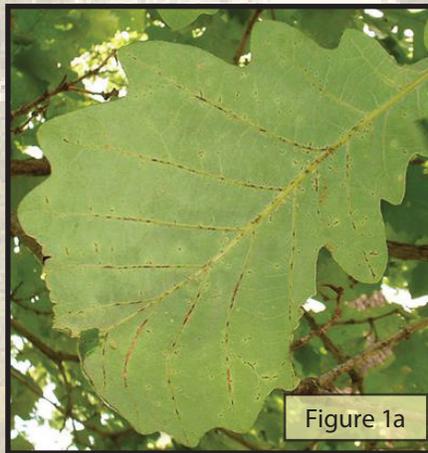


Figure 1a

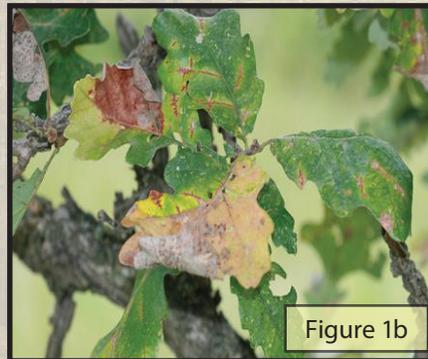


Figure 1b

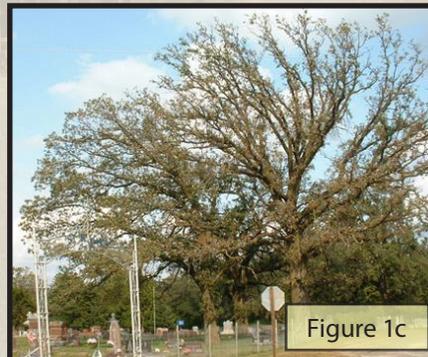


Figure 1c

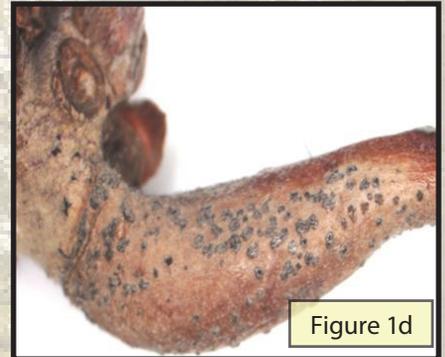


Figure 1d

Figure 1: Signs and symptoms of B.O.B.

- 1a) necrotic leaf veins, an early sign of disease
- 1b) wedge shaped lesions that develop later in the summer
- 1c) trees experiencing significant leaf dieback from B.O.B.
- 1d) Black pustules on leaf petioles where fungus overwinters on the tree, a diagnostic feature of B.O.B.

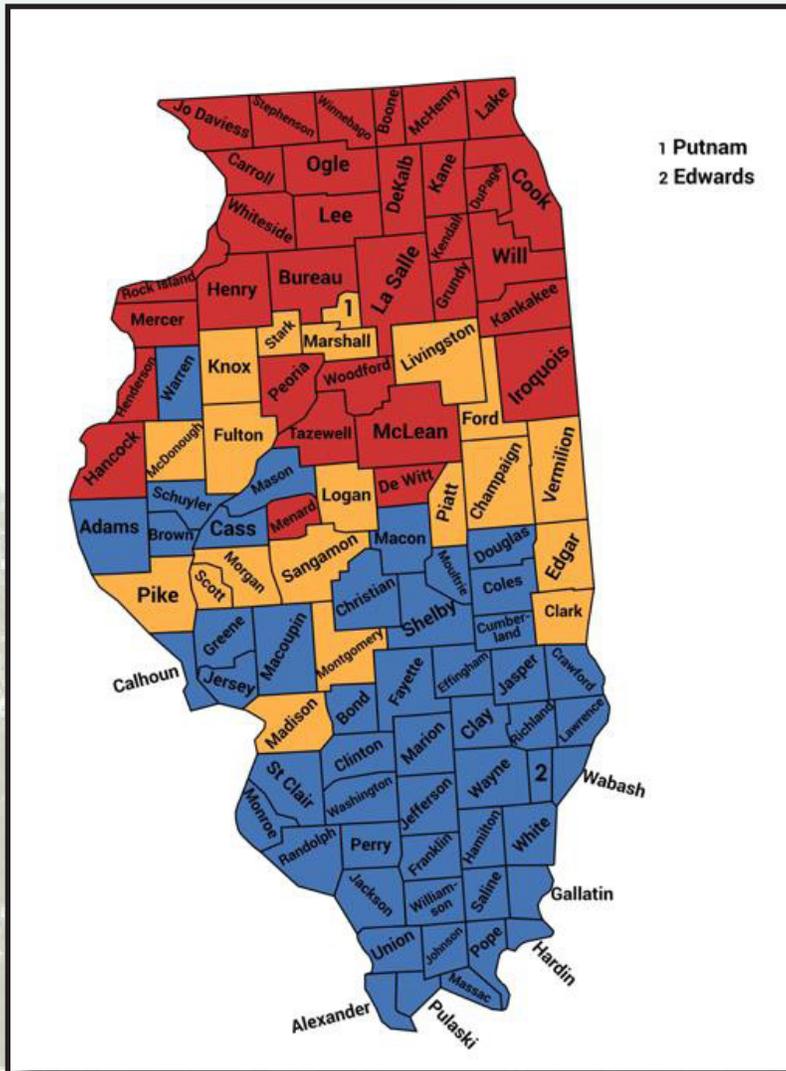
Distribution

In 2019, the Illinois Forest Health Program completed a multi-year survey of all Illinois counties to determine how widespread the disease is in the state. As is shown in Figure 2, B.O.B. is most prevalent in the northern part of the state and is uncommon in the southern part of the state where Bur Oak, particularly *Quercus macrocarpa* var. *oliviformis*, is less common.

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Management

B.O.B. is not immediately lethal to bur oaks but may eventually kill a tree over a period of years. Like many leaf diseases, B.O.B. makes oaks more susceptible to other pathogens and insects such as the two-lined chestnut borer. Promoting tree vigor through plant care practices such as watering and mulching can help trees survive. Research on the biology, epidemiology, and chemical management of BOB is ongoing, and research from the University of Iowa suggests that trunk injections of propiconazole may be effective in controlling the disease in high value trees. Injections need to be made by a certified professional and correct diagnosis of the disease is necessary before any treatments are made. If you suspect B.O.B. on a high value oak tree, collect leaf samples (with petioles attached) and send them to the University of Illinois Plant Clinic or other laboratory for confirmation. Sampling for BOB is best conducted in late summer (i.e. August and September) when the disease is fully expressed.



BOB Survey As Of December 2019

- BOB Confirmed
- Surveyed: BOB Not Confirmed
- Surveyed: No Bur Oak Found

Figure 2. The distribution of B.O.B. in Illinois. Red indicates counties with confirmed cases of B.O.B., yellow indicates counties that were surveyed but the disease was not found, and blue indicates counties where bur oak trees were not encountered.

Sources:

1. Harrington, Thomas C.; McNew, Douglas L. 2016. Chapter 7: Distribution and Intensification of Bur Oak Blight in Iowa and the Midwest (Project NC-EM-B-10-01). General Technical Report SRS 213. USDA-Forest Service, Southern Research Station. 6 p.
2. Cleveland, Travis. 2012. Bur Oak Blight. Home, Yard and Garden Pest Newsletter. University of Illinois Extension. Issue 14.
3. Pokorny, Jill D; Harrington, Thomas C. 2011. Pest Alert: Bur Oak Blight (Project NA-PR-02-11). USDA-Forest Service Northeastern Area State and Private Forestry.

Bur Oak Facts

- Can grow 80 -120 feet tall at maturity
- Bur oak can live close to 1000 years old
- The most fire resistant oak because of thick bark
- Can occur in dry and moist soils
- Distinct acorn where the cup covers 3/4 of the acorn
- Durable high quality wood

White Oak Genetics and Tree Improvement Program: A Range Wide Collaboration

By Laura Dewald

Tree Improvement Specialist, Department of Forestry and Natural Resources of Kentucky

There is concern about sustainability of the white oak (*Quercus alba*) resource in the Central Hardwood region. Most forests lack sufficient white oak seedlings that are competitive enough to grow into larger size classes, resulting in transformation of white oak forests into stands dominated by other species. To address this problem, the White Oak Initiative (www.whiteoakinitiative.org) was developed, and an eastern US project focused on developing improved white oak (www.WhiteOakGenetics.org) was established at the University of Kentucky in collaboration with the US Forest Service and the Kentucky Division of Forestry. The project is working with forest, wood, and distilling industries along with forestry, conservation, and wildlife agencies and organizations to answer a wide variety of questions associated with genetic variation and improvement in white oak. The project is intended to be collaborative with many types of partners across the entire eastern US.

Contact Laura.DeWald@uky.edu if you would like to be involved.

The project is aligned with and supports the goals of the White Oak Initiative and the James B. Beam Institute for Kentucky Spirits focusing on traits that have economic and ecological value. The goals of the project are to (1) provide a sustainable supply of improved white oak seedlings to meet current and future demands, (2) improve our ability to conserve and restore white oak to achieve a variety of ecological, conservation and economic goals at regional and national levels, and

(3) provide genetic resources for academic and industrial research and development. There are three major phases to the project. Phase 1 began in 2019 and site preparation for Phase 2 is underway with planting starting in 2021.

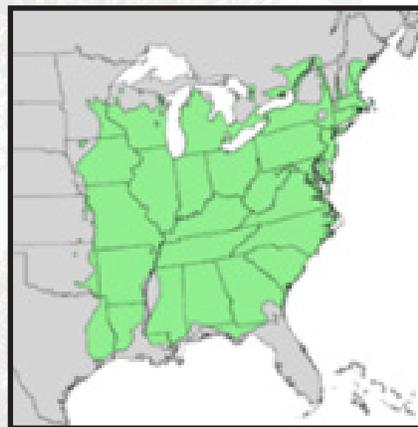


Figure 1: White oak range in the United States.

Phase 1 - Collecting and Archiving Genetic Material:

White oak acorns are being collected from the entire range of white oak (green area on the map) and planted at the Kentucky Division of Forestry's (KDF) Morgan Co. nursery. Twigs from trees the acorns were collected from are grafted to create a clone bank to conserve genetics of the parent trees. After selection based on nursery performance, the goal is to have seedlings from at least 300 parent trees moving to progeny testing.

Despite a poor mast year, over 17,000 acorns representing 91 parent trees and 9 states were planted in 2019. Volunteer acorn collectors included state and federal agency personnel, Master Naturalists programs, NGO



groups, individuals from forest and distilling industries, and citizen scientists. In 2020, over 75 grafts were made to initiate the clone bank. Acorn collecting and grafting will continue annually until the entire geographic range of white oak is represented in the project.

The 2020 acorn collection effort is underway with volunteers in over 20 states searching for white oak trees to collect acorns from. The first 2020 collections to arrive at UK were from Illinois! Help is still needed to get a diverse collection from Illinois. All we need from each person is a one-gallon ziplock type bag filled with acorns collected from the ground from under one tree. Postage and a return address label are provided to each acorn collector.

Contact Laura.DeWald@uky.edu if you can help collect this year or next year!

Phase 2 - Progeny Testing:

1-0 bareroot seedlings will be planted in progeny tests to evaluate traits of interest to stakeholders. Depending on the trait, identification of superior performance can occur within 3-15 years. The distilling industry has taken the lead in

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supplying land and support for progeny testing in KY. Several smaller progeny tests containing regional subsets from the large KY test are also being established throughout the range of white oak to evaluate local adaptation and genetic superiority.

Public and private partners have expressed interest in hosting a regional progeny test but **many more partners are needed throughout the range of white oak**. The land area needed varies depending on number of sources a partner would like included, but seedlings from about 22 parent trees (that acorns were collected from) can be evaluated on a one-acre site.

Out-planting into progeny tests will begin in March 2021 using the best seedlings from the nursery and will continue until parent tree representation within each progeny test is complete.

Phase 3 – Seed Orchard Establishment:

Parents producing superior progeny based on progeny test results will be used to create grafted seed orchards using parent material stored in the clone banks. Grafted trees can start producing acorns in about 5-7 years. Natural or controlled pollination within seed orchards will result in improved seedlings that will support ecological success in the forest and/or increased economic value for wood products industries. State nurseries are a logical place for locating seed orchards because they can effectively deploy and ensure improved seedlings are publicly available. However, other types of landowners can also host a seed orchard.

Potential Growth Improvement in White Oak

10-year-old white oak growing side-by-side at the Indiana DNR Vallonia Nursery



Unimproved
grown from random acorns sold to the nursery

These trees were grown from acorns collected at the same time, planted beside each other in adjacent nursery beds and out-planted in alternating rows on the same site at the nursery.

- Unimproved = trees grown from random sample of acorns sold to the nursery



Improved
grown from acorns from mating two superior parents

- Improved = trees grown from acorns from controlled pollination between two high quality white oaks

Keeping a Keystone Species Alive In The Shawnee National Forest



By Justin Dodson - US Forest Service Silviculturist
& Lisa Helmig - US Forest Service Natural Resource and Planning Staff Officer

If you are fortunate enough to own or manage forest land in Illinois you understand the importance of oak as a keystone species in your woodlot. You understand the diversity it possesses from the ground level to the tops of the trees. You witness the wildlife that utilize your woodlot year-round and depend on a crop of nutritious acorns hitting the ground in early fall. You see it in the high quality or specialty oak products you buy or consume. You see it in the joy of a kid's first harvest of a fall deer or a spring turkey.

What if I told you your oaks were dying, or you are losing diversity? What if I told you the wildlife numbers could decline on your property or that oak would not dominate your forest in the future? What if I told you lack of management is a contributing factor? What would you do?

In southern Illinois, we have a forest resource concern that crosses ownership boundaries and has implications for habitat, economic and social benefits. That concern is declining forest health and is the reason why the Shawnee National Forest developed the collaborative ~3,000 acre Bean Ridge project in Alexander County.



Figure 1: U.S. Forest Service Silviculturist, Justin Dodson discusses forest health at a Bean Ridge public field tour.

At the Bean Ridge project, forest health has become a critical issue because there are mature trees (>70 years old) growing very tightly together and are competing for light and nutrients to sustain growth confirmed by forest inventories in 2018 and 2020. Between the two inventories, we have a comprehensive summary of the current condition. In total, about 82% of the project area was inventoried and the data shows 88% of the forest is so dense that mortality is and will continue to occur without intervention. Foresters refer to this as competition induced mortality. This condition predisposes the forest to insect and disease attacks because the tree's resiliency is low. An alarming statistic from the inventory showed 8.6 trees per acre are dead and of this total, 3.1 are larger oak or hickory. At the same time, the forest is at risk from a species composition shift because the young seedlings and saplings are primarily species other than oak. The data shows oak or hickory seedlings outnumbered six to one. The extremely dense forest is creating

shaded light conditions that favor maple, beech and ash. The hillsides are blanketed with these shady species ready to replace the oak as it dies. The skeletal remains of once large, dominate oak trees that have succumb to age, competition, or insect and disease pressures are all too common in the forest.



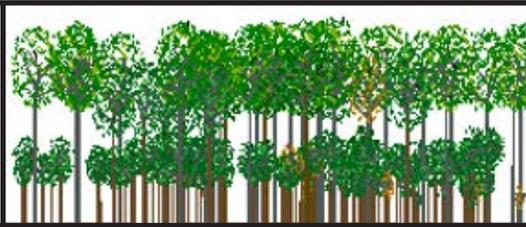
Figure 2: Mesophytic species outcompeting oaks in the understory.

Declining oak health and sustainability concerns are wide-spread and well documented throughout the eastern United States and many states, conservation groups and private landowners are working hard to sustain oak as it is a keystone species connected to so many benefits. Our management plan at Bean Ridge will improve the spacing, create compatible light conditions for oak and establish a more resilient forest.

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Current Condition

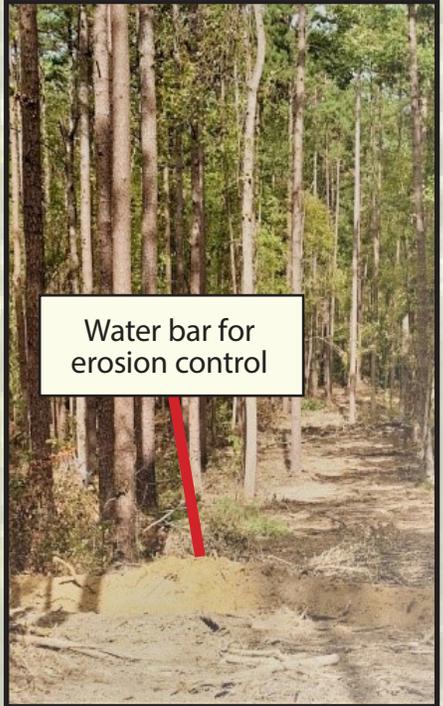
Dense oak and hickory dominated overstory with shade tolerant mid-story.



Addressing declining forest health, overstocking and species composition requires a variety of techniques that together provide advantages to sustaining keystone oak species. Techniques will be applied to varying degrees depending on the individual stand and site conditions. In the end, there will be a diversity of tree species and stocking levels found on lower slopes, stream terraces, upper slopes and ridgetops.

In addition to the techniques, we developed project design criteria to ensure the natural resources on site are not damaged. For example, we protect rare plant species, implement best management practices for soil and water resources and consider how portions of the project area can contribute to old growth characteristics.

To learn more about the Bean Ridge project, visit the Shawnee National Forest website land and resource management [projects](#) and click on Bean Ridge. To learn more from the Forest Service about Forest Health, please visit the following website [Forest Health](#). Good luck with your sustainable oak management.



Water bar for erosion control

Over the next several years, the following forest management actions will be implemented:

Technique

Commercial and Non-commercial Thinning



Objective: Reduce overstocked and dense forest conditions.

Technique

Shelterwood Establishment Cut



Objective: Similar to thinning, these techniques will reduce stocking but are focused in areas we expect to regenerate oak in the future. These techniques are meant to set up the site for future mast production and optimum light conditions for oak regeneration.

Technique

Stand Improvement



Objective: Improve stand conditions in the mid-story to improve light, which favors oak and hickory species.

Technique

Prescribed Burning



Objective: Reduce fuel loading and favor fire adapted species such as oak. Oak re-sprouts vigorously after prescribed fire.

History of Conservation in Illinois

Installment #33

by Dave Gillespie, IFA Secretary

This account of the history of conservation in Illinois was written by Joseph P. Schavilje in 1941. This installment begins where installment # 32 ended.

The first community forest in Illinois was established in 1907 by the City of Dixon. A tract of 202 acres of timberland was given to the City for a park. Many species of pine were planted to form a pine tum as early as 1910.

As a result of a cooperative agreement between the Illinois State Laboratory of Natural History (Natural History Survey) and the Forest Service, a study was made of some of the typical forest regions of the State by Wesley Bradfield, Forest Assistant. The report was published in 1908 under the title, "Typical Forest Regions in Illinois", based on preliminary examinations. The purpose was to determine the types was involved as a result of the investigations.

(To be continued in the next issue of "The IFA Newsletter".)



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As one wit (I believe Roger Miller) once said, the human brain is a wonderful thing. It starts working shortly after conception and doesn't stop until you start to write a song. For me it is a column.

Anyways, during the past several weeks, I have been watching the wildfires in the west. California burning is just a part; add Oregon, Washington, Colorado and New Mexico, and you have a real nice bonfire going. Entire towns in some areas torched, people fleeing for their lives, and fire fighters working beyond exhaustion and you have a story. Some blame the Forest Service, but I do not think so Charlie. More likely, hot, dry weather coupled with putting towns in the wrong place and a long record of letting duff pile up might be more of a factor.

Several years ago, our family went to Yellowstone National Park. About ten years or so prior to our being there a wildfire had gone through much of the south part of the park and destroyed most of the trees in that area. What had come back were numerous pines about 2.5 to three ft. in height as well as grass. As these trees are undoubtedly much taller, I wonder if any efforts have been made to thin them out and if controlled fire has been used to hold down a massive build-up of dormant grass and pine needles?

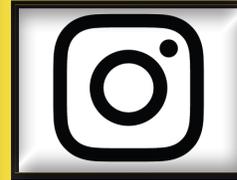
I am aware that the West Coast has an entirely different climate and ecosystem than we have here in the Midwest, but could some of the same techniques that are prescribed by foresters here be used in California? Have they even been tried? I realize that once rains come this spring, there probably will be landslides where there are steep slopes and other problems may present themselves, but what other management techniques are there that might be used?

***“ The World’s
Forests are a
Shared Stolen
Treasure That
We Must Put
Back For Our
Children’s
Future”
- Desmond Tutu***

Shawnee National Forest

We are
Closer
than you think.

- Chicago - 338 miles
- Peoria - 222 miles
- Effingham - 130 miles
- Belleville - 64 miles



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Why Do Trees Show Color in the Fall?

By Zach DeVillez

This time of year, nature lovers flock to the forest to take in the beauty of fall. The trees show vivid hues of brown, yellow, red, and orange. It is truly one of the most beautiful times of year to enjoy a forest near you. Everyone knows tree foliage changes color in the fall. However, have you ever wondered why this biological process occurs? Let's dive into the science behind why trees show color in the fall.

To understand this process, let's first discuss why leaves are green. Leaves on trees and other plants look green to our eyes because of chlorophyll. Chlorophyll is a pigment that absorbs sunlight. Without chlorophyll, photosynthesis would not be possible. This pigment absorbs certain wavelengths of light on the visible spectrum but reflects green wavelengths of light. The reflected green light is precisely why leaves have a green appearance to the human eye.



Figure 1: A southern red oak leaf

In the fall and winter, temperatures drop and the days get shorter. Trees respond to the decreasing sunlight by producing less and less chlorophyll. Eventually, the trees stop producing chlorophyll to conserve the energy it takes to carry out this biological process. This leads to leaf drop in the winter. When spring rolls back around, trees leaf out for the spring and summer, and the process continues.

So where does the actual color come from? Why do some leaves turn yellow, and some turn red? This is dictated by the other pigments in the leaves. These pigments are present in the leaves even when leaves appear green. However, as chlorophyll gets produced less and less, the leaf color favors the other pigments.

One of the pigments responsible for color change is carotenoids. Carotenoids dictate orange and yellow color in foliage. Trees that turn yellow or orange in the fall include hickories, sugar maples, tulip poplars, beeches, and ash.



Figure 2: A green ash showing yellow leaves in the fall

The pigment responsible for red leaves is flavonoids. These are dictated by the reaction of sugar and sap left in the leaf after the leaf transportation veins are cut off from the rest of the tree. The reaction of the residual sugars and sap creates anthocyanins, the flavanoid responsible for red and purple hues. Trees that turn red in the fall include maples, black gum, sweet gum, and dogwoods.

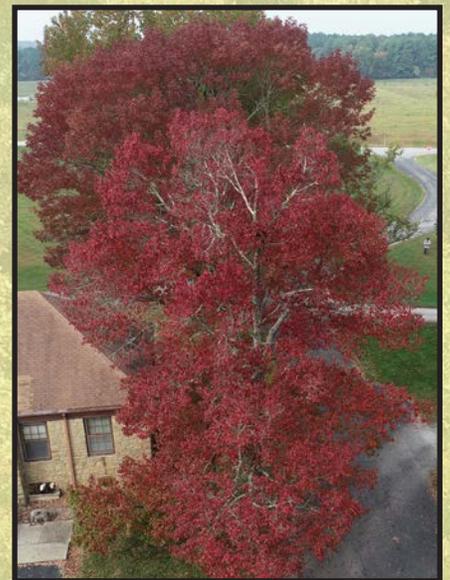


Figure 3: A black gum turning brilliant red

Weather dictates the degree of color change. Some years, the color change is more vivid, while other years are less dramatic. Red color change is more dependent on weather factors since sugar content can be directly correlated to weather patterns. Yellow and orange pigments are less dependent on weather patterns and are therefore, more consistently present in fall leaves.

Make sure to enjoy fall color in a forest near you!

