



THE
CHAMPION
of TREES

2020

Chicago Region Tree Census Executive Summary

Ensuring the sustainability
of the regional forest
and informing action
for the benefit of all
people and communities

SPEED
LIMIT
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Summary

The 172 million trees of the Chicago region provide critical benefits to the environment, ecosystems, human health, and quality of life for 9 million residents in 284 municipalities. The trees that make up the regional forest face many current and impending threats including invasive pests, opportunistic species, climate change, and urban development.

In 2010, The Morton Arboretum, in collaboration with the USDA Forest Service, undertook the first tree census of the regional forest to understand its value and develop a plan to manage and curtail rising threats. It was the largest effort of its kind in the country, producing valuable scientific data about the benefits provided and making clear the challenges to maintaining a healthy tree population.

In 2020, the Arboretum partnered with Davey Resource Group Inc. and the Student Conservation Association to conduct the second tree census, remeasuring 1,576 plots in the city of Chicago and the seven surrounding counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will to gain a comparative snapshot of the forest and the benefits it provides.

The 2020 tree census serves as a strategic guide for local and regional stakeholders to understand current trends and make informed decisions about how to protect and improve the forest in a strategic way that benefits residents and communities. This summary highlights some of the key findings, with comparative data from 2010 where possible.

For additional data and information, please visit mortonarb.org/tree-census.

Snapshot of the Chicago Region Forest

SPECIES DIVERSITY

The regional forest is diverse, with at least **194 different species** represented (103 in the city of Chicago). Of the 194 species, 37% are native to Illinois. Species diversity is necessary to maintain a healthy and sustainable forest; this is especially important given the threats of climate change, and of insects and pathogens that target specific tree species.

THE PLIGHT OF ASH TREES

The estimated number of **standing ash trees decreased 46%** from 12.7 million to 6.8 million, many of which are standing dead trees and trees in decline. This catastrophic loss is largely due to the emerald ash borer (EAB), an invasive pest that ravaged mature ash trees throughout the Midwest.

Only a small percentage of the standing ash trees are mature and healthy, and more than 30% of ash trees in the region have diameters of 3 inches or smaller. It is unlikely that the ash population will grow to maturity without ongoing pesticide treatment.

A DYNAMIC FOREST

The regional forest is dynamic, affected by the many influences of being within a major global transportation and trade hub. While the census found an increase in the total number of stems, from **157 million trees in 2010 to 172 million trees in 2020**, ash trees were seriously impacted by an invasive pest, and invasive European buckthorn continues to proliferate and dominate the forest.

The **canopy coverage increased from 21% in 2010 to 23% in 2020**. However, the canopy cover of the city of Chicago decreased from 19% to 16%, largely due to the loss of mature ash trees.

THE BUCKTHORN PROBLEM

The most common species in the region is the invasive European buckthorn, which accounts for 36% of total trees. Although its population ranges from 4% to 55% in different counties, buckthorn is a serious issue for the region. Buckthorn reduces the diversity of the forest by outcompeting native plant species, causing long-lasting damage to the soil and the larger ecosystem. Its dense thickets shade the ground from sunlight, making regeneration of oaks and other plants difficult. Buckthorn also generally does not grow large enough to provide the benefits of canopy trees. Residents should replace buckthorn on their property with species highlighted in the Healthy Hedges program, a collaborative initiative in the Chicago region to reduce the damage caused by invasive woody plants.

172 million trees from more than 194 species provide \$416 million in ecosystem benefits annually and valuable green infrastructure worth \$49 billion.

THE OAK ECOSYSTEM

The oak ecosystem remains an important part of the regional forest, with very little change from 2010. Oak species make up 4% of total trees, but 13% of leaf area. They are vitally important to the region's ecosystem, supporting more than 600 animal species in Illinois. Continued efforts should focus on oak ecosystem protection and restoration through planting, management, and collaboration across private and public property.

The All-Important Canopy

Canopy refers to the upper layer of forests formed by mature tree crowns, including the leaves, branches, and stems that shelter the ground below. Canopy quality is ecologically important—high-quality canopy from large, healthy trees with abundant leaf area provides more benefits (e.g., carbon uptake, oxygen production, shading, pollution filtration, stormwater interception, etc.) than small trees such as buckthorn and honeysuckle.

Snapshot of the Chicago Region Forest *continued*

10 MOST COMMON TREE SPECIES IN THE 7-COUNTY CHICAGO REGION

SPECIES	TREES	LEAF AREA
European buckthorn (<i>Rhamnus cathartica</i> — invasive)	36%	10%
Boxelder (<i>Acer negundo</i>)	4%	6%
Black cherry (<i>Prunus serotina</i>)	4%	4%
Amur honeysuckle (<i>Lonicera maackii</i> — invasive)	3%	1%
Honeysuckle spp. (<i>Lonicera species</i> — some are invasive)	3%	1%
American elm (<i>Ulmus americana</i>)	3%	4%
Green ash (<i>Fraxinus pennsylvanica</i>)	2%	1%
White mulberry (<i>Morus alba</i>)	2%	2%
Black walnut (<i>Juglans nigra</i>)	2%	7%
European alder (<i>Alnus glutinosa</i>)	2%	<1%

spp: several species

10 MOST COMMON TREE SPECIES IN THE CITY OF CHICAGO

SPECIES	TREES	LEAF AREA
White mulberry (<i>Morus alba</i>)	14%	4%
European buckthorn (<i>Rhamnus cathartica</i> — invasive)	6%	1%
White ash (<i>Fraxinus americana</i>)	6%	7%
Tree of heaven (<i>Ailanthus altissima</i> — invasive)	5%	4%
American elm (<i>Ulmus americana</i>)	5%	6%
Honey locust (<i>Gleditsia triacanthos</i>)	5%	6%
Silver maple (<i>Acer saccharinum</i>)	4%	16%
Buckthorn spp. (<i>Rhamnus species</i> — some are invasive)	4%	1%
Norway maple (<i>Acer platanoides</i>)	3%	11%
Ash spp. (<i>Fraxinus species</i>)	3%	<1%

spp: several species

Benefits and Value of the Chicago Region Forest

THE REGION'S TREES PROVIDE AN ESTIMATED \$416 MILLION IN ANNUAL ECOSYSTEM BENEFITS.

The values below, like removing carbon from the atmosphere and improving personal health, reflect a variety of significant ways that trees save costs and avoid expenses for municipalities and taxpayers.



POLLUTION REMOVAL

Trees in the region remove 18,600 tons of pollutants from the air per year, valued at \$192 million annually in public health savings, including the health care costs avoided due to lower rates of diseases and respiratory issues.



HABITAT PROVISION

Trees provide shelter and food for birds, insects, and mammals, contributing to the overall biodiversity of the ecosystem.



STORMWATER RUNOFF MANAGEMENT

Leaves and branches intercept rainfall and roots absorb it from the soil, reducing runoff that can cause erosion and overwhelm storm sewers. The region's trees intercept 1.5 billion cubic feet of water annually, saving cities and taxpayers \$100 million per year.



REDUCING THE URBAN HEAT ISLAND EFFECT

Sidewalks, roads, and other impervious surfaces in cities store sunlight, causing temperatures to rise. Trees lower temperatures in cities by intercepting sunlight and releasing water vapor into the air.



ENERGY SAVINGS

Trees adjacent to buildings provide shade and added insulation, regulating temperatures around buildings and saving Chicago-region residents \$32 million per year while reducing carbon emissions.



HEALTH BENEFITS

In addition to trees lessening the negative effects of air pollution, studies have shown that exposure to trees can boost mood, speed recovery times from illness, and improve overall mental health and well-being.



STRUCTURAL VALUE

Urban forests have a structural value, which factors in the cost of replacing a tree with a similar one. From 2010 to 2020, the replacement value of the regional forest declined from \$51 billion to \$45 billion. The loss of approximately 6 million ash trees greatly impacted the forest's structural value.



CARBON STORAGE AND SEQUESTRATION

As trees grow, they take in carbon dioxide and store it in their tissues, reducing greenhouse gases released into the atmosphere. The region's trees currently store 21 million tons of carbon, and an additional 542,600 tons are sequestered each year, mitigating the effects of climate change and providing carbon capture services valued at more than \$4 billion.

Stormwater Mitigation

According to the Chicago Metropolitan Agency for Planning (CMAP) ON TO 2050 comprehensive plan for the Chicago region, the city's aging infrastructure was not built to handle the rising amounts of stormwater entering the system. Adding more trees to the built environment can result in valuable stormwater mitigation. The plan guides transportation investments and frames regional priorities on development, the environment, the economy, and other issues affecting quality of life.



Taking Action

COMMITTED TO ORGANIZED ACTION

The Morton Arboretum established the Chicago Region Trees Initiative (CRTI) to address the kind of concerns identified in the 2010 tree census and to set goals for the regional forest to be achieved by 2050. CRTI is a partnership for coordinated action to improve the health, diversity, and equitable distribution of trees in the region to benefit people and communities. It has grown to include more than 200 partners working together to build a greener, healthier regional forest.

The 2020 tree census results provide insights about progress and guide future work to achieve a healthier and more diverse regional forest. CRTI will lead regional tree planting and ecosystem recovery initiatives, and provide information for homeowners and residents on how to plant and care for their own trees. Learn more at ChicagoRTI.org.

WHAT YOU CAN DO

Everyone in the Chicago region can have an impact on the health of the regional forest, even if they don't have their own trees. Homeowners and property owners can help by **planting the right tree, in the right place, with the right care**, ensuring that trees mature to provide the greatest possible benefits. Anyone who doesn't have the ability to plant a tree might consider helping water trees in city parkways or supporting a local organization, such as The Morton Arboretum, focused on scientifically informed tree planting. Together, we can build a strong, expansive tree canopy that will provide many benefits to people and communities for years to come.

For the 2020 Chicago Region Tree Census Report and more information on actions you can take, visit mortonarb.org/tree-census.

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