

# ***Illinois Forests***



*"The Voice for Illinois Forests"*

## **Inside this Issue...**

***A Message From the IFA President***

***IFA News and Updates***

***Pruning Basics***

***Extension Forestry Update***

***State Forester Report***

***Two Misconceptions About Forests***

***What Do Trees Do in the Winter?***

***and more...***



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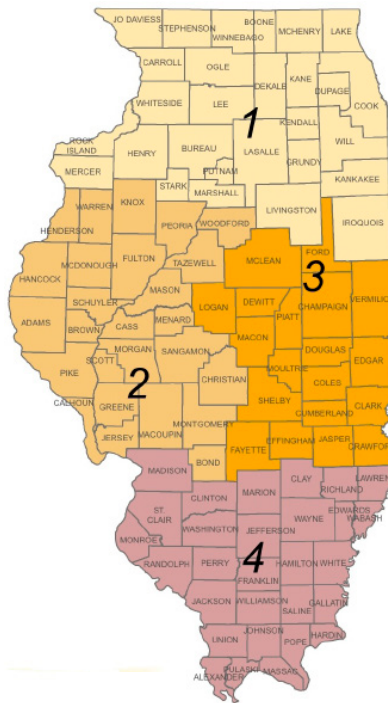
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## Our Mission...

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

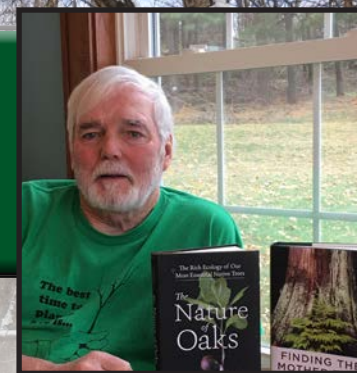
## Our Goals...

- 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

by Tom Walsh



## ***Fellow IFA Members –***

Hello IFA members and Happy New Year greetings from Tom Walsh, your new IFA president for 2022. I live in Winnebago County, just two miles from Wisconsin. I retired in 2018 after 42 years of Real Estate practice as an appraiser and property tax administrator. My wife Julie and I live and work on our 163 acre farm, outside Durand, which includes 35 acres of woods which I very much enjoy working in.

I realized soon after the election that the job of IFA president is bigger and more time consuming than I had expected. (Mike McMahan was such a good president he made it look easy!). That realization made me thankful for the fine service our previous officers and boards have provided. It also made me even more thankful to have such a fine team of dedicated, knowledgeable and experienced IFA officers and Board members surrounding me. I'm confident we'll be able to continue the fine service IFA has provided and I look forward to expanding our services into some new areas.

I remember reading that a wise person once said "If you don't know where you are going, you'll probably end up some place else". To me that means it's a good idea to establish goals to keep IFA headed in the right direction so we can achieve our ultimate goal of providing the best

possible, high quality, helpful and informative services to our members. Toward that end, my goals for IFA include:

***1.) Review and update our Strategic Plan.***

***2.) Review and update our By-Laws.***

***3.) Establish a formal committee structure.***

***4.) Ask for and act on information from all our members.***

***5.) Plan for and conduct an in-person Annual Conference and Field Day.***

Some of these goals are addressed in other articles in this newsletter. I would like to point out that several board members have stepped forth to serve on our committees but more members are needed and will be welcomed. We have lots of work to do.

Zach has put together another excellent newsletter. I'm sure you will find it informative and useful. You should expect to be asked to respond to short IFA surveys from time to time. I want us to hear as much as we can from our members in order to learn how they think the Board is serving their needs and

what other things they would like us to do to improve our service. Thank you for putting your faith in me to serve as your president. I look forward to working to serve our members. We have lots of work to do. Let's enjoy working together.

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Every little bit helps.  
Thanks for your support!



# IFA News and Updates

by Zach DeVillez



## **- Happy New Year IFA Members!**

For many, a new year marks a transition to positive change. I'm sure plenty of you or those you may know make new years resolutions. This new year, the IFA plans to make several positive improvements to better how our organization serves its members.

## **IFA Forms New Committees**

To help the IFA have more of an impact in the years to come, the IFA has formed a number of new committees. Committee seats have only been filled by IFA directors thus far, but we will open some seats to members in the near future.

### **Committees Listed Below:**

#### **1. IDNR/IFDC Coordination Committee**

This committee will work to coordinate between the IFA and the leadership of IDNR and IFDC to further the mission of promoting responsible forest management in Illinois.

#### **2. Revenue and Corporate Sponsorship Development Committee**

This committee will work to establish new projects and funding sources to make the Illinois Forestry Association a more financially sound organization.

#### **3. Tree Planting Committee**

This committee will focus on developing an annual tree planting program through IFA. There has never been more of a need to put more trees in the ground than today. To help in this cause, the IFA should do its part.

#### **4. Social Media Committee**

This committee will work to improve the IFA's social media presence, hopefully reaching more forest landowners and citizens who want to be involved in improving Illinois Forests.

#### **5. Strategic Plan Committee**

This committee will work to revise the Illinois Forestry Association's Strategic Plan, forming long range plans for the next few years.

If any IFA members wish to participate in the first three listed committees, please send an email to [zachd@illinois.edu](mailto:zachd@illinois.edu) to express your interest!

## **IFA to Hold Urban Forestry Programs in Southern Illinois**

Throughout the next two years, the Illinois Forestry Association will help bring urban forestry programs to Southern Illinois communities. Traditionally, the Illinois Forestry Association has focused most of its efforts on rural forests, and that will surely continue. However the programs throughout 2022 and 2023 will mark our biggest effort in offering urban forestry training. We

will refer to the programs as "trainings" because attendees of these events will receive Continuing Education Credits. These programs should be of special interest to urban foresters, tree care professionals, and forest managing professionals. However, interested citizens in nearby communities will also learn a great deal from the programs. As such, anyone who wants to learn more about forestry should come join us for these events! See a break down of the forestry trainings below.

### **2022 Trainings**

#### **4 Tree and Forest Health Trainings**

#### **4 Invasive Plants Trainings**

#### **Virtual Tree Identification Trainings**

### **2023 Trainings**

#### **4 Tree and Forest Health Trainings**

#### **4 Invasive Plant Trainings**

#### **Virtual Right Tree Right Place Trainings**

Overall, eight communities will be chosen over two years. Each community chosen will have one forest health training and one invasive plants trainings.

Let's make this a great year for the Illinois Forestry Association!

*Continued on the next page -*

## Member Reminders

### Photos of Herbicide Damage Symptoms

### Monitoring for Suspected Herbicide Drift

In 2021, the Illinois Forestry Association developed a system for landowners to report off-target herbicide drift damage. In total, the IFA received 23 reports of suspected damage to a variety native trees. However, the tree species that occurred most frequently in the reports included oaks and hickories.

In case you missed it in last year's issue or organization-wide emails, the purpose of this reporting system is to collect data. It is not intended to place blame on agricultural pesticide applicators. Herbicide is a very useful tool and often a necessary tool. However, when some herbicides are applied during the wrong atmospheric conditions, these herbicides can volatilize (evaporate into the atmosphere) and travel outside of the intended application area, settling on trees and plants. We refer to this as herbicide exposure. When certain abnormal symptoms occur on plants and trees across multiple species in the same area, we consider this suspected herbicide drift damage.

The word "suspect" is important to note with the IFA's new reporting system. That is because we cannot confirm with certainty that anyone's trees or plants have been exposed to drifting herbicides. To do that, you need to send tissue samples (leaves) to a plant clinic/lab. However, the IFA has some board members that have seen plenty of damage that has been

confirmed for herbicide exposure. In many of those cases, trees showing damage resulted in widespread tree mortality.

Since we have monitored this herbicide damage in the past, we are confident that if landowners answer a few important questions and send clear and concise photos showing symptoms on the reporting system, we can identify plant and tree symptoms that we highly suspect would be related to off-target herbicide drift.

### What Can I Do as a Landowner?

**Monitor Your Trees** - It's not always easy to notice symptoms. Sometimes the tree in the backyard goes unnoticed. Make a habit of examining the foliage and fullness of your trees' canopies.

#### Document Abnormalities

- When multiple species of trees are showing strange significant characteristics, make note of when and what symptoms you've detected. Take a few well-taken photos to share with a professional.

#### Fill Out the IFA's Suspected Herbicide Drift Report Form

- If the symptoms you've noticed match symptoms highlighted on the Illinois Forestry Association website for off-target herbicide drift, do your part and share your experience by filling out the IFA report form.



Figure 1: Browning Leaves



Figure 2: Leaf Cupping



Figure 3: Thinning Canopy

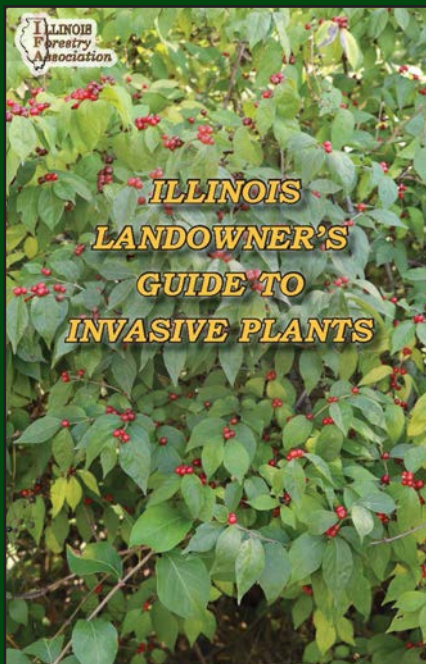
**To learn more about off-target herbicide drift, to see more symptom photos, and to access the reporting system, go to: <https://ilforestry.org/Off-Target-Herbicide-Drift>**

**If you have any questions about the reporting system, please email: [zachd@illinois.edu](mailto:zachd@illinois.edu).**



### ***More Illinois Landowner's Guide to Invasive Plants Will Be Available***

The Illinois Forestry Association is currently working on revising and improving the Illinois Landowner's Guide to Invasive Plants. If you missed getting a copy of the first print, we should have you covered this Spring. We will have free copies available at IFA events. If you would like to be mailed multiple copies to share with your neighboring landowners, we can mail you some copies upon special request. To make such a request, email [zachd@illinois.edu](mailto:zachd@illinois.edu).



### ***National Woodland Owners Association Update to IFA Members***

The IFA board has recently received word that the NWOA will be raising prices for subscriptions to their quarterly magazine by \$2.50. This price increase was decided to be a necessity due to inflation of paper costs. A one year subscription for IFA members will now cost \$12.50 yearly. This increased price will reflect for other state affiliates as well. However, we have been assured that those who have already ordered their subscription will be grandfathered. Thus, if you have paid for two - three years in advance, you will not have to pay extra until you are up for renewal. The IFA board still considers the NWOA magazine to be well worth the generous \$12.50 price to stay up to date on national forestry updates and news.

If you haven't subscribed to the National Woodland Owners Association magazine "National Woodlands", make sure to check it out! It's a great way to stay updated on forestry news and stories at a national scale.

If you're an IFA member and you haven't subscribed yet but would like to, you can subscribe by ordering online at <https://ilforestry.org/Sys/Store/Products/268554>. Remember, you can order a subscription for 1-3 years but it must match your membership to IFA. For example, if you want to order a 3 year subscription to National Woodlands, you should also pay for 3 years of IFA membership.

You can also order a subscription to National Woodlands by marking the check box on the IFA membership form. If you choose to do this, just include the extra amount on your membership dues.

### ***IFA and Illinois Chapter of the Walnut Council in Talks to Collaborate on a Field Day***

IFA members interested in attending a field day should stay tuned for the potential announcement of an event this spring. The Illinois Forestry Association and the Illinois Chapter of the Walnut Council are currently discussing the possibility of teaming up to hold an event. Those interested should watch for an email announcement, a social media post or keep an eye on the IFA event page. To access the IFA event page, go to: <https://www.ilforestry.org/Events>

### ***IFA Bylaw Changes Coming?***

Throughout the past two IFA board meetings, the IFA leadership has been discussing potentially making small revisions and adding language to its bylaws. While the IFA leadership is not yet ready to announce these proposed changes, it hopes to do so very soon.

As an organization, we have not undertaken this process in some time. In anticipation of this potential bylaw change, members should know how they can participate in this process. The IFA board of directors can propose changes to its bylaws, but it has to follow a specific protocol. As written in the IFA bylaws, "any article or section of the By-Laws of the Association may be amended, altered, or repealed at the annual meeting or special meeting of the Association provided that notice of such proposed amendment, alteration, or repeal shall be mailed to all members of the Association at least thirty (30) days prior to the date of such meeting. Adoption of the proposed amendment(s) shall require the favorable vote of two-thirds of those members present and voting". IFA members should be aware of this process in preparation of any potential changes to bylaws.

# Pruning Basics

By Sarah Vogel  
Horticulture and Natural Resources Educator,  
University of Illinois Extension

Whether managing for timber, wildlife, or recreation, forest landowners need every tool at their disposal to ensure the health of trees and protect them from pests and pathogens. When considering the focus of private forest management, landowners may consider nearby urban forest health in creating a strategy, as one will unfailingly impact the other.

We educators and advocates communicate with urban forest managers such as park maintenance staff, municipal leadership, and the home gardener regarding the use of proper practices. These first steps in plant health care as well as environmental factors are critical to the overall health of an individual tree. Site and species selection, the use of native species, planting and establishment, and correct pruning all play significant roles in an individual tree's lifespan. We spend much of the growing season discussing pruning ornamental species during dormancy, but for some species the time is now.

Though pruning can be a daunting task, it is an important cultural practice for the health and vigor of many trees and shrubs used in landscaping. Pruning can be performed for several reasons including size reduction, shaping, increased flower or fruit production, and promoting sound structure.

The correct time to prune deciduous shrubs and trees is determined by the plant's growth habit, bloom time, and health or condition. Though timing will be species dependent, any time is a good time to remove dead, dying, or broken branches. Use clean, sharp tools and sanitize tools between plants with a 10% bleach solution or undiluted 70% isopropyl alcohol. Sanitize between each cut if disease is suspected.

Spring flowering shrubs, such as lilac and forsythia, bloom on the growth from the previous season- sometimes called 'old wood'. The best time to prune a healthy, well-kempt species is immediately after flowering in spring. Overgrown shrubs may require more extensive pruning through rejuvenation or renewal methods in late winter or early spring. Heavy pruning methods may cause fewer blooms for a few years but can improve the overall health of the shrub.



Figure 1: *Spiraea* rejuvenation method

Summer blooming shrubs, or those blooming before July 1, produce blooms on the current year's growth. These are best pruned in late winter or early spring. Do not prune deciduous shrubs in late summer as that will encourage a flush of new growth that will not have the opportunity to harden off before winter, leaving the plant susceptible to frost damage and dieback.

Many of the same rules for shrubs also apply to deciduous trees. Most will respond well to late winter pruning, including many fruit trees. Performing this task on trees during the dormant season allows increased visibility for the gardener and proper wound closure for the plant. When branches are cut correctly at a node or at the branch collar, specific hormones allow the plant to seal wounds properly to prevent the spread of decay and minimize entryways for potential pests and pathogens. However, there are some exceptions to early spring pruning. For instance, to reduce the spread of Oak Wilt, oaks should not be pruned from March through October. Additionally, river birch will respond best to cuts made during late fall or early winter months after leaves have fallen and when sap flow is reduced.



Continued on the next page -





Figure 2: Pruning *Taxus*, a genus of coniferous shrubs known as yews.

Pruning techniques on evergreens will vary according to species and desired effect. Fall pruning is not recommended for evergreens, as new growth will be susceptible to winter injury. Evergreen shrubs like juniper and yew can be pruned in March or April before new growth emerges. Evergreen trees like pine, spruce, and fir generally require very little pruning, and removing lower branches is not advisable as it compromises the structural integrity of the tree.

Spruce and fir trees possess lateral buds on the newest growth; these are buds that grow from the sides of the branch, not the ends. To create a more dense form, prune back to these lateral buds in early spring. Pines only grow from terminal buds at the end of the branch. Pines are pruned in spring or early summer at the candle stage by removing two-thirds of the elongated bud. Do not cut branches back to older growth as they will not develop new growth from those areas.

Do not remove more than one third of the canopy in any one year, as removing foliage reduces the plant's ability to photosynthesize. Some evergreens, like yew and boxwood, produce a thin layer of growth creating a large interior 'dead zone' which, if accidentally pruned into, will not produce new growth and can create an unsightly plant. Shearing may seem quick and simple for some species but are not horticulturally correct cuts. Shearing can unnecessarily stress a tree or shrub by increasing the amount of wound closure it must perform. If shearing methods are used, limit the shearing cuts to new growth only. When shaping a shrub, it is important to leave the base wider than the top so light may reach lower branches.

Though not applicable for entire forests, timely and appropriate pruning practices are helpful in managing residential landscapes and municipal land. Improved plant health in these urban forests can support the health of larger, more forested areas by mitigating the presence of biotic stressors. Regardless of management strategy, the goal for public and private foresters, urban and rural, is always to improve forest health.



Figure 3: *Tsuga*



# Extension Forestry Update

By Chris Evans  
University of Illinois Extension Forester

Extension forestry continues to expand its efforts in forestry education and research. Extension forester Chris Evans recently received a federal grant that will allow for the development of a new Southern Illinois Beginning Forest Landowner Course with the goal of teaching new forest landowners (or any landowner that has not actively engaged in forest management) the basics of forestry and forest management through involvement in a year-long course. Students will learn from experts, get hands-on field experience and be connected with other forest landowners in the region. If you are a landowner in southern Illinois and are interested in the program, contact Chris Evans at [cwevans@illinois.edu](mailto:cwevans@illinois.edu) for more information.

Maple syrup season is upon us! Extension forestry is partnering with Missouri University, Principia College and others on the "Putting Maple on the Map in the Lower Midwest" project. This work will expand educational efforts on maple syrup production and collect detailed data about sap collection in the lower Midwest that will allow us to develop better recommendations and tools to help landowners interested in starting a sugarbush.



Figure 1: Extension Forestry workshop to install new pipe and tubing system for maple sap collection.

Research is underway with multiple partners at the University of Illinois to investigate the influence invasive plant species have on ticks and tick-borne diseases. Other studies have strongly indicated that the presence of invasive shrubs like bush honeysuckle can lead to much higher numbers of ticks and a higher prevalence of tick-borne disease, like Lyme disease. We are looking at this phenomenon in more detail in Illinois. Specifically, we are expanding to look at not only invasive shrubs, but also forbs (garlic mustard) and invasive grasses

(Japanese stiltgrass). Using repeated surveys, we are recording the number of ticks found throughout the year in invaded forests and uninvaded forests and then will be testing the ticks for diseases. In addition, we are recording data on how invasive species influence the local conditions of a forest, such as temperature and humidity as that directly relates to tick survivorship. We have just finished up year one of data collection and look forward to analyzing the data and gearing up for the second season.



Figure 2: Surveying for ticks.



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# State Forester Report

By Tom Gargrave  
IDNR State Forester

## **Division of Forestry Mission Statement**

It is the mission of the Illinois Division of Forest Resources to protect, perpetuate, restore, conserve, and manage the forest and related resources of Illinois, public and private, rural and urban; and to ensure for future generations the greatest economic, scientific, and social benefits that can only be provided through a forest ecological system.

Illinois Forests are the hinge pin of where ecological diversity and habitat management/preservation meet. Vital forest cover types such as oak hickory are in decline and are of great concern. These stands provide the necessary habitat for over 75% of our state's wildlife populations. The Division of Forest Resources continues to strive to meet the mission of the Department and seeks to better the public and private lands of Illinois.

## **Staffing**

In January 2022 the Division of Forestry started out with some changes. After 27 years of service, State Forester Paul Deizman retired. Paul served the Division over the years in many capacities including District Forester and our Wood Utilization Program Manager. Additionally, Steve Felt, District Forester in Rock Island office and Barrie McVey in Colchester retired. Both were hard working, first rate Foresters, of excellent character, and outstanding public servants. They

will be missed. We now have only 12 District Foresters statewide, several serving multiple districts.

Good news follow-up, Paul Deizman, Tom Wilson, and Barrie McVey are back with DNR 75-day contracts to help fill in the backlog and work on unfinished specific special projects.

No permanent forestry positions have been filled for several years but we remain steadfast and optimistic.

Our not so new (July 2019) Urban and Community Forestry Program Manager, Mike Brunk is utilizing his 30 years of urban forestry experience and making some program gains with partners and communities across the state. We are privileged to have Mike aboard.

## **Forestry Development Act**

The Forestry Development Act program is running smoothly. District Foresters are operating off a healthy backlog, so we ask for your continued patience. We anticipate no changes in the FDA laws and look forward to continued success with our private land management assistance. We remain hopeful for a landowner cost share program in the coming years. As DNR staffing challenges continue we will continue to ask more from our consulting forestry partners for both new and renewed FDA plans.

Additionally, the FDA program has been undergoing extensive audit and cleanup of outdated enrollments and errors made during life of the program. Most recent



database information indicates there are more than 9,945 landowners enrolled statewide. Total acres in FDA is around 550,000 acres. District offices continue efforts to enroll new properties and reenroll existing participants.

## **Nursery**

Our state nursery in Mason County produced, approximately 500,000 tree seedlings, 1800 potted trees and plants, over 500 pounds of pollinator seed mix, and over 1000 pounds of pure wildflower seed. Mason nursery continues to be the key producer for the Illinois Monarch Project. Improvements to the facilities are in the works and we hope to see them started in FY23.

## **Fire**

The Illinois Wildland Fire Program continues to grow under Forestry's care. We now have over 20 DNR employees that train and serve regularly as Wildland Firefighters. Each year the crew continues to play an integral role nationally in tactical wildfire operations.



DNR Forestry plans to take delivery on a new type 6 engine this spring. This will serve prescribed fire here at home and on western deployments as the fire season progresses.

### **Community Forestry**

Forestry succeeded in building Illinois' Tree City USA Growth Awarded communities to 40, the most in the Nation. Forestry has also grown its urban and community forestry partner base to include six non-profit organizations across the state, The Morton Arboretum, Trees Forever, Illinois Arborist Association, Heartlands Conservancy, Chicago Wilderness and Openlands.

### **Division successes last 6 months include:**

Forestry continues to work alongside of our sister divisions (Heritage, Wildlife, and Lands) to manage and conduct several timber sales on State lands. Each planned harvest has a follow up timber improvement plan and utilizes most of the proceeds to contract the work. The Division plans to conduct more sustainable harvests with follow up TSI on state properties this year. Additionally, we are working to help manage threatened/endangered species, control Chronic Wasting Disease, and remove invasive and exotic species from state lands.

The Division Continues to collaborate well with our esteemed partners (USFS,USFW,USDA,BLM,etc) in many state wide projects including "Let the Sunshine in", Fuel Reduction and Management grants, Landscape Scale Restoration grants, CREP easements, and many others.

We are currently working with USDA and the Illinois Natural History Survey to contractually hire 6 CRP/EQIP Service Foresters on 2 year contracts. These Foresters will work on private lands, assisting the District staff.

The Timber Buyers Licensing Act is outdated and, in many cases, clearly not effective. Forestry has begun a rewrite of this Act and hopes to get it sponsored this year. This new edition serves to protect landowners better from unscrupulous buyers, educate them on sound forest management practices, and help monitor the volume of timber being cut.

The Division of Forestry will continue to do our best to step up protecting, managing, and restoring the fine forest resources of this state. Forestry administration is constantly seeking growth and funding opportunities for the Division. New forestry initiatives are in the draft stages to help us prosper and reestablish old positions. We remain optimistic and passionate for all the State's natural resources and will continue to honor the privilege of public service.

Thank you, to our landowner partners. You clearly understand that ownership dictates a responsibility of good land stewardship. Your hard work, passion, and tenacity remains admirable.

*"It is not so much  
for its beauty that  
the forest makes  
a claim upon  
men's hearts, as  
for that subtle  
something, that  
quality of air that  
emanation from  
old trees, that  
so wonderfully  
changes and  
renews a weary  
spirit"*

*- Robert Louis Stevenson*



# Two Misconceptions About Forests

By Ethan Tapper  
Chittenden County, Vermont Forester

As I write this, Chittenden County is settling into winter, last night's rain notwithstanding. As December progresses you might start to hear the buzzing of chainsaws and the thrum of skidders in the woods, logs piling up by the side of your road. You might see a forest that you know and love change; the forest floor dotted with bright-topped stumps and scattered with the tops and branches of trees.

Good forest management is more than just cutting valuable trees: it seeks to be regenerative, to improve conditions for wildlife, to make forests more resilient in a changing climate, to protect biodiversity, to benefit our communities and future generations. The ability to tell healthy forests from unhealthy forests -- and responsible forest management from irresponsible forest management -- is unintuitive to most people. It's not something we're born with -- it's something we need to develop. As such, we sometimes evaluate the health of our forests and the quality of forest management based on a couple misconceptions.

The first common misconception is that forests should look neat and tidy. Nothing could be further from the truth: forests which are resilient and adaptive in a changing climate, which provide diverse habitat for wildlife, which clean our air and our water, which sequester and store carbon, often defy our sense of order and aesthetics. Features that look "messy" to most people -- like dead wood on the forest floor, dead-standing trees, big, old declining trees, an irregular gap-filled canopy and pockets of

young trees and shrubs -- fundamentally support the expansive web of life that is a forest. This doesn't mean that any messy forest is good (a forest which has been poorly-managed will probably also look messy) but it does mean that a forest isn't unhealthy because it looks messy.

The second misconception about forests is that they never change. Because trees grow so slowly and live such a long time, it's tempting to think that forests are defined by their stability, their ability to resist change. In reality, forests are dynamic, always changing, and they are defined by their resilience -- their ability to stay healthy while they change. As much as the death of trees may seem sad and scary, it is a normal, natural, and even beautiful, part of how forests work.

Following forest management, as with a natural disturbance, the forest will look and feel different. When I manage forests I embrace the messiness and the dynamism, telling loggers to leave treetops and limbs un-lopped, to leave dead trees in the woods, to create gaps of different shapes and sizes to encourage the development of different sizes, ages and species of trees. The result can be jarring: a tidy forest turned untidy, a familiar forest made different. Even if you know that healthy forests are messy and dynamic, as you walk through a freshly-managed forest next spring it may be hard to understand how this could ever be part of something beautiful.

While you can appreciate some of the benefits of forest management, like local renewable resources, right away, the ecological benefits take time to reveal themselves. Forest managers in Vermont rely on natural regeneration rather than planting trees, and so -- as in a forest following a windstorm -- there is a lag between the disturbance and when its benefits are realized. This lag can be a stressful time, and so in the years following management we need to remind ourselves to be patient, to let the forest's natural resilience work.

This summer, I walked through an area managed three winters ago at the Hinesburg Town Forest. In July the area was exploding with life, green filling every space. Raspberry and blackberry canes looped around young trees, goldenrods and asters blooming in yellow and purple. Birds nested in the thick understory and dove through canopy gaps, catching insects on the wing. Salamanders wriggled into rotting wood as the trees above them reached their limbs up into the blue sky.

Of the many lessons that forests can teach us, cultivating patience and equanimity are perhaps two of the most important. Like many of the best things in life, forests and forest management are complex and nuanced, and learning to appreciate them takes time.

**Ethan Tapper is the Chittenden County Forester for the Vermont Dept. of Forests, Parks and Recreation. See what he's been up to, check out his YouTube channel, sign up for his eNews and read articles he's written at <https://linktr.ee/ChittendenCountyForester>**



# What do Trees Do in the Winter?

By Lindsey Purcell  
Urban Forestry Specialist

So, what do trees do in the winter? Do they freeze up like unprotected water pipes? Or burst when it gets below freezing? Yes, the below-ground parts of a tree are kept insulated by mulch, soil and a layer of snow, and that is important to survival, but the exposed parts of a tree are not protected.

Deciduous trees, like maples and oaks, have a lot of water inside their trunks and branches. Water is the single most important substance for tree life, comprising nearly 80% of tree material. Although there is a little less inside the tree during the winter, if the temperature drops low enough, the water in even the most cold-hardy tree will freeze. Broadleaf, deciduous trees lose their leaves in the winter to reduce water loss inside the trunk and branches. Most needle-leaved trees, known as conifers, which include pines and spruce, retain needles year-round – with exceptions of some deciduous evergreens such as larch and bald cypress– only losing older, or damaged needles. Needles are better at retaining water than broadleaves due to their small surface area and waxy outer coating limiting water loss to transpiration, the evaporation of water from leaves. A hard freeze or poorly timed drop in temperatures can be devastating to living tree cells since ice crystals can shred cell membranes, leading to dead leaves, branches, and even whole trees. Most trees live through the winter despite prolonged exposure to brutally cold air and wind and snow, with special strategies and planning.

Dormancy of trees can be divided arbitrarily into three phases: early rest, winter rest, and after-rest. Each of these phases is marked by a distinct set of physiological processes. The transition between the three phases is gradual and there are many metabolic and developmental processes going on in the buds and twigs. A tree begins its preparations in late summer as day length shortens to survive winter temperatures. Cold acclimation occurs gradually and fall color is a sign that the process is in place and pre-dormancy is beginning.

When the tree enters the winter rest stage, research suggests three basic ways in which a tree prevents freezing. One is to change their membranes, so the membranes become more pliable; this allows water to migrate out of the cells and into the spaces between the cells. The relocated water exerts pressure against the cell walls, but this pressure is offset as cells shrink and occupy less space.

The second way a tree helps prevent freezing is to thicken the fluids within the cells. When days begin to get shorter, trees convert starch to sugars, which act as a natural antifreeze for the plant. The cellular fluid within the living cells becomes concentrated with natural sugars, which lowers the freezing point inside the cells, while the water between the cells is allowed to freeze. Because the cell membranes are more pliable in winter, they're squeezed but not punctured by the expanding ice crystals.





The third mechanism involves what has been described as a "glass phase," where the liquid cell contents become so viscous that they appear to be solid, a kind of "molecular suspended animation" and mimic the way silica remains liquid as it is supercooled into glass. This mechanism is triggered by the progressive cellular dehydration that results from the first two mechanisms and allows the supercooled contents of the tree's cells to avoid crystallizing.

All three cellular mechanisms are intended to keep living cells from freezing. That's the key for the tree; don't allow living cells to freeze.

A tree doesn't have to keep all of its cells from freezing, just the living ones which are primarily the phloem cells. This is significant, since much of a tree's living trunk is made up of cells that are dead, such as xylem cells. These dead cells can and do freeze, but even the lowest temperature doesn't have an adverse effect. While a majority of a tree's above-ground cells do indeed freeze regularly when exposed to subfreezing temperatures, the living cells remain unfrozen and active on a reduced level. There are living cells in the trunk that remain unfrozen even though they are right next to – and at the same temperature as – dead cells that are frozen solid!

This seemingly mystical combination of pliable membranes, natural antifreeze, and glasslike supercooling, with frost on the outside and viscous dehydration on the inside, helps trees avoid freezing injury to living cells. Trees are the largest, oldest living organism on our planet and don't grow older and larger without having very specific strategies for survival.

However, sometimes, trees aren't able to withstand extreme conditions, especially if nature provides an unusual change. While trees have evolved amazing strategies for withstanding the winter cold, sometimes it gets so cold that trees can explode. During spells of extreme cold or especially when trees haven't had time to acclimate before the cold arrives, the life-sustaining sap inside a tree can begin to freeze. Sap contains water so it expands when frozen, putting pressure on the bark, which can break and create an explosion, so to speak.

Proper winter care is critical to protect your trees with mulch and water to help trees make it through the winter months.





# Trees With Heart-Shaped Leaves



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**Figure 1:** A northern catalpa (*Catalpa speciosa*) leaf.

## **Northern Catalpa (*Catalpa speciosa*)**

The Northern catalpa, sometimes referred to as the Western catalpa, or the cigar tree, is a medium sized tree that generally grow from 40 - 60 feet tall. These trees have heart-shaped leaves, large, showy white flowers in May and June and have an elongated bean-like seed. The wood of Northern catalpa is very soft and lightweight, considered weak in terms of strength. They can be found naturally in bottomland forest, but are also popular as urban trees. While these trees are fairly easy to identify, there is a native look-alike, the Southern catalpa. However, there are some characteristics to help differentiate between the two. The Northern catalpa bark tends to be more deeply furrowed and has shorter clusters of flowers than the Southern catalpa.



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**Figure 2:** An Eastern redbud (*Cercis canadensis*) leaf.

## **Eastern Redbud (*Cercis canadensis*)**

The Eastern redbud is a small tree that can grow up to 35 feet tall. The leaves are heart shaped and alternately arranged. The flowers of Eastern redbud are showy clusters of purplish-pink that begin to flower as soon as leaf-out. The fruit is an elongated legume that is about four inches in length. This tree is very popular and prized as an ornamental. Naturally, they occur in upland forest, typically as an edge species (commonly found on the edges of forest).



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**Figure 1:** An American basswood (*Tilia americana*) leaf.

## **American Basswood (*Tilia americana*)**

The American basswood is a large tree that can grow up to 100 feet tall. The leaves of American basswood are heart shaped with toothed edges and arranged alternately. The nut of American basswood is spherical and light brown in color. American basswood can be a valuable timber species for some uses. These trees generally occur in well-drained upland forest but they also do well in riparian areas. This species is known as being especially important to pollinators since they flower in June to July when less species are flowering.





# History of Conservation in Illinois

Installment #38

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 # 37 ended.

The Morton Arboretum, a 400 acre tract located at Lisle, DuPage County, Illinois, was founded in 1921, by Jay Morton. Its purpose and aims are expressed in the Declaration of Trust establishing it, "creating a foundation to be known as the Morton Arboretum, for practical, scientific research work in horticulture and agriculture, particularly in the growth and culture of trees, shrubs and vines by means of a great outdoor museum arranged for the convenient study of every species, variety and hybrid of the woody plants of the world able to endure the climate of Illinois; such museum to be equipped with an herbarium, a reference library, and laboratories for the study of trees and other plants, with reference to their characters, relationships, economic value, geographical distribution and their improvement by selection and hybridization; and for the publication of the results obtained in these laboratories by the officials and students of the Arboretum, in order to increase the general knowledge and love of trees and shrubs and bring about an increase and improvement in their growth and culture." (Miller and Tehon, 1929) Perhaps the foremost feature of the Morton Arboretum in the experimental planting of forest trees. Mr. H. Teuscher writes of the plans of the "Forest Trees and Reafforestation Experiments" conducted at the Arboretum in July, 1925 issue of the "Bulletin of Popular Information" published by the Morton Arboretum.

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







## Walnuts & Acorns

by Lee M. Rife

As I write this, it is snowing outside. We just got rid of the 15 inches from three weeks ago. However, now dealing with six - eight inches. Couple this with a strong west wind and I can say that my trees will be thoroughly pruned. Old man winter is making up for the mild January.

A few weeks ago, my wife and I made a business trip to Petersburg, Illinois. As we drove, I sitting in the passenger seat observed the countryside. I observed trees, which to my surprise, were numerous along field borders and ditches. We are talking about flat land here, unlike the hills and hollows of my native Union County. Most of the fields were tiled, so ditches were necessary to carry off water and probably were used much of the year.

I also observed new plantings of mostly Colorado blue spruce along driveways and newer houses. I have advocated for windbreaks along livestock facilities for some time, but where we were going, there were only a few cows sighted. However, I am happy to see trees along field borders and stream banks.

Along these lines, I noted in the February 16th edition of the Illinois Farm Bureau's Farm Week Now, which had an article concerning trees as a windbreak in large fields. Apparently, the University of Illinois is now experimenting with tree plantings in large fields as a means of combatting wind erosion, and the results look good, with slight to no loss of yield due to wind.

The Farm Bureau is the first (to my knowledge) farm organization in Illinois to take an interest in using trees as a windbreak.



## Why Are Windbreaks Important?

"Windbreak" is a term you often hear when learning about forestry or tree planting. For any who may not know, a windbreak is a barrier of trees that are planted to slow the movement of wind.

Just how beneficial can windbreaks be? Well, for those making a living in agriculture, they can be very beneficial.

When planted around crop fields, windbreaks can reduce wind erosion. Wind erosion can have a

negative impact on plants. Wind erosion can make soil less productive by removing fertile parts of soil at the surface. Over time, this can have a degrading affect on soil structure, leading to reduced crop yields.

Illinois has some of the most fertile topsoil on the planet. We have glaciation and our historic prairies to thank for that. To protect that soil, windbreaks are one such strategy to maintain our soils' productivity.

Windbreaks are not only beneficial to field crops, they are also beneficial to horticultural crops. Crops such as fruits and vegetables can experience improved quality by benefitting from windbreaks. Studies have even shown that better pollination can occur on the leeward side of a windbreak because of reduced wind impact to insects.

There are many benefits to implementing windbreaks on a farm. It may just be a good strategy for you!

## Shawnee National Forest

We are  
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Effingham - 130 miles  
Belleville - 64 miles



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August 2021

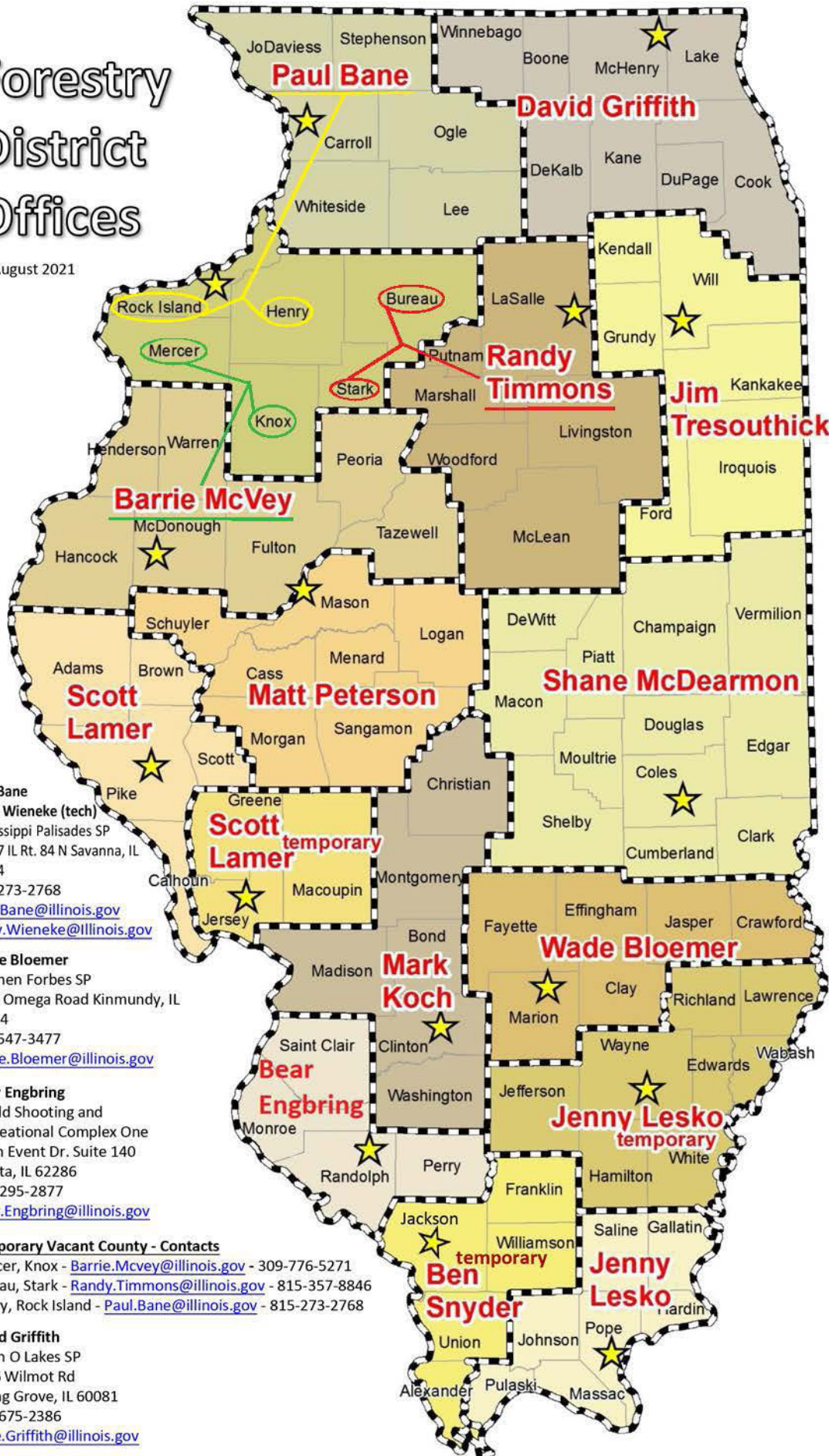
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