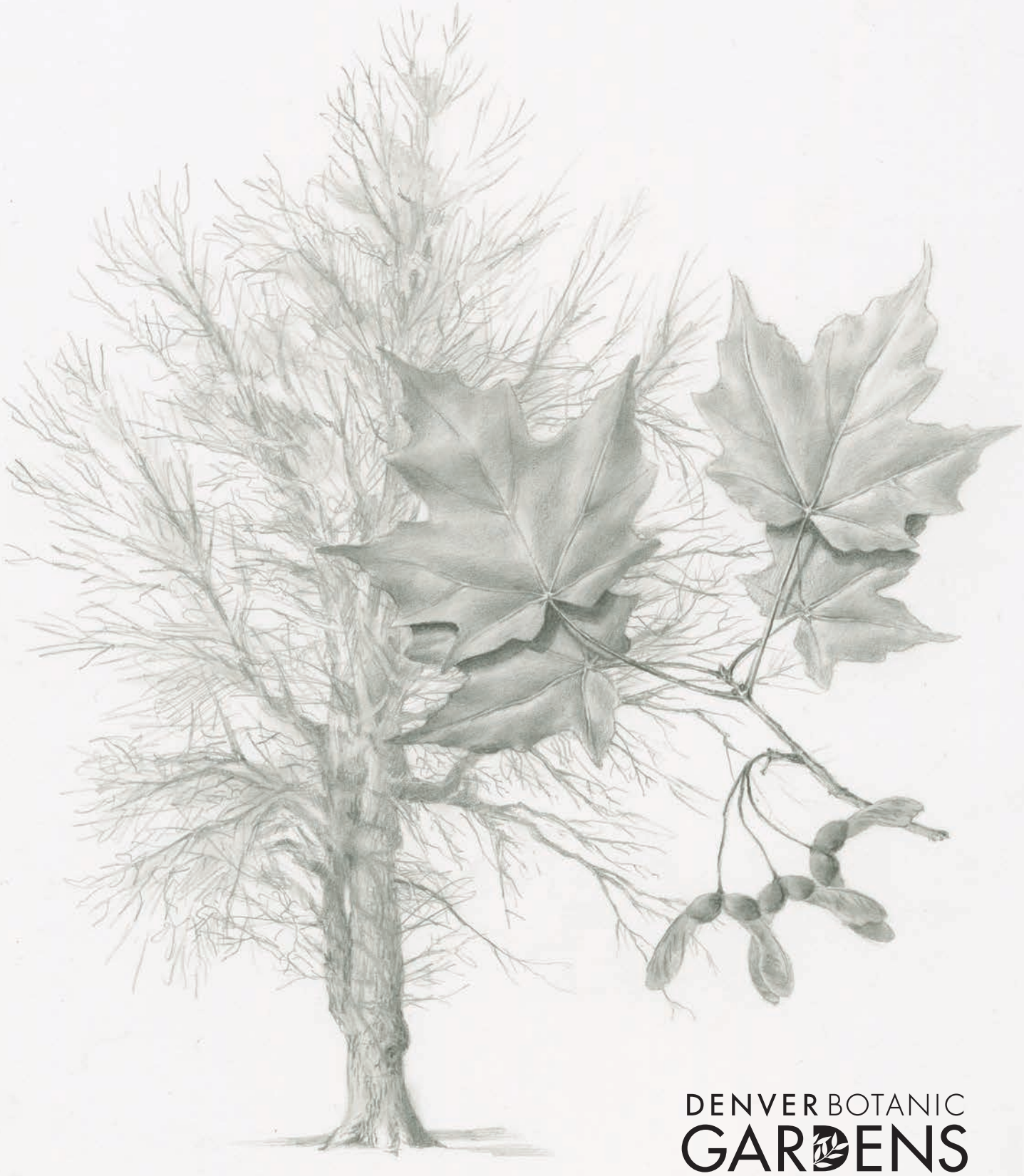
ROLLINGER TREE COLLECTION
50-YEAR SURVEY



DENVER BOTANIC GARDENS

Celtis laevigata (sugarberry)

Collaborators:

DENVER BOTANIC GARDENS

COLORADO STATE UNIVERSITY EXTENSION

DENVER PARKS & RECREATION

COLORADO TREE COALITION

COLORADO STATE FOREST SERVICE

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Quercus rubra (Northern red oak)

ROLLINGER TREE COLLECTION 50-YEAR SURVEY PROJECT REPORT

INTRODUCTION

Ann Frazier, Denver Botanic Gardens; Alan Rollinger, AR Landscape Design; Panayoti Kelaidis, Denver Botanic Gardens

Al Rollinger circa 1970

Late in the fall of 1968, Al Rollinger, a young landscape designer just graduated from Colorado State University (CSU), was in the office of Western Evergreen Nursery talking to the owner, Harry Swift. Al complained that the list of trees growing successfully in Denver was rather short. Harry asked how he knew this—had he actually looked? No, answered Al, but I will. He had no idea what he had just volunteered for, or how 50 years later, this casual proclamation would circle back to impact not just him, but a whole new generation of tree enthusiasts.

Based on a tip, Al started at the City of Denver Forester's office to review their list of specimen and unusual trees. Then he walked the Denver parks. It was a good start, but he soon realized that to find as many trees as possible he was going to have to drive every street in town. So, he did. A year later, he had compiled a list of more than 1,100 trees of 45 species, noting their location, diameter and height. He did not survey the more commonly planted trees such as honey locust, elm and silver maple, but rather looked for the rarer tree species, such as oak, horse chestnut or Eastern redbud. He soon discovered that the best time to look at trees is mid to late fall. In summer when all the leaves are green, it is difficult to pick out individuals, but autumn reveals the various colors and textures of the different tree species. Identifying all the species was a monumental task, for which Al turned to James Feucht, Ph. D., who worked for the CSU extension in Denver at the time. Jim's encouragement and aid in identification of the trees was invaluable. Al typed up the results of his survey into a report and went on with his life as a landscape designer in Denver.

Fast-forward to the present, and the world seems like a very different place. Many of us have grown up as the American elm disappeared from America's main streets, and now the emerald ash borer threatens a large percentage of what's left in our Front Range cities. These catastrophic events have made many of us painfully aware of the fragility of the urban forest of the Front Range. So much of it has succumbed to neglect, the explosion of population and construction along the corridor and worst of all, complacency and ignorance on the part of the public.

Al Rollinger circa 2018

Early in his career at Denver Botanic Gardens, Panayoti Kelaidis stumbled on Al's report on the notable trees of the Denver, a copy of which had made its way into the Gardens' Helen Fowler Library. Panayoti had known Al since the 1970s—Al had had an enormous influence on generations of designers in the region, and he and Larry Watson taught a landscape course at the Gardens that was a sellout for years.

When the 50-year anniversary of Al's report began to loom on the horizon, Panayoti had an idea: Wouldn't it be interesting to see how many of these trees are still alive and how much they've grown? And what would this tell us about our urban forest?

A much larger team came together to tackle the job this time, including the Denver Office of the City Forester, Denver Botanic Gardens, the Denver County Extension Office's Master Gardeners, City Forestry staff from the outlying suburbs and representatives from the Colorado Tree Coalition, the Colorado State Forest Service and various other local arborists and tree enthusiasts. Al Rollinger himself, ready for round two, also joined the team. This time, we were armed with current technologies that didn't exist in 1968, such as GPS and digital mapping, iPads and laser range finders, but it still took us two years to repeat what Al had done.

This report summarizes what we found, which turned out to be more than just which trees are still alive or how much they've grown. By going up and down the streets, walking through the parks and knocking on people's doors to ask if we could measure their trees, we discovered that Denver has grown up and around the trees, revealing the value of our urban forest and how it relates to the history of our city.

And after all this time, Al still finds himself taking different routes around town, just to see what trees he can discover.

PROJECT DESCRIPTION AND METHODS

Ann Frazier, Denver Botanic Gardens

In 2016, we began the effort of taking the results of the 1960s tree survey, documented solely as a paper report, and determining how to repeat this survey in the present. The original report lists 1,148 trees in 45 species, with location information, the diameter at 18 inches above the ground, and an estimate of the height within a 10-foot range. Since this was long before the advent of technologies such as GPS, the location information is listed only as a street address, an intersection or a general location within a public area (e.g. north end of park). The trees were on both public and private property. Although the bulk of the trees were in Denver City limits, approximately 150 of them were in the outlying cities of Lakewood, Wheat Ridge, Edgewater, Littleton and Englewood. The list of species in the survey is shown in Table 1.

TABLE 1. TREE SPECIES INCLUDED IN THE STUDY

Latin Name	Common Name
Acer palmatum	Japanese maple
Acer plantanoides	Norway maple
Acer saccharum	sugar maple
Aesculus glabra	Ohio buckeye
Aesculus hippocastanum	horse chestnut
Aesculus octandra	yellow buckeye
Amelanchier alnifolia	serviceberry
Carya ovata	shagbark hickory
Carya pecan (illinoensis)	pecan
Castanea dentata	American chestnut
Castanea mollissima	Chinese chestnut
Celtis laevigata	sugarberry
Cercis canadensis	Eastern redbud
Chamaecyparis nootkatensis	Alaska cedar
Chamaecyparis pisifera	Sawara cypress
Chamaecyparis sp.	false cypress
Cladastris lutea (kentukea)	American yellowwood

TABLE 1. TREE SPECIES INCLUDED IN THE STUDY (CON´T)

Latin Name	Common Name
Fagus sylvatica atropunicea	European beech-copper or purple
Gingko biloba	gingko
Gymnocladus dioicus	Kentucky coffee tree
Juglans regia	English walnut
Koelreutera paniculata	golden raintree
Laburnum	golden chain tree
Larix decidua	European larch
Liquidambar styraciflua	American sweetgum
Liriodendron tulipifera	tulip tree
Magnolia soulangeana	saucer magnolia
Morus alba	white mulberry
Pinus strobus	Eastern white pine
Prunus armeniaca	apricot
Prunus serotina	black cherry
Quercus alba	white oak
Quercus bicolor	swamp white oak
Quercus rubra	Northern red oak
Quercus coccinea	scarlet oak
Quercus imbricaria	shingle oak
Quercus muhlenbergii	chinkapin oak
Quercus macrocarpa	bur oak
Quercus palustris	pin oak
Quercus robur	English oak
Quercus velutina	black oak
Sophora japonica	Japanese pagoda tree
Sorbus aucuparia pendula	European mountain ash
Sorbus (sp. X oak leaf var.)	oakleaf mountain ash
Tsuga canadensis	Eastern hemlock

Project Team

Development of the project concept and methods, as well as overall oversight were carried out by a joint team consisting of staff from Denver Botanic Gardens, the Denver Office of the City Forester, Colorado State Forest Service (CSFS), Colorado Tree Coalition (CTC), Colorado State University (CSU) Denver Extension Office and Al Rollinger. Denver Botanic Gardens coordinated the project and each organization provided staff support to do the data collection. In particular, the Denver Office of the City Forester provided many hours of their arborists' time to help in tree identification and measuring, and the CSU Extension Master Gardeners were a major part of the data collection team. Local arborists and tree enthusiasts were also recruited to help. Finally, the City Forestry offices of the outlying cities did the data collection in their areas. See Appendix A for a list of participants.

Methods

The first step was to convert the paper report into electronic form. The data were entered in an Excel spreadsheet and then mapped using Google Maps as well as in GIS format.

The bulk of the data collection was done in a series of events scheduled from 2016 through 2018. In these events, a group of City arborists, Master Gardeners and other project participants met in an area of the city and divided into teams of three to five people. Each team got a map and a list of trees to find and measure. For trees in public areas, it was simply a matter of going to the location listed and determining if the tree is still alive and then collecting the data. Data collected included diameter at 18 inches above the ground, diameter at breast height (DBH; 4.5 feet above the ground), height, GPS coordinates and taking a picture. Denver City staff members also added the tree to their city-wide inventory of trees if it was not already in the inventory, or if already in the inventory, noted that it is a tree associated with this project.

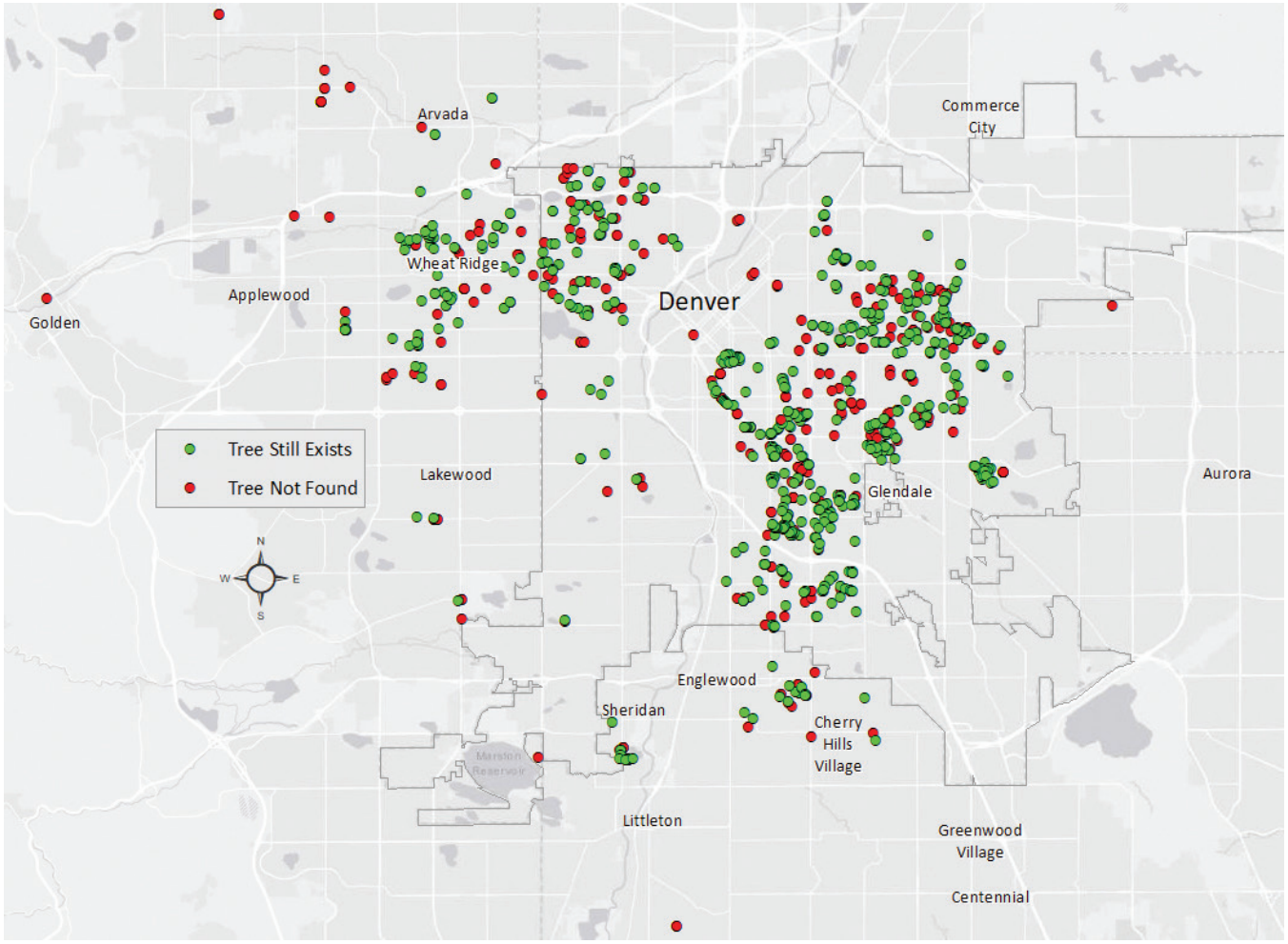
For the trees on private property additional steps were required to contact homeowners and get consent to enter their property to measure their tree. Owners were contacted either directly by knocking on the door, or by leaving or mailing a letter describing the project and a consent form requesting permission to measure the tree at a later date. For those properties where a consent was not received, the diameters were estimated if possible, and the height, photo and GPS coordinates could generally still be collected without entering the property. The remainder of the data not collected during the group events was collected by City forestry staff from Denver or the outlying cities, or by Denver Botanic Gardens staff and Master Gardeners.

SUMMARY OF RESULTS

Ann Frazier, Denver Botanic Gardens; Ben Rickenbacker, City of Denver

Survival Rate – Overall

Overall, 691 of the 1,148 trees in the original survey, or 60 percent, were found to be still alive. The map below shows the locations of the trees, with green signifying still alive and red signifying the tree was not found.



Map of tree locations. Green signifies still exists, red means not found.

Survival Rate By Species

Table 2 shows the survival rates by species in this study. Some of the 45 species only had a few individuals, so the table only shows those with at least 10 in the original survey. The species with the highest survival rates are Kentucky coffee tree (82%) and bur oak (81%). Those with the lowest are European larch (30%) and Norway maple (28%). In general, we do not have information about whether the trees died of natural causes or were removed for other reasons. In some cases, property owners were able to tell us why a tree was removed (e.g. was hit by lightning). In other cases, we could surmise that recent development or construction in the area probably led to removal of the tree. Since we do not have definitive information on why the trees no longer exist, we cannot say these are natural survival rates for the species in general. However, the comparative rates between species can be instructive, assuming all species suffered about the same percentage of loss due to non-natural causes. Any urban area will see a certain amount of tree loss due to development and other human-driven changes. Therefore, this information can be useful for future updates to the "Front Range Tree Recommendation List."(https://extension.colostate.edu/docs/pubs/garden/treereclist.pdf)

The original survey focused on the more rare and unusual species of that period, such as the various oak species, sugar maples, Japanese pagoda tree, horse chestnuts, buckeyes, Kentucky coffee tree and others. Many of these trees have proven to be tough, standing the test of time, and planted in parks and parkways by the City of Denver with success. The City is confident in recommending many of these trees to developers and homeowners in the metro area. With the results of this study, we can show people what these trees will look like as they mature in 50+ years.

Quercus macrocarpa (bur oak), Denver Civic Center

Gymnocladus dioicus (Kentucky coffee tree), Cheesman Park

TABLE 2. SURVIVAL RATE BY SPECIES – N >10

Species	Yes	No	Total	% Exists
Gymnocladus dioicus (Kentucky coffee tree)	9	2	11	82%
Quercus macrocarpa (bur oak)	143	34	177	81%
Koelreutera paniculata (golden raintree)	12	4	16	75%
Quercus rubra (Northern red oak)	225	96	321	70%
Quercus robur (English oak)	38	20	58	66%
Quercus alba (white oak)	6	4	10	60%
Quercus bicolor (swamp white oak)	8	6	14	57%
Sophora japonica (Japanese pagoda tree)	9	7	16	56%
Quercus palustris (pin oak)	17	15	32	53%
Quercus coccinea (scarlet oak)	44	40	84	52%
Aesculus glabra (Ohio buckeye)	21	20	41	51%
Aesculus hippocastanum (horse chestnut)	17	17	34	50%
Pinus strobus (Eastern white pine)	52	56	108	48%
Quercus muehlenbergii (chinkapin oak)	7	9	16	44%
Acer saccharum (sugar maple)	38	49	87	44%
Cercis canadensis (Eastern redbud)	6	11	17	35%
Larix decidua (European larch)	6	14	20	30%
Acer plantanoides (Norway maple)	5	13	18	28%

Growth Rates By Species

The 1968 survey focused only on trees that were fairly large in 1968, with diameters generally greater than 12 inches. Therefore, the trees that were found alive are quite large, usually the biggest trees in the area. Many of these trees are on the Colorado Tree Coalition champion tree registry as state champions or runners-up.

Table 3 shows the average increase in diameter at 18 inches above the ground by species for the surviving trees. Only those species with at least three surviving trees are shown.

TABLE 3. AVERAGE INCREASE IN DIAMETER AT 18" ABOVE THE GROUND BETWEEN 1968 AND 2018

Species	Number of trees surviving	Average increase in diameter (in.)
Quercus muehlenbergii (chinkapin oak)	7	27.4
Fagus sylvatica atropunicea (European beech)	4	23
Quercus robur (English oak)	34	21.1
Quercus palustris (pin oak)	17	20.4
Quercus coccinea (scarlet oak)	39	20.4
Quercus rubra (Northern red oak)	212	20.3
Quercus alba (white oak)	6	17.8
Quercus bicolor (swamp white oak)	8	17.6
Quercus imbricaria (shingle oak)	3	16.7
Quercus macrocarpa (bur oak)	129	15.6
Cercis canadensis (Eastern redbud)	5	14
Larix decidua (European larch)	6	13.8
Gymnocladus dioicus (Kentucky coffee tree)	9	13.1
Pinus strobus (Eastern white pine)	51	13
Aesculus hippocastanum (horse chestnut)	17	12.5
Aesculus glabra (Ohio buckeye)	20	12.3
Acer saccharum (sugar maple)	37	11.4
Sophora japonica (Japanese pagoda tree)	7	10.5
Koelreutera paniculata (golden raintree)	12	10.2
Acer plantanoides (Norway maple)	5	6.8

Growth in height is not as instructive for a couple reasons: The original survey only showed heights within a 10-foot range, and many species seem to "top out" in a certain height range once mature, although they continue to grow in diameter. For example, a set of bur oaks planted around 1870 and measured in 1933 show that the heights now are still about the same as in 1933, but the diameters have increased about 20-30 inches. (See final section for further discussion of these trees.)

Quercus muhlenbergii (chinkapin oak), Johnson and Wales University

Quercus robur (English oak), City Park

A compilation of the data results from the project can be found in Appendix B.

IMPLICATIONS FOR URBAN FORESTRY IN DENVER

History, Story and How a City Protects the Value of Significant Trees

Rob Davis, Denver City Forester

The value of trees is greatly amplified by time and a known story of their existence. When people develop a personal connection to trees, like ties to a family's history, there can be very powerful emotional bonds between those trees and the family. Al Rollinger's work from half a century ago has now established a story that places a new appreciation upon 691 Denver trees.

While working through the process of tracking down trees inventoried long ago, I expected to find myself in awe when uncovering massive, new (to me) trees hiding in backyards and alleyways, but there was an unexpected experience that I never saw coming with this project.

It was the stories, the connections so many property owners have with these unique trees in their yards and along their streets. When stopping by houses and explaining to property owners why we had embarked on this "tree hunt," it opened the door to "tree stories." And I could feel the change, tree by tree, as there was an amplification of value which grew from each story.

The people-to-tree bond that is formed from a combination of time, personal connection and an intelligent appreciation of the various beneficial contributions large, mature trees bring to a neighborhood plays into the importance a tree has within a community. Working through this unusual project led to a recurring question from concerned citizens about protecting trees that hold significant value, and what Denver can do to help. It is this attachment and connection to trees that has led many cities to develop regulations that allow for designated protection over qualified trees.

While Denver has strict ordinances that protect the good health and preservation of qualified trees, there are no higher-level protections in place for truly notable or historic trees. I now find myself considering if more needs to be developed within our municipal tree laws, and this contemplation is driven from the face-to-face connections with the people of Denver. All of this was made possible thanks to the "tree-hugger passion" of Al Rollinger, half a century ago.

IMPLICATIONS FOR URBAN FORESTRY FROM A REGIONAL PERSPECTIVE

Keith Wood, Manager, Urban & Community Forestry, Colorado State Forest Service

As a representative for both the Colorado Tree Coalition and the Colorado State Forest Service Urban & Community Forestry Program, the project results have significance not only for local and regional tree selection purposes, but statewide relevance as well.

The Colorado Tree Coalition (CTC) is a volunteer, nonprofit 501(c)(3) organization committed to leading statewide efforts in preserving, renewing and enhancing community forests in Colorado. CTC works closely with partners, bringing awareness to proper tree selection and care, and on urban forest management in Colorado communities. Among the programs and services CTC provides to communities across Colorado are access to information on proper tree selection, tree planting programs and the champion tree program. Information from the re-measurement of the Rollinger trees has not only added to this wealth of tree selection information

but enabled CTC to update information on several champion trees and further monitor their performance in the Denver area urban landscape.

The mission of the Colorado State Forest Service (CSFS) is to achieve stewardship of Colorado's diverse forest environments for the benefit of present and future generations. The Urban & Community Forestry (U&CF) program of CSFS applies this mission to the diverse forest type that occurs in cities and towns across the state. Communities too, have forests; trees appear along streets and greenways, in backyards and parks. These forests enhance the quality of human life by purifying air, modifying temperatures, reducing noise pollution, improving aesthetic appeal and raising real estate values. The information on the performance of the Rollinger trees over a 50+ year time frame helps the CSFS U&CF program promote a diverse array of tree species not only for the metro area but statewide where similar conditions exists in cities and towns for these tree species to be used. With the onset of emerald ash borer in Colorado, this information will help diversify urban forests in Colorado communities by replacing ash trees with tried and true performers across a variety of tree types.

THE HISTORY OF DENVER AS SEEN THROUGH ITS TREES

Ann Frazier, Denver Botanic Gardens

When pioneers first arrived in this area in 1858, it was a very different place from the perspective of trees. One has only to drive outside the city to the more rural areas to see what the landscape was like – rolling grasslands where the only trees were cottonwoods and willows along the waterways. One of the first things the early settlers wanted to do was plant trees. In a paper called "Shade Trees" presented in 1881 by William Newton Byers at a horticultural society exhibition, he stated that the first trees in Denver were planted in 1865, because that was the first year a water source was developed that could be used to water the trees[1]. They started with cottonwoods, and then boxelders, which became so popular that supply couldn't keep up with demand, so they moved on to silver maples, ash, black locust and elms[2]. By the early 1900s quite a few species were recorded as growing in Denver, and under the influence of Mayor Robert Speer, this era became the Golden Age of tree planting[3]. Therefore, our current urban forest is almost entirely human-planted, and Denver has grown up and around and amidst these trees. Some of these early trees are still amongst us. As we went all over the city measuring trees that were mature even 50 years ago, we became more and more interested in the stories of the trees and what they revealed about the history of Denver.

Perhaps one of the best-known stories of some of Denver's original trees is of the Brown bur oaks. The Brown family arrived in 1860 and established a farm next to the Platte River south of Oxford Ave. where they grew food for miners and planted many bur oaks. A 1933 master's thesis written by Katherine Bruderlin Crisp titled "Trees of Denver" notes 26 of these trees and includes pictures and measurements of several of them[4]. Crisp writes in her thesis:

> *These were started by Mrs. Sarah Brown in 1871. Her son, Clarence E. Brown, who still owns the farm, says that his mother brought the bur oak seeds and seedling trees from Kansas, and planted them in that year, upon returning from a visit to relatives there. She first planted the seeds and seedlings in nursery rows. When they were well established some of them were transplanted to the roadside. Now, sixty-two years later, they are two feet or more in diameter and fifty to fifty-five feet in height. Over 200 trees are still growing in the nursery location. Standing closer together, they are considerably taller than those along the roadside.*

The 1933 photographs show the trees as lonely sentinels in open fields, along a fence or a dirt road. In the late 1950s some of the trees were destroyed as a housing development was begun in the area, but public outcry caused the developers to save the rest. In 1968 when the trees were just under 100 years old, Al Rollinger noted 21 bur oaks in the area of Federal Blvd. and Stanford Ave., with 4-foot diameters and heights of 50-60 feet. In 2018 when the trees were nearing 150 years old, we could only find 14, several along Union Blvd. just west of the Platte River, one in nearby Centennial Park with a couple of stumps next to it signaling a few more recently gone, and the rest nestled in the yards of the neighborhood west of Federal Blvd., towering over the houses. Two of these trees are currently Colorado state champion bur oaks, one in third place, the other tied for fourth. A few of these trees now have diameters of about 5 feet, but the heights are still in the same range of 50-60 feet. These 14 trees have seen 150 years of change, starting out in the open prairie and early farm fields, then roads and homes and parks sprouted up around them, while they quietly grew.

But this wasn't the end of their story. According to this article from 1957, the legacy of these oaks went far beyond the Brown farm:

> *These same Burr Oaks have contributed much more to the Denver area than their own welcome presence on what was once a part of the treeless plains of Colorado. These "early settlers" have been producing crops of acorns for many years, and these tree seeds have been gathered and planted to further enhance the beauty of Denver and its surroundings. It is impossible to discover the fate of all of these acorns, but many have produced seedling trees now established throughout the city. Thanks to Sam Brown and his wife Sarah, the first oaks were planted and proven in eastern Colorado. The "children" of the original oaks as well as the surviving trees are ours to enjoy today. A number of these acorns were planted in the park department nursery, and trees from this source have been planted in City Park, Washington Park, and along Forest Drive on the south side of the Platte River from Broadway to Bannock Street. This last planting is probably the most notable, for many thousands of Denverites traveling to or from the downtown business district drive past these trees each day*[5].

The Forest Dr. referred to is now Speer Blvd. southbound on the southwest side of Cherry Creek. Many of these trees still exist, and we didn't realize their legacy as we were measuring them.

Another example of the history of tree planting in Denver are the stories we learned about the neighborhoods built in the early 1900s, Speer's Golden Age of tree planting in the city. In several cases when we described the project to homeowners to get permission to measure their trees, they produced old photos of their home from 100 years ago, showing skinny saplings in otherwise barren landscaping, that may very well be the same trees we were there to measure. One house from this era is home to two more of the champion bur oaks, one tied for first place and the other in sixth place. These are about 80 feet tall, which is consistent with Crisp's observation that the bur oaks that grow in proximity to other trees are forced to grow taller because of the competition. In contrast to the Brown oaks, these trees have seen much less change in their environment over the past 100 years, these neighborhoods looking very much as they did back then, except that now they resemble old growth forests instead of the prairie because of the value placed on trees during that time.

CONCLUSION

When Denver was established in 1858, it was a mostly treeless prairie, therefore the early pioneers planted trees for shade, beauty and to buffer the harsh, exposed environment. The establishment of trees made Denver seem more like the cities in the eastern United States where the early settlers came from, and less like the open, semi-arid grassland these trees have displaced. With just over 160 years of history some of the trees planted in the city's early days are still among us. Anxious for shade, the first settlers planted fast-growing trees, which are often those most prone to winter damage due to brittle growth. These "speedsters" —poplars and silver maples—are now succumbing to old age. Others fell to make way for the city's growth. Different species went in and out of fashion, as it became apparent that some species do better in our environment or are better suited for life in an urban setting. This survey underscores that the various oaks are among the longest-lived species that were planted. Yet we have learned the danger in relying too heavily on a single species, as the American elm trees fell to Dutch elm disease, a fate that may soon be repeated with Denver's numerous ash trees as the emerald ash borer creeps closer to the city. What we have now is an urban forest entirely of our own making, that has grown, changed and evolved with the city. The question now is, where do we go from here? How should our forested island in the prairie be managed? Should there be stronger measures of protection to preserve this natural resource created over the last century, or is this human-made tree canopy over-valued? We hope that studies such as this one, comparing snapshots in time, provide useful information to help guide us into the future.

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APPENDIX A: LIST OF PARTICIPANTS

First Name	Last Name	Affliation
Mike	Archer	Colorado Master Gardener
Charlotte	Aycrigg	Colorado Master Gardener
Donna	Baker-Breningstall	Colorado Master Gardener
Neal	Bamesberger	Colorado Tree Coalition
Anne	Beletic	Colorado Master Gardener
Ted	Berg	City of Denver
Angus	Campbell	Colorado Master Gardener
Anne	Canon	Colorado Master Gardener
John	Carleton	Preservation Tree Care
Dan	Carlson	City of Englewood
Patricia	Carmody	Colorado Master Gardener
Gordon	Carruth	Colorado Master Gardener
William	Cassell	MyLandscapeConsultant/City of Edgewater
Doug	Cohn	Englewood Historical Society
Laurie	Daniels	Colorado Master Gardener
Rob	Davis	City of Denver
Sara	Davis	City of Denver
Jessica	Donoian	City of Wheat Ridge
Kim	Douglas	Colorado Master Gardener
Nancy	Downs	Colorado Master Gardener
John	Dzialo	City of Lakewood
Dave	Dziczkowski	Colorado Master Gardener
Kirsten	Eastwood	Colorado Master Gardener
Nick	Evers	City of Denver
Jan	Fahs	Colorado Master Gardener
John	Fiechtner	Colorado Master Gardener
Dave	Flaig	City of Littleton
Ann	Frazier	Denver Botanic Gardens
Erik	Geyer	Denver Botanic Gardens
Dan	Goldhamer	Colorado Master Gardener
Andy	Gordon	City of Denver
Anne	Green	Colorado Master Gardener
Scott	Grimes	Colorado Tree Consultants
Victoria	Grotewiel	Colorado Master Gardener
Olivia	Hall	Colorado Master Gardener
Craig	Hillegrass	City of Arvada
Betsy	Hoover	Colorado Master Gardener
Julie	Householder	Colorado Master Gardener
Bob	Howey	Tree Analysis Group

First Name	Last Name	Affliation
Anne	Hughes	Colorado Master Gardener
Sonia	John	
Dan	Johnson	Denver Botanic Gardens
Nick	Kantor	City of Denver
Panayoti	Kelaidis	Denver Botanic Gardens
Luke	Killoran	City of Lakewood
Susan	King	Colorado Master Gardener
Dave	Lee	City of Englewood
Coleman	Loughery	City of Denver
Ian	MacDonald	City of Arvada
Carol	Maclennan	Colorado Master Gardener
Dan	Maples	City of Edgewater
Pat	McClearn	Colorado Master Gardener
Jeff	Meyer	City of Denver
Richard	Molenaar	Colorado Master Gardener
April	Montgomery	Colorado Master Gardener
Daniel	Obarski	Ancient Lake, LLC
Harriet	Palmer-Willis	Colorado Master Gardener
Nina	Pisano	City of Denver
Barb	Pitner	Colorado Master Gardener
Darren	Potucek	City of Denver
Michael	Reed	Colorado Master Gardener
John	Regalbuti	Colorado Master Gardener
Eric	Reiff	Colorado Master Gardener
Robin	Rice	City of Wheat Ridge
Ben	Rickenbacker	City of Denver
Alan	Rollinger	AR Landscape Design
Kiki	Romero	City of Denver
Nils	Saha	City of Denver
Doug	Schoch	City of Denver
Haley	Smetana	City of Denver
Toni	Smith	Rainbow Treecare
James	Sudderth	City of Denver
Kyja	Thorsgard	Colorado Master Gardener
Jen	Trunce	Denver Botanic Gardens
Tom	Wells	City of Broomfield
Keith	Wood	Colorado State Forest Service/ Colorado Tree Coalition

Fagus sylvatica atropunicea (European beech)

DENVER BOTANIC GARDENS

1007 York Street, Denver, CO 80206
botanicgardens.org

SCFD Scientific & Cultural Facilities District
CITIZENS MAKING IT POSSIBLE

American Public Gardens Association

American Alliance of Museums

Cover Illustration: Randy Raak, *Acer saccharum* (sugar maple), found at Crown Hill Cemetery, block 23, (lat. 39.757053 long.-105.087153)
Photos: Courtesy of the Rollinger Tree Collection Project