FEATURE II

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A Summary of 20 Years of Chicago Area Golf Courses Inventories

Since 1988, I have provided part-time consulting services to golf courses, principally in the Chicago area, regarding tree-related issues. The services provided include recommendations relating to disease and insect problem diagnosis and control, tree selection and transplanting, tree placement and obstruction resolution, pruning and specialty care, and comprehensive tree inventories and assessments.

The tree inventories and health assessments are extensive, all inclusive projects. Each tree in the in-play and service areas of the golf course is examined and its health assessed. On a typical 18-hole golf course three, 10-hour days are required to examine every tree. The specimens are tagged with a quarter-sized, numbered inventory tag, identified as to species, and assessed for physical condition, and physiological age status. The size of the tree is not considered particularly important. The physiological age is considered a more important measuring "tool" for a tree's health and potential longevity than its physical size. Physiological age is classified as one of following: not yet established (recently transplanted) or established; healthy or not healthy; immature, mature, mature and declining, or severely declining; and removal recommended due to health, poor position on the course, invasiveness, poor structural integrity, or other reasons. Arboricultural treatments useful in preserving the tree, such as pruning, cabling and bracing, lightning protection, and treatment for a specific problem are also recorded. The incidence of lawn mower and golf ball injury are specifically noted. The information is compiled and presented in a detailed report that outlines important issues and necessary steps needed to maintain the trees on the course. Specific attention is given to the most serious problems that were discovered during the field work.

These inventories and assessments have largely been conducted in the Chicagoland area, but a limited number have been conducted in other parts of the country. Most of the golf courses are private, but a few public courses were inventoried as well. The Chicago area golf courses were evenly distributed throughout the metropolitan area. A total of 36 tree inventory and health assessments have been conducted to date. Four of these involved a re-inventory of previously inventoried Chicago area golf courses and three golf courses were outside of the Chicago region.

Listing of Inventoried Chicago Area Golf Establishments

Bob O'Link Golf Club
Bryn Mawr Country Club
Butler National Country Club
Calumet Country Club
Chapel Hill Golf Club
Crystal Tree Country Club
Elgin Country Club
Flossmoor Country Club
Glencoe Golf Club
Idlewild Country Club
Knollwood Club
McHenry Country Club
Naperville Country Club
Northmoor Country Club
Oak Park Country Club
Park Ridge Country Club
Prestwick Country Club
Riverside Golf Club
Ruth Lake Country Club
St. Charles Country Club
Shore Acres Country Club
Skokie Country Club
Sunset Ridge Country Club
Tam Golf Course
Turnberry Country Club
Twin Orchard Country Club
Wynstone Golf Club

Statistics regarding the Chicago Area Golf Course Tree Population

In the following discussion, golf courses that were inventoried more than once were counted only once in the analysis. The statistics from the first inventory and assessment are used in the analysis – a total of 27 golf courses. One was a 9-hole course, one was a 27-hole course, and the remaining were standard 18-hole courses.

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Based on historical records and early aerial photographs, many golf courses were developed from what had been agricultural land. Before golf course development, some of the properties had been open agricultural field areas, but many were farmsteads that contained a composite of agricultural fields, treed pastures, and farm buildings. Several of the golf courses were initially developed on property that held large-scale remnants of groves of large native trees. Many of the golf courses, particularly the private courses, were established in the early 1900s. Ongoing land redevelopment, and tree planting and removal have continued since their founding.

Specifics

A total of 49,573 trees were counted and analyzed for the 27 golf courses - an average of 1731 per course. On the 18-hole golf courses, the tree count ranged from a low of 928 to a high of 2612.

A total of 123 different kinds of trees were recorded on all golf courses! These trees are listed in Appendix #1 at the end of this article. The average number of tree species represented on a golf course was 62. The lowest species diversity range was 46 and the highest species diversity was 82.

Six genera (collective kinds of plants, for example, Maple and Oak) make up 60.8% of the trees. The most common genus is Maple, making up 18% of the total. The following table outlines the totals.

Major Genera	% of Total Trees
Maple (*Acer*)	18.0 %
Oak (*Quercus*)	16.5 %
Ash (*Fraxinus*)	11.9 %
Honeylocust (*Gleditsia*)	5.4 %
Pine (*Pinus*)	4.6 %
Elm (*Ulmus*)	4.4 %
Total	60.8 %

The 20 most common tree species are represented in the table below. The leading species is Green Ash with 13.4% of all trees.

Tree Species	% of Total Trees
Green Ash (*Fraxinus pennslvanica*)	13.4 %
Silver Maple (*Acer saccharinum*)	9.7 %
Bur Oak (*Quercus macrocarpa*)	7.3 %
Honeylocust (*Gleditsia triacanthos*)	6.9 %
Norway Maple (*Acer platanoides*)	6.8 %
Crabapple (*Malus cultivar*)	5.0 %
White Oak (*Quercus alba*)	4.2 %
Colorado Spruce (*Picea pungens*)	3.8 %
American Elm (*Ulmus americana*)	3.6 %
Sugar Maple (*Acer saccharum*)	3.4 %
Red Oak (*Quercus rubra*)	3.0 %
White Pine (*Pinus strobus*)	2.9 %
Downy Hawthorn (*Crataegus mollis*)	2.7 %
White Ash (*Fraxinus americana*)	2.2 %
Shagbark Hickory (*Carya ovata*)	2.1 %
Basswood (*Tilia americana*)	1.9 %
Austrian Pine (*Pinus nigra*)	1.6 %
Weeping Willow (*Salix alba 'Tristis'*)	1.6 %
Red Maple (*Acer rubrum*)	1.5 %
Black Oak (*Quercus velutina*)	1.4 %

The following table identifies the number of times one of the top 20 species was the most common tree on a course and the number of times it was included in the top ten most common species.

Number of Times a Species is in the Top 10

Tree Species	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Total
Green Ash (*Fraxinus pennsylvanica*)	10	3	4	2	3	1	1	0	0	0	24
Honeylocust (*Gleditsia triacanthos*)	1	3	4	3	4	3	1	2	1	1	23
Norway Maple (*Acer platanoides*)	1	5	4	4	1	0	1	0	4	1	21
Crabapple (*Malus cultivar*)	1	2	2	3	2	3	2	3	0	2	20
Silver Maple (*Acer saccharinum*)	6	3	1	1	3	0	1	0	0	2	17
Colorado Spruce (*Picea pungens*)	0	2	1	1	3	3	1	0	2	2	15
Bur Oak (*Quercus macrocarpa*)	5	1	0	2	2	0	0	2	0	1	13
Sugar Maple (*Acer saccharum*)	0	0	2	0	0	2	1	2	3	2	12
White Ash (*Fraxinus americana*)	0	0	0	1	1	1	3	1	2	3	12
Basswood (*Tilia americana*)	0	0	0	0	0	2	0	4	2	1	9
American Elm (*Ulmus americana*)	0	1	2	1	0	0	1	1	1	1	8
Shagbark Hickory (*Carya ovata*)	0	1	1	0	1	1	0	0	2	2	8
Austrian Pine (*Pinus nigra*)	0	0	1	1	0	1	1	2	1	0	7
Downy Hawthorn (*Crataegus mollis*)	1	0	0	1	3	1	0	0	0	1	7
Red Maple (*Acer rubrum*)	0	0	0	1	1	1	2	2	0	0	7
White Oak (*Quercus alba*)	0	2	1	0	1	1	1	0	0	0	6
White Pine (*Pinus strobus*)	1	1	0	2	0	0	0	0	1	1	6
Black Cherry (*Prunus serotina*)	0	0	0	0	2	0	1	2	0	0	5
Black Oak (*Quercus velutina*)	1	1	0	1	0	1	0	1	0	0	5
Littleleaf Linden (*Tilia cordata*)	0	0	1	0	0	0	0	0	1	3	5

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Importance of Species Diversity

Diversity is nature's defense mechanism. As a general rule, no single **species** should make up more than 10% of the trees in a given management area (e.g., golf course, city streetscape, or park planting). For the same management area, no single **genus** should make up more than 20%, and no single **botanic family** (e.g., Ash is the Olive Family (*Oleaceae*) should make up more that 30% to the total tree population.

Lack of species diversity was the primary reason so many golf courses were drastically impacted when Dutch elm disease (DED) killed thousands of American elms in the 1960s and '70s. Many large and majestic American elms continue to adorn Chicago area golf courses. These trees are inherent liabilities because of the continued management they require to help ensure their utility. The percentage of DED susceptible elms on Chicago area golf courses ranged from a low of 0% to a high of 12.6%.

Another example of the danger of low diversity is the significant risk presented by Emerald Ash Borer (EAB). No native North American ash species is resistant to this serious pest introduced from Asia. As discussed earlier, Green Ash is the most common tree on the inventoried golf courses, and ashes (*Fraxinus*) are the third most common group of trees with 11.9% of the total. The percentages of EAB susceptible ashes on Chicago area golf courses ranged from a low of 4.3% to a high of 32.7%.

In Conclusion

As world-wide commerce continues to increase, the chance of introducing new, potentially harmful pests and diseases also increases. A diverse tree population is one of the best ways to ensure that one insect pest or disease pathogen is unlikely to affect a large number of trees. Thus one pest or pathogen cannot greatly alter the play or landscape of a golf course. Knowing the species composition of your tree population is key in understanding its inherent vulnerability. **-OC**

TGIF SEARCHABLE TOPIC

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http://tic.lib.msu.edu/

Want to know more about this subject?

Keyword: *Golf Course Trees*
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Common Name	Scientific Name
Balsam Fir	*Abies balsamea*
White Fir	*Abies concolor*
Hedge Maple	*Acer campestre*
Freeman Maple	*Acer x freemanii*
Amur Maple	*Acer ginnala*
Box Elder	*Acer negundo*
Norway Maple	*Acer platanoides*
Red Maple	*Acer rubrum*
Silver Maple	*Acer saccharinum*
Sugar Maple	*Acer saccharum*
Yellow Buckeye	*Aesculus flava*
Ohio Buckeye	*Aesculus glabra*
Horse Chestnut	*Aesculus hippocastanum*
Black Alder	*Alnus glutinosa*
Gray Alder	*Alnus incana*
Serviceberry	*Amelanchier*
River Birch	*Betula nigra*
Paper Birch	*Betula papyrifera*
European Birch	*Betula pendula*
Whitespire Birch	*Betula populifolia*
Hop Hornbeam	*Carpinus caroliniana*
Bitternut Hickory	*Carya cordiformis*
Shagbark Hickory	*Carya ovata*
Southern Catalpa	*Catalpa bignonioides*
Northern Catalpa	*Catalpa speciosa*
Hackberry	*Celtis occidentalis*
Katsura tree	*Cercidiphyllum japonicium*
White Fringe tree	*Chionanthus virginicus*
Flowering Dogwood	*Cornus florida*
Kousa Dogwood	*Cornus kousa*
Corneliancherry Dogwood	*Cornus mas*
Turkish Filbert	*Corylus colurna*
Cockspur Hawthorn	*Crataegus crus-galli*
Hawthorn	*Crataegus mollis*
English Hawthorn	*Crataegus oxyacantha*
Washington Hawthorn	*Crataegus phaenopyrum*
Dotted Hawthorn	*Crataegus punctata*
Fleshy Hawthorn	*Crataegus succulenta*
Winter King Hawthorn	*Crataegus viridis*
Russian-olive	*Elaeagnus angustifolia*
Spindle-tree	*Euonymus europeus*
American Beech	*Fagus grandifolia*
European Beech	*Fagus sylvatica*
White Ash	*Fraxinus americana*
European Ash	*Fraxinus excelsior*
Black Ash	*Fraxinus nigra*
Green Ash	*Fraxinus pennsylvanica*
Blue Ash	*Fraxinus quadrangulata*
Ginkgo	*Ginkgo biloba*
Honeylocust	*Gleditsia triacanthos*
Kentucky Coffeetree	*Gymnocladus dioicus*
Butternut	*Juglans cinerea*
Black Walnut	*Juglans nigra*
Chinese Juniper	*Juniperus chinensis*
Eastern Redcedar	*Juniperus virginiana*
European Larch	*Larix decidua*
Sweetgum	*Liquidambar styraciflua*
Tuliptree	*Liriodendron tulipifera*
Loebner Magnolia	*Magnolia x loebneri*
Saucer Magnolia	*Magnolia x soulangiana*
Star Magnolia	*Magnolia stellata*
Redbud	*Cercis canadensis*
Crabapple	*Malus cultivar*

Common Name	Scientific Name
Apple	*Malus domestica*
Mulberry	*Morus alba*
Black Gum	*Nyssa sylvatica*
Ironwood	*Ostrya virginiana*
Amur Corktree	*Phellodendron amurense*
Norway Spruce	*Picea abies*
White Spruce	*Picea glauca*
Colorado Spruce	*Picea pungens*
Austrian Pine	*Pinus nigra*
Ponderosa Pine	*Pinus ponderosa*
Red Pine	*Pinus resinosa*
Eastern White Pine	*Pinus strobus*
Scots Pine	*Pinus sylvestris*
London Planetree	*Platanus x acerifolia*
Sycamore	*Platanus occidentalis*
White poplar	*Populus alba*
Cottonwood	*Populus deltoides*
Hybrid Poplar	*Populus x euramerica*
Quaking Aspen	*Populus tremuloides*
American Plum	*Prunus americana*
Apricot	*Prunus armeniaca*
Purple Leaf Plum	*Prunus cerasifera*
Sour Cherry	*Prunus cerasus*
Plum	*Prunus domestica*
Amur Cherry	*Prunus maackii*
Black Cherry	*Prunus serotina*
Choke cherry	*Prunus virginiana*
Douglas Fir	*Pseudotsuga menziesii*
Callery Pear	*Pyrus calleryana*
Common Pear	*Pyrus communis*
Saw-toothed Oak	*Quercus acutissima*
White Oak	*Quercus alba*
Swamp White Oak	*Quercus bicolor*
Northern Pin Oak	*Quercus ellipsoidalis*
Shingle Oak	*Quercus imbricaria*
Black Oak	*Quercus relutina*
Bur Oak	*Quercus macrocarpa*
Chinquapin oak	*Quercus muhlenbergii*
Pin Oak	*Quercus palustris*
English Oak	*Quercus robur*
Red Oak	*Quercus rubra*
Regal Prince Hybrid Oak	*Quercus x warei*
Buckthorn	*Rhamnus cathartica*
Black Locust	*Robinia pseudoacacia*
Hybrid Willow	*Salix* (Hybrid)
Weeping Willow	*Salix alba*
Black Willow	*Salix nigra*
Laurel Willow	*Salix pentandra*
Sassafras	*Sassafras albidum*
Japanese Tree Lilac	*Syringa reticulata*
Bald Cypress	*Taxodium distichum*
White Cedar	*Thuja occidentalis*
Basswood	*Tilia americana*
Little Leaf Linden	*Tilia cordata*
Silver Linden	*Tilia tomentosa*
Hemlock	*Tsuga canadensis*
Hybrid Elm	*Ulma* (hybrid)
American Elm	*Ulmus americana*
Siberian Elm	*Ulmus pumila*
Red Elm	*Ulmas rubra*
Nannyberry Viburnum	*Viburnum lentago*
Black-Haw Viburnum	*Viburnum prunifolium*