# Illinois Trees

The Quarterly Publication of the Illinois Arborist Association

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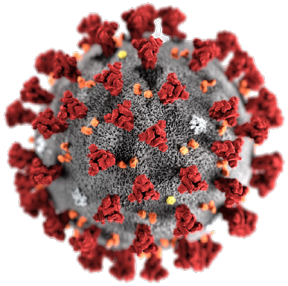
Spring 2020

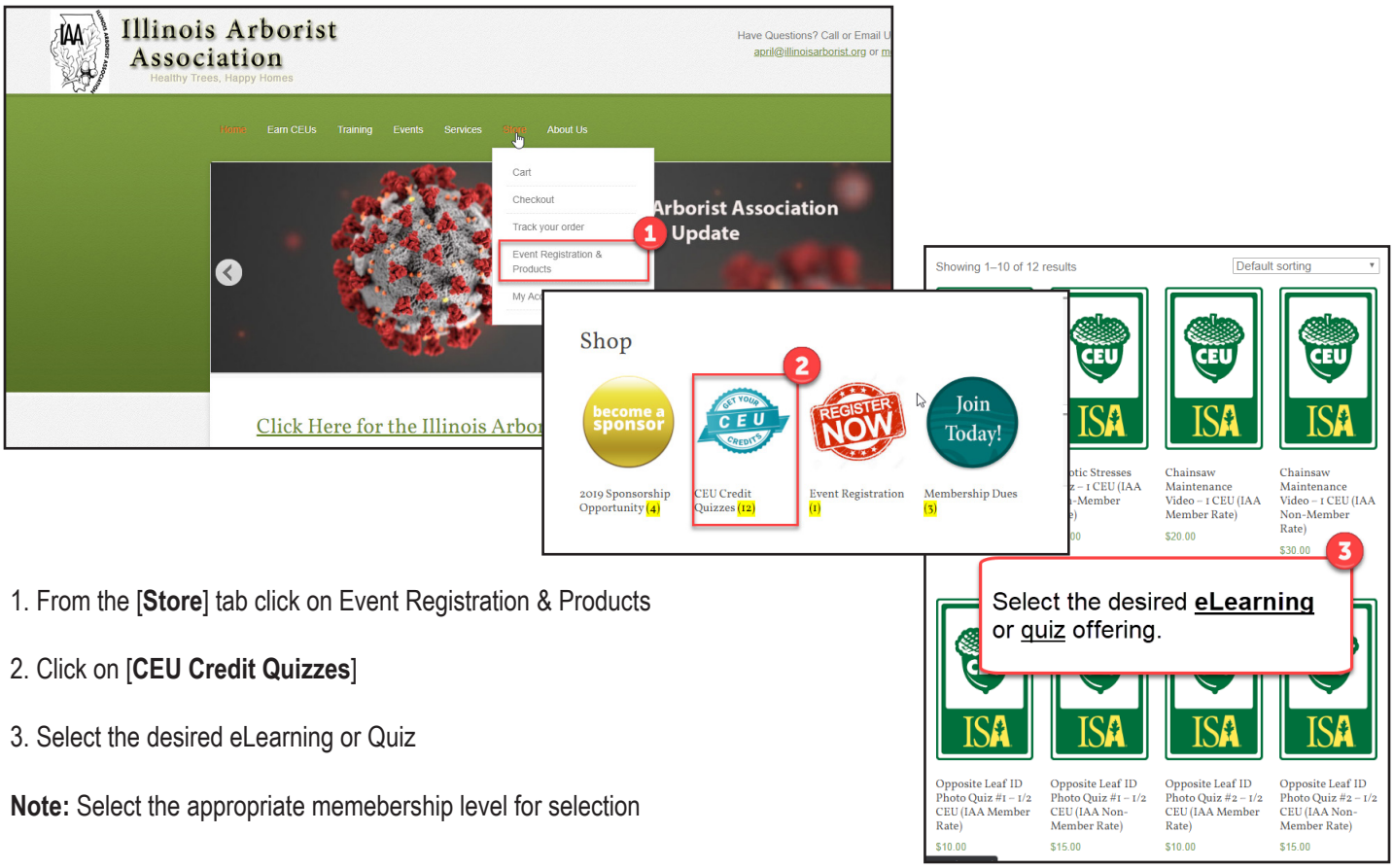

## COVID-19 Update for IAA

by April Toney



Wow, what a strange few months it has been! It's not like 2020 was normal to begin with, as the weather, politics and now a pandemic have literally turned our world upside down. Who would have ever imagined that our day to day activities, work, sports/entertainment and fellowship with family and friends would have been disrupted in the manner it has? Before 2020, a terms like "social distancing" would have been a punchline to a joke, today, it has become a daily occurrence in our communications. As a result of the mandated, or in some cases, recommended federal, state and/or local guidelines; like all of you, the Illinois Arborist Association has had to adjust operations. The IAA has quickly shifted to help our members maintain their training and CEU requirements by offering eLearning and quizzes directly from our website. That's right, you can from the comfort of your home or mobile devices, take quality content and receive credit for completion. Please visit the IAA website and signup for one of our offerings.

There will be additional content added, so be sure to check in periodically to see what's new. Wishing all of you well during these difficult times…looking forward to the day when things return to normal.

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## Illinois Arborist Association

### Mission Statement

*"Foster interest, establish standards, exchange professional ideas and pursue scientific research in Arboriculture"*

# Executive Director Corner

Hello IAA members!

I sure hope everyone is successfully navigating through our national emergency. The COVID-19 pandemic has made what we all do much more difficult and challenging these days, the IAA office included. The “Safer at Home” mandate by the state of Illinios has forced the association to postpone classes, and in some cases, cancel events. We are actively seeking ways to continue to provide our membership with training and CEUs to help maintain certification. Recently, we added quizzes that can be taken for CEU credit and now we want to introduce you to the first module (more to come) in our “How to Series” eLearning courses. The first course in this series is Chainsaw Maintenance with Norm Hall. This is a 40 minute eLearning course that will take you through the many parts of properly maintaining your chainsaw(s). You can access the Chainsaw Maintenance course by **clicking on the image below**. Take care everyone and check back in for the next “How to Series” module titled Knots (Climbing, Rigging and Hitches).

Sincerely,
*April Toney*

Executive Director

# Illinois Forestry Association & Responsible Forest Management

Today in Illinois, there is a great need for responsible forest management in rural, as well as urban environments. Due to many threats to our state's trees, it is becoming increasingly important that responsible forest management techniques, and the right trained professionals are being utilized to actively conserve and improve forest and tree health. However, you as a member of the Illinois Arborist Association undoubtedly know this. What you may or may not know, is how the Illinois Forestry Association is working for the future of Illinois forestry and forest health.

### The Illinois Forestry Association

The Illinois Forestry Association is an organization with a very diverse membership. Our membership is comprised of concerned citizens, forest landowners, farmers, forestry and natural resources professionals, arborists, professors, administrators, urban foresters, wood product industry business owners, and more. What we share is a belief that forestry is good for our state and country and that healthy forests must survive for future generations.

With the forest health issues affecting Illinois forests and urban environments today, it is important that the general public knows about the need for responsible forest and tree management. Issues such as expansion of non-native invasive species, the need for active management of oak-hickory forest, the environmental need to plant more trees, monitoring for tree diseases and forest pests, and general tree health maintenance, are all critical issues that we as professionals and concerned citizens should all be aware of, and actively trying to manage. The Illinois Forestry Association advocates for responsible forest management and focuses on outreach needed to engage private landowners. There are 3.5 million acres of privately owned forest in Illinois (77% of total forestland). Due to the fragmentation of Illinois forests, it is critical to provide the right information, to the individuals owning these forests.

To provide this outreach the Illinois Forestry Association organizes field days, and annual meetings. The organization also organizes a quarterly newsletter, and has an actively managed website, so that private landowners can get the information they need to responsibly manage their forest. By working with other great forestry organizations like the Illinois Arborist Association, we provide quality, up-to-date content and information.

### The IFA Newsletter

The IFA quarterly newsletter, much like the IAA newsletter, is a fantastic way to stay informed about current topics in the field of forestry. By including articles from forestry professionals, researchers, professors, and knowledgeable private landowners, we are able to offer a diverse lineup of topics. Our next Spring issue will contain an article written by the Illinois Arborist Association, and we are very excited to have the expertise of the IAA board represented in our newsletter.

### IAA/IFA Partnerships

The IFA is actively partnering with IAA in several ways. We both are sponsors, along with the University of Illinois Extension Forestry Programs and SIU, of the annual Student Forestry Field Days at the Dixon Springs Agricultural Center, where forestry and natural resource college students are introduced to techniques and equipment used in forestry and tree management as well as hear about different career paths related to forestry and arboriculture. IFA also regularly organizes a special session at the IAA annual conference that covers topics that appeal to arboriculture, urban forestry and traditional forestry.

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### The IFA Annual Meeting

On September 26th last fall, the IFA held its 14th IFA annual conference at the beautiful Principia College in Illinois. The theme was “Keeping Illinois Forests Healthy and Productive”. The conference kicked off with a tour of Pere Marquette State Park. This field tour was led by IDNR District Heritage Biologist Mark Phipps. The tour focused on the active forest management techniques being used to manage upland forests, as well as the unique hill prairies on the site. On the second day of the conference, attendees we able to learn about forest management from a diverse group of professionals giving talks about a wide range of topics. On the third and final day of the conference, attendees were able to tour the exciting research taking place at Principia College, led by Principia College Professor of Biology and Natural Resources, John Lovseth. Thanks to all the hard work from planners, and speakers at the meeting, the annual conference was a great success. We encourage any interested individuals to sign up for future annual conferences when they are announced.

### Future Events

The IFA is planning to hold its next annual meeting in conjunction with Illinois Tree Farm’s annual field meeting. We at the IFA are excited to collaborate with Tree Farm to provide a program with a diverse range of forestry topics. The annual meeting will be held in late September. The IFA also plans to hold four regional field days to focus on oak-hickory management and invasive species management. Those field days will be held in May and June. Those details will also be on our website very soon. If you are interested in events like these, keep an eye on our events page at https://www.ilforestry.org/Events.

# ISA Update

The Digital Version of the Certified Arborists' Study Guide is Now Available

The digital version of the Certified Arborists' Study Guide is now available at the ISA Store. This online resource maintains the popular look and feel of the current print version, including all of the illustrations, while also providing handy features including a searchable table of contents which takes you directly to the chapter of interest. Members pay only $60 (Non-member price is $110) for this online resource which maintains the popular look and feel of the current print version.

After careful consideration and several weeks of discussions with officials at the Albuquerque Convention Center and the Albuquerque Convention and Visitors Bureau, ISA is moving the 2020 ISA Annual International Conference and Trade Show to 15-17 December 2020.

We are excited that we will have the opportunity to connect as a community to wrap up an unprecedented year and look to where the profession is headed in 2021. ISA hopes that these new dates allow time for more of our members to be able to travel, our exhibitors to operate, and our community to recover. We plan on providing more details in the coming weeks with information on registration, housing, and a new virtual conference experience for those who may not be able to join us in December.

The ISA Annual International Conference and Trade Show provides a forum for the exchange of information and opportunities to network with others in the arboricultural profession. The event provides a lineup of educational sessions led by industry leaders from around the globe, sharing their thoughts and views about the newest trends in equipment, practice, technology and research in arboriculture and urban forestry. It is the world's premier gathering of arboricultural professionals, where practicing arborists and urban foresters come together with top researchers and educators.

ISA will continue to monitor the circumstances surrounding COVID-19, coordinating with local public health officials, and provide updates as necessary. We are committed to protecting the health and safety of our attendees, exhibitors, sponsors, and staff and hosting the most successful conference possible. Thank you for your understanding and your commitment to ISA.

# ISA Cancels 2020 International Tree Climbing Competition


ISA has made the difficult decision to cancel the 2020 ISA International Tree Climbing Championship (ITCC) in Albuquerque, New Mexico, U.S., scheduled for 7-9 August 2020. The decision comes with thoughtful discussions on evolving developments, potential international travel restrictions, cancelled tree climbing events that qualify for the ITCC including the ISA Asia Pacific Tree Climbing Championship and the ISA European Tree Climbing Championship, respect for our volunteers time and efforts in uncertain economic climates, and ultimately the health and safety of all involved in hosting the event.

While we are incredibly disappointed to have to cancel this event, we hope this early announcement relieves undue uncertainty during these trying times for our components, climbers, sponsors, and volunteers who make the event successful.

We appreciate the value our climbers, participating components and organizations, sponsors, volunteers, and other stakeholders place on this event and their patience and understanding in this challenging decision. We also must thank the ISA Rocky Mountain Chapter for their leadership, dedication, and commitment as the event hosts. We will take this opportunity to ensure that the 2021 ISA Tree Climbing Championships, including the 2021 ISA International Tree Climbing Championship in Copenhagen, Denmark are the most successful events possible. Thank you for supporting ISA, and we look forward to once again hosting these important and meaningful competitions in the coming year.

Based on the current situation, ISA continues to plan on holding the 2020 Annual International Conference and Trade Show, planned for 9-12 August in Albuquerque, New Mexico, U.S. However, with the ongoing developments surrounding the coronavirus (COVID-19), ISA is monitoring the evolving climate and reviewing information shared by global organizations, health authorities, and local and federal government agencies. We will continue to act in the best interest of our organization and those who will be attending our conference. We will communicate any changes in our event as we have confirmed details.

# Plant Growth Regulators in Arboriculture

## A Look at the Science and Uses of Plant Growth Regulators in Arboriculture

*by Rainbow  Treecare Scientific Advancements-2020*

## Introduction

Plant growth regulators (PGRs) can be a versatile tool for managing trees within the urban/suburban interface. PGRs have been around for decades, and were first popularized in floriculture and turf management before being adapted in utility arboriculture to reduce pruning frequency. PGRs have since been embraced for use on landscape trees and shrubs. Arborists, Urban Foresters, Landscape Contractors and Public Works Directors continue to find innovative ways to implement PGR's like Cambistat.

The active ingredients of a modern PGR (e.g., paclobutrazol) work by altering hormone production. When these products are applied to trees, synthesis of the plant hormone gibberellin is blocked. From a plant growth perspective, gibberellin is responsible for cell elongation and expansion. The result of less gibberellin in the tree is decreased twig elongation and trunk diameter. Cell division is not interrupted, so the plant still produces the same amount of cells, but these cells are simply smaller. *(See Image 1)*


*Image 1: Example of growth control of treated vs untreated with paclobutrazol*

Several species within the Pinaceae family, this can represent a reduction of 30-70% twig and diameter growth over a period of two to three growing seasons *(See Image 2).*


*Image 2- Select species comprising Pinacea family*

With the reduction of gibberellin production, we see an increase in phytyl and abscisic acid production (Chaney 2005). Phytyl is a component of chlorophyll; thus, treated trees often see an increase in chlorophyll production, which can help with chronic chlorosis issues. Abscisic acid plays several roles within a plant that can benefit health. When higher concentrations of Abscisic acid are present, the tree is able to respond to drought conditions by closing the stomata faster when compared to untreated trees. *(See Images 3-5)*.This allows leaves to retain more water during drought conditions. Abscisic acid also stimulates protease inhibitors, which can provide defense from certain pathogens and leaf

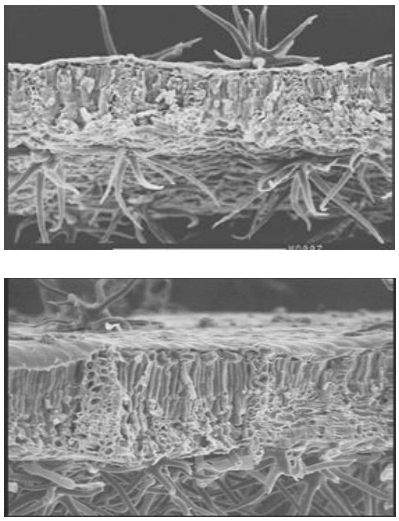
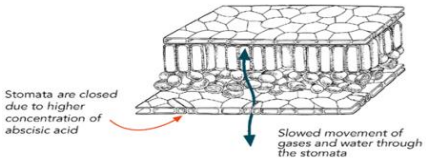


*Image 3-5-These electron Microscope photographs show the thicknesses of the leaves are increased after treatment with Cambistat as compared to untreated. Research and Photographs courtesy of Qi, Knighten, and Chaney*




feeding pests. In addition, the active ingredient paclobutrazol has been shown to inhibit the growth of certain fungal pathogens *(Jacobs and Berg 2000).*

Morphologically speaking, we see an alteration to leaves and fine root density. Some leaves produced after trees are treated with a PGR may be slightly smaller. These leaves may account for the improved color often observed in treated trees, as chlorophyll may be more concentrated. *(See Image 6-7 on next page)*  In addition to being smaller,

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# Plant Growth Regulators in Arboriculture

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new leaves also produce a thicker waxy cuticle and an increased amount of leaf hairs (trichomes). From a tree resilience stand- point, this improves both drought and pest resistance. The thicker waxy cuticle helps the leaf to retain more water during periods of drought while making it more difficult for foliar disease fungi to penetrate mesophyll cells. Likewise, the increased amount of leaf hairs creates a microclimate around the leaf that pre- vents water loss in both hot and cold conditions.

In many instances, the density of fine root growth is increased after trees are treated with plant growth regulators. This response can help trees better recover from root disturbance/damage especially when treated in advance of the site construction

There is also a correlation between root density and chlorosis (i.e., trees with poorly developed root systems are more inclined to display symptoms of chlorosis). Using plant growth regulators along with other cultural practices may be a tool to help stabilize slowly declining trees *(Watson and Himelick 2004).*

**Untreated**

**Treated**

*Image 6 &7- More phytols can be formed and chlorophyll levels are enhanced. Chlorosis Research conducted by Dr. Jeff Gillman at the University of MN*

## Practical PGR Applications

For trees planted within close proximity to infrastructure, controlling growth with PGRs, rather than pruning, results in more sustainable trees that require less overall maintenance. The use of PGRs can help site managers to maintain large, maturing trees in less than ideal locations for longer periods of time. These products can also be used on highly manicured small trees, landscape shrubs, hedges, vines or groundcover to maintain desired size and shape.

Reduced pruning cycles can benefit budgets and labor allocation, and result in less frequent wounding of the tree.

PGRs have the potential to reduce the frequency of potentially dangerous situations, which in turn can greatly reduce risk and exposure. Keeping vigorous species from obstructing road signs, building facades, power lines and overhead lighting is important.

Likewise, there is an inherent danger for workers to be performing tree care activities along roadways, or anywhere they may come into contact with traffic. Maintaining highly manicured small trees often requires crews to work from ladders using power sheers. Reduction in these types of situations may contribute to better safety statistics for both workers and the public.

Due to several effects of PGR application (i.e., increase in abscisic acid, leaf cuticle thickness, trichome production, fungal properties and fine root density), we find that treated trees can be more tolerant to drought conditions *(See Image 5.)*

Additionally, PGRs can aid in recovery from these conditions such as compacted and salt laden soils, heat microclimates and increased soil temperature can all induce drought symptoms on a tree. Of course these conditions describe many sites in which trees in the urban/suburban interface are growing.

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# Plant Growth Regulators in Arboriculture (continued from page 9)

## Disease Resistance and PGRs

Noted disease resistance induced by application of PGRs gives arborists another tool for aiding trees in the landscape (Image 3). Studies have displayed disease resistance for several fun- gal diseases, including crab apple (*Malus* Radiant) apple scab (*Ventu- ria inaequalis*) and the spruce (*Picea pungens*) *(Watson and Jacobs 2012*). Again, both the combination of physiological and morphological changes associated with PGR application are likely the reason for this resistance against these fungal diseases. *(Percival and AlBalushi 2007).* Lack of precipitation is not the only contributing factor to a tree displaying drought symptom stressed linked disease cytospora canker (*Leu- costoma kunzeii*) on blue Spruce.

Disease resistance against bacterial pathogens has also been observed. Dis ease severity of fire blight (Erwinia amylovora) was significantly lower on McIntosh apple trees treated with PGRs (McGrath et al. 2009). This is attributed to reduced tip elongation related to less surface area for the bacteria to affect. Likewise, red oaks (*Quercus rubra*) infected with bacterial leaf scorch (*Xylella fastidiosa*) displayed suppression of symptoms after treatment with PGRs. Since disease symptoms of bacterial leaf scorch are related to water stress, it is likely that the drought resistance induced by PGRs is partially responsible for this response *(Sherald 2007).*

## Summary

PGRs provide another tool to aide with managing trees in our urban/suburban interface. Although they offer new possibilities for improving and maintaining tree health, they should not be viewed as a silver bullet. PGRs should be used as part of an integrated approach to tree health care. When used responsibly, PGRs can help with reducing the labor needed for pruning trees and shrubs in landscape areas and help with managing the safety of public infrastructure and crews, as well as, induce responses in trees that make them more resilient to urban/suburban tree stressors.

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*Image 2-Wildflowers-and-Weeds.com -Plant Identification, Edible Plants, Weed Ecology, Mushrooms, and more.*

*Article drafted with contributions by Brandon Gallagher-Watson, Patrick Anderson and Lee Fredericks all employees of Rainbow Treecare Scientific Advancements.*

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# Historic & Present Composition of Chicagoland Forests

by Lindsay Darling

Illinois's forests are in a time of change. Invasive trees and shrubs are increasingly common, the emerald ash borer (EAB) has effectively eliminated one of the most abundant genera, and climate change is casting confusion on how forests should be managed into the future (Nowak et al. 2013, Brandt et al. 2017). This article will briefly describe the historic and present composition of the Chicago region's forest, and make some recommendations for the future. While it will focus on Chicago which has the most complete datasets, the patterns from that region are likely similar to the rest of the state.

In the 1830's, when surveyors first took stock of the vegetation in the Midwest, oaks made up 88% of all trees in the Chicago region (Fig. 1) (Mcbride and Bowles 2007, Fahey et al. 2012). At this time, settlement was minimal; there were few planted trees and forests had a restricted distribution. Frequent fires maintained prairie ecosystems in the majority of the region, and forests were restricted to areas with fire breaks, like on the leeward side of rivers (Fig. 2). The wooded areas of the 1830's were quite different from the current forests. They were much more open, with fewer understory trees and a more sun loving herbaceous layer (Bowles et al. 1994). The tree species composition was also influenced by disturbance, and oaks are particularly resistant to fire and drought.

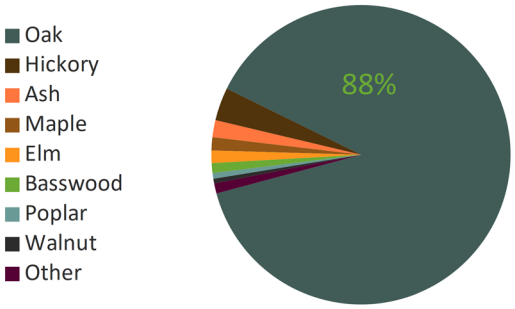


**Figure 1**: Tree genus distribution in the 1830's. Oaks made up the majority (88%) of trees.

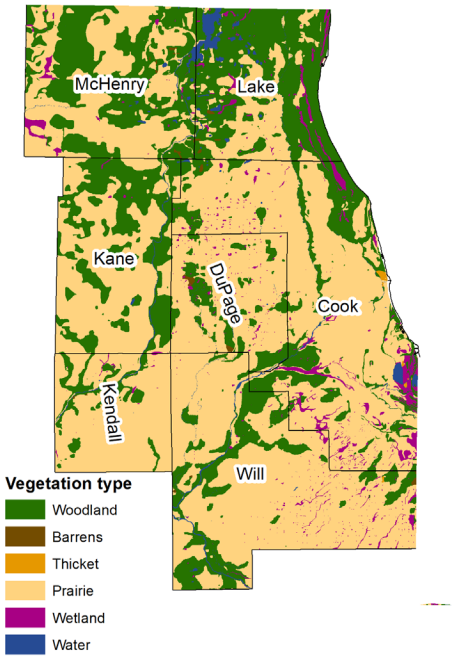


**Figure 2**: Distribution of ecosystem types in the 1830's. Most of the Chicago region was prairie. Forests mainly existed in areas with natural fire breaks. This map was adapted from Marlin Bowles's work (Bowles et al. 1994).

By 2010, the location and composition of the region's forests had changed tremendously. Areas that were wooded in the presettlement era still tend to have more canopy than areas that were prairie (Fig. 3). However, in some suburban areas like DuPage and Cook Counties, extensive canopy gains have been made. In 2010, oaks only made up 5% of the region's trees (Fig. 3). The loss of oaks has several causes. In natural areas, fires and other disturbance regimes have been suppressed, which has allowed fire intolerant, shade-loving species like maples and basswood to take over (Nowacki and Abrams 2008, Fahey et al. 2015). Oaks require an open canopy, and are unable to regenerate in these shadier forests. In urban areas, maples and ash dominate plantings (Darling, unpublished data). But the biggest change in the region comes from the proliferation of

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invasive species. European buckthorn and bush honeysuckle make up nearly a third of all trees in the Chicago region (Nowak et al. 2013) (Fig. 4). These invaders have wreaked havoc on natural areas, where native plants and animals are succumbing to new competition.

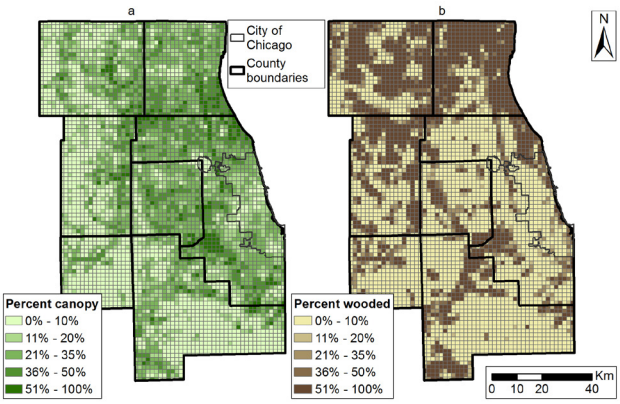


**Figure 3:** Comparison of 2010 canopy cover (a) wooded areas in 1830 (b).

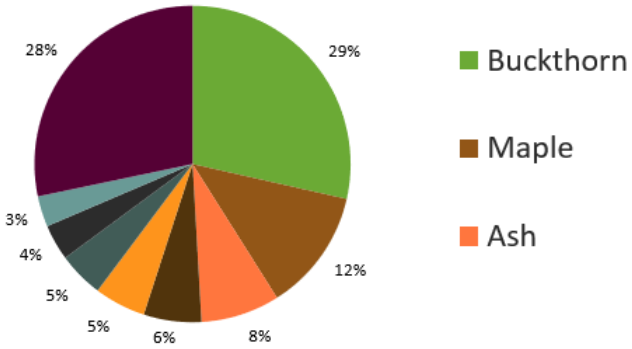


**Figure 4:** Species composition in the Chicago region in 2010. Oaks make up only 5% of trees, and buckthorn is the most abundant genus.

It's hard to imagine the region's trees could change more in the next 200 years than they have in the past two centuries, but there are some very real challenges on the horizon. The species composition in Fig. 3 is from an inventory in 2010, before EAB invaded the region. It's expected that the vast majority of the region's 12.7 million ash trees have been lost. Maple makes up an even larger proportion of the region's trees, and are susceptible to Asian longhorned beetle (ALB). ALB has been introduced to the region before (although it was eradicated due to quick detection and incredible work by Chicago's Department of Forestry), and it has been found in Ohio. The pathogen that causes sudden oak death has also been found in Illinois and Indiana. Additionally, climate change may result in species that currently thrive in Illinois to be less well adapted in the future. There are ways that foresters can proactively manage these issues:

- Monitoring trees is the best way to detect a pest before it becomes established,
- Healthy trees are better able to fend off diseases or other stresses. Plant trees properly and in appropriate places, inspect trees often, prune as needed, and water new trees until they are well established,
- High species, genus, and family diversity is the best way to limit damages if a new pest were to establish.

Mitigating the effects of climate change and trees requires multi-faceted solutions. High diversity is still a good way to increase the resilience of forests, as is ensuring that trees are well cared for and able to tolerate extra stress. For more specific ideas on how to plan for climate change in urban forests and natural areas, see the Northern Institute for Applied Climate Sciences web page. They have completed assessments of southern Illinois's forests, as well an urban specific assessment for the Chicago region (Brandt, et al. 2014, Brandt et al. 2016).

The Chicago Region Trees Initiative has compiled data from over 50 street and park inventories. There are nearly a million trees in this dataset, and with that depth of data we can identify which trees are projected to thrive in future climate projections, and are not commonly planted. A few examples include:

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- Hophornbeam (Ostrya virginaia). A small statured (good for under power lines) tree that is hardy and has attractive seeds. It makes up just 0.2% of street trees in the Chicago region
- American musclewood (Carpinus virgiana). Similar to hophornbeam in size, and it's bark very showy. It also makes up 0.2% of street trees.
- Shingle oak (Quercus imbricaria). An oak species that makes a great street tree. Beautiful, glossy leaves, tolerant of urban conditions, and while it is gaining in popularity, it only makes up 0.17% of street trees.
- Sweetgum (Liquidambar styraciflua). This tree is barely hardy in the Chicago region, but it is starting to be used more extensively. It has great fall color and some cultivars don't make seed balls. It makes up 0.13% of street trees
- Pecan (Carya illinoinensis). Again, marginally hardy in Chicago, but gaining popularity. It makes delicious nuts and is a beautiful tree. It can be challenging to transplant. It is exceedingly rare, making up just 0.001% of trees.

Our forests have been through a lot in the last 200 years, and they will continue to change. With good data, we can make management decisions that will increase the health and resilience of our forests for generations of people and animals alike.

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# IAA Creates a Workforce Development Committee

by Paul Filary

Did you know the IAA has a Workforce Development committee? The goal of this committee is to promote the arboriculture industry and encourage people in the workforce to pursue careers in it with our IAA members. We also put on the annual career fair at the IAA Annual Conference to help provide affordable opportunities for IAA members to get in front of career seekers and provide career opportunities in arboriculture. Through promotion of our industry and engagement with career seekers, we seek to further professionalize and increase the work force in arboriculture.

The Illinois Arborist Association Workforce Development committee has been busy over the early part of this year. The current situation with COVID-19 has recently limited our ability to attend more events, but up until now we were able to attend four different high school career exploration events. These were great opportunities for the IAA to be present and in front of soon to be high school graduates promoting the profession of arboriculture as they decide their career and educational path.

The events started this past January in Champaign, IL and then recently completed with a Zoom career expo put on by Fermilab and their annual STEM Career Expo. These events allowed us to promote our industry to graduating students and encourage careers in our field with IAA members. Multiple organizations volunteered staff to attend these events and thanks to all of those who attended and helped promote the profession of arboriculture.

- Dan O'Brien – Russo Power Equipment
- Tony Dati – Village of Niles
- Zach Woodbury – City of Champaign


- Gabriel Marquez, Jr. – Gabriel's Companies, Inc.
- Chris Beiser – Nels Johnson Tree Experts
- Betsy Meyers – Kramer Tree Specialists, Inc.
- Alan Seal – Kramer Tree Specialists, Inc.
- Paul Filary – Kramer Tree Specialists, Inc.

The events that we attended in 2020 thus far, include:

- Mahomet Seymour High School Career and College Exploration Night
- Fremd High School Career Expo School District 211
- Grant Community High School Career Fair
- Fermilab STEM Career Expo

We look forward to identifying and attending more of these events in the future as well as continuing to host our own career fair at the IAA annual conference. If you know of events for us to attend or you are interested in helping our committee grow the workforce in arboriculture, contact Paul Filary at pfilary@kramertree.com

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