

## Why a Replacement Tree Table

Recently Asian Longhorned Beetle (ALB) and Emerald Ash Borer (EAB) have had a significant impact on communities in the Northeastern and Midwestern United States. We received requests from communities for a list of trees that do well in urban environments and are not ALB or EAB host trees. To develop this list, we combined all the recommended replacement trees for areas where ALB has been found and added information on EAB tree replacement from the Michigan State University website. Information about each tree species was compiled from the references listed below the Replacement Tree Table. Drafts of the table were sent to urban forestry professionals and we used their suggestions to make edits.

To promote species diversity, we included many trees that do well in urban areas, but we also realize that the table does not include every non-host tree species. Users of The Replacement Tree Table are encouraged to use this as a starting reference for potential replacement trees and then to do their own research to identify species that fit their specific site characteristics.

## Planting Trees in ALB Areas: Tips for Planning, Tree Selection, Planting, and Care

Tree planting is a critical component to help a community recover from a pest infestation or natural disaster. If properly planted and cared for, trees are a valuable and growing asset worth 3½ times the investment! They “pay us back” by providing many benefits such as improved air quality, reduced storm water runoff, energy savings and higher property values for homeowners.

Whether working in your yard, or doing a large community project, plant the right tree in the right place to ensure that the trees grow well, provide desired benefits and don't conflict with infrastructure. There are many good references, but to help you get started, a partial list of recommended species is included below.

The “Tree Owner's Manual”, developed by the U.S. Forest Service, provides detailed information on the basic steps for tree selection, planting and maintenance. A copy of this can be down loaded at: <http://www.treeownersmanual.info>.

Basic steps to consider in tree planning, selection, planting, and care are:

- ✓ Plan – Work with knowledgeable professionals to develop a comprehensive reforestation plan. This can address prioritization of planting areas, planting and maintenance specifications, recommended species, working with partners and volunteers, inspecting work and documenting progress. Detailed planting site plans should be developed for specific areas.
- ✓ Assess Planting Site - Assess all aspects of the site that may affect the tree such as: rooting space, distance to buildings, sidewalks, utilities, and competing trees. Check for underground utilities through the location service in your area. Within 25 feet of overhead utility lines, plant only species with a small mature height. Consider the hardiness zone, soil type, drainage and pH. Check local ordinances that regulate planting on public property.

- ✓ Select Appropriate Species - There are many non-host species that make good choices for urban areas. Select a variety of species so that the future tree population is diverse and more resilient to stresses. Match the characteristics of the tree, including mature size, to the site. Consider what function you want the tree to serve - shade, aesthetics, privacy, etc. Consult the many useful references, websites and listings to help with tree selection.
- ✓ Purchase Quality Trees and Handle Them Properly - Determine the type of stock that is best for your project and budget; bare root, potted, balled-and-burlapped. Work with a respected nursery and make sure the trees meet accepted standards. Tree stock should be protected during transportation and storage prior to planting. Warranties for tree survival and health are recommended.
- ✓ Plant the Tree Correctly - Prepare the appropriate size hole for the root ball—not too deep! Remove burlap and wire basket. Check for encircling roots. If trees must be staked, do it correctly and plan to remove all staking materials within one to two years. Mulch and water thoroughly at time of planting.
- ✓ Provide Care after Planting - Maintenance is critical for at least 3 years after planting. Water newly planted trees from spring through fall, as needed, based on the soil and natural rainfall. Prune young trees lightly, removing only dead or poorly located limbs. Protect trees from mowers, other equipment and construction damage.

The Replacement Tree Table was developed by Angie Hammond, Forest Health Protection Technician, in July 2012. Species recommendations can vary greatly, and the list of available trees is constantly changing. We plan to update this document periodically. Comments and suggestions are encouraged! Please email comments and suggestions to [amhammond@fs.fed.us](mailto:amhammond@fs.fed.us).

Please click here for an interactive version of the table: [Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern](#).

## Suggested References & Websites

Best Management Practices for Tree Planting  
ANSI Standards for Nursery Stock and Transplanting  
Principles and Practices of Planting Trees & Shrubs  
Available from The International Society of Arboriculture: [www.treesaregood.org](http://www.treesaregood.org)

U.S. Forest Service, Urban Forestry Program: <http://www.na.fs.fed.us/urban>  
Your State Forester: <http://www.stateforesters.org/SFlist.html>  
Society of Municipal Arborists: <http://www.urban-forestry.com>  
Arbor Day Foundation: <http://www.arborday.org>



United States Department of Agriculture  
Forest Service  
Northeastern Area State and Private Forestry  
Newtown Square, PA 19073 [www.na.fs.fed.us](http://www.na.fs.fed.us)

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## Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern

Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
<b>American Arborvitae</b>	<i>Thuja occidentalis</i>	'Techny' many available	3	Full Sun	Tolerant of Some Wetness and Acidic/Alkaline	Small, 20' to 30' tall (usually), 10' to 15' wide	Medium	Conical	Subtle	Conifer, Small Scale Like Leaves in Flat Sprays	Inconspicuous	Bark Attractive on Older Trees	Native, Screen, Windbreak		Leaf Miner, Bag Worm, Spider Mites, Foliar Burn on Very Harsh Sites	A Favorite Food of Deer	
<b>American Beech</b>	<i>Fagus grandifolia</i>		4	Full Sun to Shade	Moist, Well Drained, Acidic Soil	Large, 50' to 70' tall, Up to 120' wide	Slow	Rounded	Subtle	Simple, Glossy Green Top, Light Green Underside, Dead but Persists in Winter	3 Winged Nut Enclosed by Spikes, Prized By Wildlife	Light Gray, Smooth, Trunk is Short, Branches Frequently Touch Ground	Native, Lawn, Specimen, Parks, Wildlife	Intolerant of Wet or Compact ed Soils	Beech Bark Disease	Fruit Can be a Litter Problem	Very Smooth Bark May Invite Vandalism
<b>American Hophornbeam</b>	<i>Ostrya virginiana</i>		4	Full Sun to Part Shade	Moist, Cool, Fertile, Slightly Acidic	Medium to Large, 30' to 50' tall	Slow	Rounded	Subtle	Simple, Oval, Green Leaves	Looks Like Hops, Change From Green to Tan	Vertical Strips Exfoliate, Trunk Muscled Appearance	Native, Lawn, In Natural Areas	Intolerant of Salt and Severe Urban Stress			
<b>American Hornbeam</b>	<i>Carpinus Caroliniana</i>	'Palisade'	3	Full Sun to Part Shade	Deep, Fertile, Moist, Acidic Soil	Small, 20' to 30' tall, 20' to 35' wide	Slow	Oval	Narrow Dangling Clusters of White Flowers in Spring	Simple, 2" to 4" Long, Oblong, Toothed, Fall Yellow, Orange, Red	Nutlets in a Leafy Cluster, Green, Mature to Brown in Fall	Smooth Light Gray Trunk, Vertical Ridges Give a Muscular Appearance	Native, Under Utility Lines, Confined Spaces, Street Tree, Specimen, Lawn, Woodlands	Sensitive to Drought, Compacti on		Difficult to Transplant	

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<b>American Sweetgum</b>	<i>Liquidambar styraciflua</i>	'Moraine' more cold hardy than species	5	Full Sun, Tolerates Some Shade	Chlorosis at Higher pH	Large, 60' to 80' tall, 40' to 60' wide	Medium to Fast	Oblong to Rounded	Subtle	Simple, Maple Like Leaf, Fall Color Showy	Spiny, Turn Brown, Persists In Winter	Deep Furrows, Narrow Ridges, Twigs Sometimes Corky	Native, Lawn Tree, Shade Tree	Intolerant of Polluted Areas	Susceptible to Bleeding Bark Necrosis, Leaf Spot, Scale, Webworm, Caterpillars	Fruit Can be a Litter Problem	
<b>American Yellowwood</b>	<i>Cladrastis kentukea</i>		4	Full Sun	Moist, Fertile, Well Drained	Medium to Large, 30' to 50' tall, 40' to 55' wide	Medium	Broad, Rounded	Fragrant, White, Pea Like, in June, Maybe Not Each Year	Compound Leaf, Fall Color Yellow, Orange	Flat Pod up to 4 Inches Long, Green to Brown in Fall	Smooth Light Gray, Short Trunk, Can Sun Scald	Native, Lawn Tree, Specimen	Sensitive to Drought, Compact on	Narrow Branch Angles, Sensitive to Canker and Verticillium Wilt	Prune in Summer to Avoid "Bleeding",	Very Smooth Bark May Invite Vandalism
<b>Amur Corktree*</b>	<i>Phellodendron amurense</i>	'Macho', 'PNI 4551'	4	Full Sun	Tolerant of Most Soils and pH	Medium, 30' to 45' tall, wider than tall	Medium	Broad, Spreading	Subtle, Male, Female Plants	Compound Leaf, Dark Green, Fall Unremarkable	Clusters of Pea Sized Fruit, Green to Black in Fall	Noticeable Ridges, Furrows, Short Main Trunk	Specimen, Vase Shape	Tolerant of Pollution, Drought	Pest Free	Fruit Can be a Litter Problem	*Plant Conservation Alliance's Alien Plant Working Group reports invasive tendencies.
<b>Amur Maackia</b>	<i>Maackia Amurensis</i>		4	Full Sun	Loose, Well Drained Soil, pH not a Concern	Small, 20' to 30' tall, wider than tall	Slow	Rounded	Small, Upright, White, Pea Like Flowers, June, July, Not Each Year	Compound Leaf, Gray-Green to Olive-Green, No Fall Color Change	Up to 3 Inch Long Flat Pod, Green to Brown	Showy Bark, Copper with Green Undertones, Exfoliates in Curls, or is Shiny	Fixes Nitrogen		Japanese Beetles Will Feed on Foliage	Hard to Locate to Purchase	

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<b>Baldcypress</b>	<i>Taxodium distichum</i>	'Monarch of Illinois' wide spreading, 'Shawnee Brave' and 'Prairie Sentinel' narrow crowns	5	Full Sun	Wet Swampy Areas, Standing Water, Acid Soils, Chlorotic above pH 7.5	Large, 50' to 70' tall	Medium	Pyramid to Conical, Some With Flat Tops	Up to 5 inch Clusters of Flowers in March, April	Deciduous Conifer, Airy Texture, Fall Good Red-Brown	Round Cones Up to 1 Inch Diameter, Green to Brown	Bark Fissured, Red-Brown, Buttressed Trunk Base, Root "Knees" in Wet Sites	Native, Wet Sites, Lawn, Specimen, Shade, Very Wind Tolerant	Tolerant of Compaction	Spider Mites		
<b>Bitternut Hickory</b>	<i>Carya cordiformis</i>		4	Full Sun to Part Shade	Deep, Well Drained	Large, 50' to 75' tall	Medium	Narrow, Oval, Irregular	Subtle	Compound Leaf, 5 to 9 Serrated Leaflets 6" to 10" Long, Fall Showy Yellow-Gold	Round 1 Inch Diameter Nut	Gray to Brown With Shallow Ridges, Stout Gray Stems	Native, Lawn, Specimen, Fall Color, Wildlife, Wood			Difficult to Transplant, Fruit Can be a Litter Problem	
<b>Blackgum/Tupelo</b>	<i>Nyssa sylvatica</i>		4	Full Sun to Part Shade	Moist, Well Drained, Acidic Soil	Medium to Large, 30' to 50' tall, 20' to 30' wide	Slow	Pyramid with Flat Top Crown	Subtle	Simple, Oval, Toothed Edge, Glossy Dark Green, Fall Showy Red	Blue-Black Drupe on Female Trees, Birds Eat	Irregular, Block Like Bark, Horizontal Branching	Native, Lawn, Specimen, Street, Fall, Wildlife	Decreased Growth With Soil Compaction and pH Above 6	Leaf Spot, Leaf Miner, Rust	Difficult to Transplant, Fruit Can be a Litter Problem	
<b>Bur Oak</b>	<i>Quercus macrocarpa</i>	'Clemons'	3	Full Sun	Prefers Alkaline Soil but Tolerant of Most Soils and pH	Large, 70' to 80' tall, 70' to 80' wide	Slow	Broad	Subtle	Simple, Rounded Lobes	1" Acorn With Fringed Cup	Gray-Brown and Flaky, Twigs Yellow-Brown, Corky	Native, Shade or Specimen	Intolerant of Soil Compaction, Intermediate Tolerance of Drought, Heat, Pollution		Transplant Shock Can Last Years	

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<b>Callery Pear</b>	<i>Pyrus calleryana</i>	'Aristocrat', 'Chanticleer', 'Red Spire'	5	Full Sun	Adaptable, Drought Tolerant	Medium, 30' to 40' tall, 1/3 as wide	Fast	Narrow Oval, to Broad Oval	White Flowers in Spring	Simple, Oval, Scalloped Edge, Leathery, Fall Color Red, Purple, Orange	Inconspicuous	Possible Weak Branch Bark Union	Under Utility Lines, Confined Spaces, Specimen, Lawn	Tolerant of Drought, Heat, Salt	Fireblight	Weak Wood That Splits Easily, Fruit Can Be Messy	Possible Weak Branch Unions Could Result in Branch Failure
<b>Carolina Silverbell</b>	<i>Halesia tetraptera</i> (Formerly <i>Halesia carolina</i> and <i>Halesia monticola</i> )	'Arnold Pink', 'UConn Wedding Bells', 'Silver Splash', 'Variegata' also var. <i>monticola</i>	5	Full Sun to Part Shade	Moist, Well Drained, Acidic Soil	Medium, 30' to 40' tall, 25' to 35' wide	Medium	Round to Broad	Single 1/2" White, Hanging Clusters, Early Spring	Simple 2" to 5" Long, Toothed Edge, Dark Green Color, Fall Yellow-Green	4 Winged, 1" Long, Matures from Green to Tan, Persists in Winter	Steel Gray With White Stripes	Native, Under Utility Lines, Confined Spaces, Specimen, Lawn				
<b>Chinese Juniper</b>	<i>Juniperus chinensis</i>	'Hetzii', 'Pfitzeriana'	4	Full Sun	Well Drained	Large, 50' to 60' tall, 20' wide	Slow to Medium	Conical	Subtle	Conifer, Short Scale Like Needles	Pale Blue, Berry Like Cones, Mature to Brown	Brown, Ridges and Furrows, Peels in Thin Strips	Screen, Specimen		Kabatina and Phomopsis blights		
<b>Crabapple</b>	<i>Malus spp</i>	'Adams', 'Donald Wyman', 'Prairifire', many others. Choose for disease resistance, persistent fruit	4	Full Sun	Well Drained	Small, 10' to 30' tall, 10' to 35' wide	Medium	Rounded, Oval, or Vase Shape Depending on Cultivar	Single or Double, White, Pink or Red, Spring	Simple 1" to 2" Long, Green to Reddish Green	1/4" to 2" Apples Various Shades of Red, Orange, or Yellow	Variable Depending on Cultivar	Depending on Cultivar, Under Utility Lines, Confined Spaces, Street Tree, Specimen, Lawn, Check Cultivar to See if Native	Depending on Cultivar Can Be Good	Some Susceptible to Apple Scab, Fireblight, Cedar-Apple Rust	Fruit Can Be Messy	

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<b>Cucumber Magnolia</b>	<i>Magnolia acuminata</i>	'Butterflies', 'Elizabeth', 'Gold Crown', 'Ultimate Yellow'	4	Full Sun to Part Shade	Fertile, Moist Soil	Large, 50' to 80' tall, 50' to 80' wide	Fast	Pyramid, Becoming Open	About 3" Greenish White Flowers in Spring, Fragrant, Hidden by Leaves	Simple, 6" to 12" Long, Oval, Yellowish Green, Fall Yellow-Bronze	Showy, 2" to 3" Cucumber, Red Seeds, Persists in Winter	Thin Bark, Grey-Brown Ridged and Furrowed	Native, Lawn Tree, Specimen, Shade, Park	Intolerant of extreme Drought or Wetness and Pollution	Scale, Thin Bark		
<b>Dawn Redwood</b>	<i>Metasequoia glyptostroboides</i>	'National', 'Sheridan Spire'	4.00	Full Sun	Moist, Slightly Acidic Soil	Large, 65' to 85' tall, 25' to 40' wide	Fast	Conical	Subtle	Deciduous Conifer, 1/2" Long, Medium to Bright Green Needles, Fall Pinkish Tan to Reddish Bronze	1" Cones, Light Blue Maturing to Brown	Trunk Base Braided, Shredded Reddish Brown Bark	Specimen, Lawn, Shade, Screen	Tolerant of Air Pollution	Japanese Beetles Will Feed on Foliage, Spider Mites on Dry Soil		
<b>Eastern Larch</b>	<i>Larix laricina</i>		1.00	Full Sun	Moist, Well Drained, Acidic Soil, but Tolerant of Wet	Large, 50' to 80' tall, 20' to 30' wide	Slow to Medium	Pyramid	Subtle	Deciduous Conifer, 1" Long, Blue - Green 3 Sided Needles Clustered on Spurs, Fall Showy Yellow	3/4' to 1' Cones, Light Brown	Small Scaly Gray to Reddish-Brown Patches, Horizontal Branches	Native, Natural Areas, Grown in Groups	Tolerant of Salt Spray, Intolerant of Heat, Drought, Pollution, Shade	Larch Sawfly Most Destructive Pest, Larch Case-Bearer Cause of Extensive Mortality In Some Areas		Cool Summers Required

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<b>Eastern Redbud</b>	<i>Cercis canadensis</i>	'Forest Pansy'	4.00	Full Sun to Part Shade	Moist, Well Drained	Small, 25' to 30' tall, 25' to 35' wide	Medium	Round to Broad With Flat Top	Showy, Purple-Pink, Pea-Like in Early Spring Before Leaves, Late April or May	Simple, Heart Shaped, 3" to 5" Long and Wide, Bright Green, Matures to Dark Green, Fall Yellow	2" to 3" Flat Pods, Mature From Green to Brown in October	Brown Bark, On Older Branches, Bark Peels to Show Orange Bark	Native, Under Utility Lines, Confined Spaces, Street Tree, Specimen, Lawn, Woodlands	Avoid Very Hot, Dry Locations	Canker, Verticillium Wilt, Leaf Spot, ScaleTends to be Short Lived Under Chronic Stress	Fruit Can be a Litter Problem	Only Plants From Northern Seed Sources Are Hardy in Zones 4 and 5
<b>Eastern Redcedar</b>	<i>Juniperus virginiana</i>	'Grey Owl', 'Skyrocket'	3	Full Sun	Tolerant of Most Soils and pH	Medium to Large, 40' by 50' tall, 8' to 15' wide	Medium	Conical	Subtle	Conifer, Scale Like Pointed Needles, Cedar Smell	Light Blue, Berry Like Cones	Reddish Brown, Shreds in Long Strips	Native, Screen, Windbreak, Specimen, Difficult Sites	Tolerant of Drought, Heat, Salt	BagWorm, Cedar-Apple Rust,		
<b>English Oak</b>	<i>Quercus robur</i>	'Fastigiata'	5	Full Sun	Tolerant of Most pH and Drought	Large, 60' to 80' tall, 50' to 70' wide	Slow to Medium	Rounded and Broad	Subtle	Simple 3" to 5" Long, Rounded Lobes, Dark Green Top, Pale Underside	1" to 2" Oval Acorns on Long Stalks	Short Trunk, Furrowed Dark Gray Bark	Lawn, Shade Tree	Tolerant of Pollution, Drought	Powdery Mildew on Leaves	Fruit Can be a Litter Problem	
<b>European Beech</b>	<i>Fagus sylvatica</i>	'Purpurea Tricolor', 'Riversi', 'Rohanii'	4	Full Sun to Shade	Moist, Well Drained, Acidic Soil, Avoid Wet Soils	Large, 50' to 60' tall, Up to 50' wide	Slow	Rounded	Subtle	Simple, Glossy Green Top with Reddish Tint, Fall Showy Reddish Bronze, Dead but Persists in Winter	Triangular Nut Enclosed by Spikes	Light Gray, Smooth, Trunk is Short, Branches Frequently Touch Ground	Lawn, Specimen, Parks		Beech Bark Disease	Fruit Can be a Litter Problem	

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<b>European Hornbeam</b>	<i>Carpinus betulus</i>	'Fastigiata'	5	Full Sun	Tolerant of Most Soils and pH	Medium to Large, 40' to 60' tall, 20' to 30' wide	Slow to Medium	Narrow Conical Becoming Broad and Oval	Subtle	Simple 3" to 5" Long, Double Toothed Edge, Deep Veins, Dark Green, Fall Yellow-Green	Nutlets in a Leafy Cluster, Green Mature to Brown in Fall	Gray, Smooth, Fluted	Screen, Hedges, Shade, Street, Specimen	Tolerant of Pollution	Japanese Beetles, Canker, Narrow Branch Angles on Some Forms		
<b>Flowering Dogwood</b>	<i>Cornus florida</i>	'Cherokee Daybreak', 'Cherokee Sunset'	5	Full Sun to Part Shade	Moist, cool, fertile, slightly acidic with organic matter	Small, 30' tall, 30' wide or wider	Medium	Rounded to Flat Topped	4" White Flowers in May Before Leaves	Simple, Oval, Fall Showy Red or Reddish Purple	Bright Red Shiny Fruits, Eaten by Birds	Bark Small Raised Blocks, Branching Almost Horizontal	Native, Lawn, Patio, Specimen, Natural Areas, 4 Season Appeal	Intolerant of Heat, Drought, Pollution, Salt	Anthracnose, Borer, Mildew, Crown Rot, Canker	Health Issues, Possibly Over Used	
<b>Ginkgo</b>	<i>Ginkgo biloba</i>	'Lakeview', 'Princeton Sentry'	3	Full Sun	Tolerant of Most Soils and pH	Medium to Large, 40' to 80' tall, 30' to 40' wide	Medium	Conical, Spreading With Age	Subtle	Simple 2" to 3" Long, Fan Shaped Leaves, Bright Green, Fall Yellow, Tend to Drop At Once	Male and Female Trees, Females Bear Fruit, Very Foul Order	Gray-Brown With Ridges	Specimen, Lawn, Shade, Possibly Street Tree	Tolerant of Drought, Heat, Salt, Pollution		Fruit is Foul Smelling	
<b>Gray Dogwood</b>	<i>Cornus racemosa</i>	'Cuyzam', 'Ottzam'	4	Full Sun to Shade	Tolerant of Dry to Wet Soils	Small, 10' to 15' tall, 10' to 15' wide	Medium	Irregular Broad Spreading Shrub, Some Cultivars "Tree Like"	Many Small White Flowers in June	Simple 2" to 4" Long, Oval, Fall Reddish Purple in Full Sun	Small White Fruit, Eaten by Birds, Stems Holding Fruit Showy Red, Last During Winter	Matures to Light Gray, Bark and Branching Have Winter Interest	Native, Border, Hedge, Difficult or Natural Areas, Wildlife Food and Shelter	Very Adaptable			



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<b>Hawthorne</b>	<i>Crataegus species</i>	<i>Crataegus viridis</i> ‘Winter King’, <i>Crataegus laevigata</i> ‘Crimson Cloud’, <i>Crataegus crusgalli</i> var. <i>inermis</i>	4	Full Sun	Tolerant of Most Soils and pH	Small, 15' to 30' tall, 10' to 35' wide	Medium	Oval to Rounded	White or Pink, Some Smell Foul	Simple, 1" to 4" Long, Fall Yellow, Orange, Red, or Purple	1/4" to 1" Red, Apple Like	Can Have Long Thorns	Native* See Comments, Street Tree, Possibly Under Utility Lines, Specimen, Lawn	Toughest of Small Flowering Trees, Relatively Long Lived on Urban Sites	Select Disease Resistant Cultivars	Long Thorns, Not All Have "Tree Form"	*Native Species Include: <i>Crataegus crusgalli</i> , <i>Crataegus mollis</i> , <i>Crataegus nitida</i> , <i>Crataegus phaenopyrum</i> , <i>Crataegus succulenta</i> , <i>Crataegus viridis</i>
<b>Higan Cherry</b>	<i>Prunus subhirtella</i>	‘Autumnalis’	5	Full Sun	Moist, Acidic, Well Drained,	Small to Medium, 20' to 35' tall, 20' to 35' wide	Fast	Rounded	Showy Double Pink in Early Spring Before Leaves	Simple, Oblong 2" to 4" Long, Dark Green, Fall Yellow to Bronze	Oval Black, Not Showy, Attracts Birds	Showy Bark, Dark Brown With Horizontal Lines	Under Utility Lines, Confined Spaces, Street Tree, Specimen, Lawn	Tolerant of Pollution, Some Tolerance of Drought, Heat	Many Insect and Disease Problems Including Black Knot	Tends to be Short Lived	
<b>Honeylocust</b>	<i>Gleditsia triacanthos</i> var. <i>inermis</i>	‘Imperial’, ‘Shademaster’, ‘Skyline’	4	Full Sun	Deep, Moist, Neutral pH	Large, 50' to 60' tall, 50' to 60' wide	Fast	Broad Oval	Subtle	Compound Leaves, Bright Green, Lacy, Fall Showy, Clear Yellow	Long Brown Pods, Usually Few on Clutivars	Attractive Bark, Gray-Brown, Long Flat Strips Separated by Furrows	Native, Lawn Tree, Street Tree if Space, Allows Filtered Light to Reach Ground Beneath	Tolerant of Pollution, Salt	Bagworm, Spider Mites, Webworm, Pod Gall Midge, Cankers	var <i>inermis</i> Should be Thorn Free, Overused in Past	
<b>Japanese Tree Lilac</b>	<i>Syringa reticulata</i>	‘Ivory Silk’, ‘Summer Snow’	3	Full Sun	Well Drained, Slightly Acidic	Small, 20' to 30' tall, 15' to 25' wide	Medium	Rounded	Showy, Fragrant, White, in Early Summer	Simple 2" to 4" Long	Tan Capsules in Clusters	Gray-Brown With Horizontal Lines, Twigs Stout, Shiny	Under Utility Lines, Confined Spaces, Street Tree, Specimen, Lawn		Some Resistance to Mildew, Scales, and Borers		

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Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
<b>Japanese Zelkova</b>	<i>Zelkova serrata</i>	'Green Vase', 'Schmidtlow', 'Village Green'	5	Full Sun	Well Drained, Deep, Fertile, Moist Soil	Large, 50' to 70' tall	Medium	Vase Shape	Subtle	Simple, Long Thin Oval Shape, Fall Showy Bronze to Reddish Purple	Inconspicuous	Showy, Gray Bark Exfoliates to Show Orange Inner Bark	Under Utility Lines, Confined Spaces, Street Tree, Specimen, Lawn	Tolerant of Compaction, Drought, Heat, Pollution	Japanese Beetles, Not Immune to Dutch Elm Disease and Bacterial Canker	Can Have Twig Die Back Due to Cold	
<b>Kentucky Coffeetree</b>	<i>Gymnocladus dioicus</i>	Few cultivars; they are male with elm-like branching	4	Full Sun	Deep, Moist, Rich Soil But Will Tolerate Others	Large, 55' to 75' tall, 40' to 50' wide	Medium	Oval	Whitish Clusters, Subtle	Compound, Blue-Green Leaflets, Fall Sometimes Showy	4" to 10" Pods on Female Trees	Gray, Textured Bark, Stark Silhouette	Native, Lawn, Shade, Parks, Specimen	Tolerant of Drought, Pollution, Salt		Sheds Pods and Leaves at Different Times	
<b>Kousa Dogwood</b>	<i>Cornus kousa</i>	'Milky Way', 'Summer Stars'	5	Full Sun	Moist, Cool, Fertile, Slightly Acidic with Organic Matter	Small, 30' tall, 30' wide or wider	Medium	Rounded	About 4" Wide, White Turning to Pink, Early June, Very Long Bloom Time	Simple, Oval, Fall Showy Red or Reddish Purple	Showy, Green Pendant Fruit, Ripens to Red From Late August to October	Older Bark Exfoliates Revealing Gray-Tan to Mahogany-Brown Bark	Lawn, Patio, Specimen, Four Season Appeal	Some Tolerance of Drought			
<b>Littleleaf Linden</b>	<i>Tilia cordata</i>	'Greenspire', 'Glenleven'	4	Full Sun to Part Shade	Well Drained, Deep, Fertile, Moist Soil, Tolerates Wide pH, Compaction	Large, 50' to 60' tall, 35' to 55' wide	Medium	Oval	Small Yellow Flowers in Drooping Clusters, Bloom Early Summer	Simple, 2" to 3" Long, Heart Shaped, Dark, Shiny Green, Fall Yellow-Green	Round, Cream Colored Nutlet	Gray-Brown with Ridges and Furrows	Specimen, Lawn, Shade, Street Tree, Parking Lots	Tolerant of Compaction, Sensitive to drought, salt	Japanese Beetles, Aphids, Sooty Mold	Attracts Bees When Blooming	

## Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern

Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
<b>Magnolia</b>	<i>Magnolia soulangiana</i>	'Alba Superba', 'Alexandrina', 'Brozzonii', 'Verbanica'	5	Full Sun	Moist, Deep, Fertile, With Organics	Small, Up to 30' tall	Medium	Rounded	Very Showy, Large, White, Pink, or Purple, Early Spring, Sometimes Fragrant	Simple, Oval, 3" to 7" Long, Green, Fall Yellow-Brown	4" Long, Knobby, Orange-Red Seeds, Mature Early Fall	Smooth Silver Gray	Under Utility Lines, Confined Spaces, Specimen, Lawn	Tolerant of Pollution	Scale, Sooty Mold	Soft Wood Prone to Damage from Heavy Snow or Ice, Quite Common	
<b>Magnolia</b>	<i>Magnolia stellata</i>	'Star', 'Royal Star', 'Centennial'	4	Full Sun	Moist, Deep, Fertile, With Organics	Small, 15' to 20' tall, 10' to 15' wide	Medium	Rounded to Oval	Very Showy, 3" to 4" White to Pink, Light Fragrance	Simple, 2" to 4" Long, Oblong	Reddish Green Knobby Fruit, 2" Long, Orange-Red Seeds Mature Early Fall	Smooth Silver Gray	Under Utility Lines, Confined Spaces, Specimen, Lawn	Tolerant of Pollution	Scale, Black Mildew, Leaf Blight, Leaf Spots, Leaf Scab	Soft Wood Prone to Damage from Heavy Snow, or Ice,	
<b>Magnolia</b>	<i>Magnolia virginiana</i>	'Milton', 'Ravenswood', 'Henry Hicks'	5	Full Sun	Requires Acidic Soil, Tolerates Wet Soils	Small, 10' to 30' tall	Medium	Rounded to Pyramid	2" to 3" White Flowers, Hidden by Leaves, Lemon Scent,	Semi-Evergreen to Deciduous, Simple, 5" Long, Oval, Bright Green	Reddish Green Knobby Fruit, 2" Long, Orange-Red Seeds Mature Early Fall	Smooth Dark Gray	Native, Under Utility Lines, Confined Spaces, Specimen, Lawn, Natural Areas, Wet Soil	Avoid Windswept Areas		Possible Winter Injury in Zone 5, Not Heavy Bloomer	
<b>Overcup Oak</b>	<i>Quercus lyrata</i>		5	Full Sun	Tolerates Damp Soils	Medium to Large, 40' to 60' tall, 40' to 60' wide	Medium	Pyramid to Rounded	Subtle	Simple, 6" to 10" Long, Rounded Lobes	1" Long Acorn, Almost Enclosed by Rough Cup	Gray-Brown, Scaly	Native, Lawn, Shade, Parks, Specimen		Caterpillars, Oak Wilt	Acorns Can be a Litter Problem	
<b>Pignut Hickory</b>	<i>Carya glabra</i>		4	Full Sun to Part Shade	Well Drained, Fertile,	Large, 50' to 60' tall, 25' to 35' wide	Medium	Narrow Oval	Subtle	Compound Leaves 8" to 12" Long, Leaflets Toothed Edge, Yellow-Green, Fall Yellow	3/4" to 1" Long Nut, Edible	Smooth Gray-Brown With Ridges, Stout Stems	Native, Lawn, Shade, Specimen, Park, Wildlife, Wood			Difficult to Transplant, Fruit Can be a Litter Problem	

## Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern

Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
<b>Pin Oak</b>	<i>Quercus palustris</i>	'Crownright', 'Green Pillar'	4	Full Sun	Requires Acidic Soil	Large, 55' to 75' tall, 40' to 55' wide	Medium	Oval	Subtle	Simple, 3" to 6" Long, Pointed Lobes, Fall Bronze or Red	1/2" Acorns	Lower Branches Grow Down, Upper Branches Grow Up	Native, Lawn, Shade, Parks, Specimen	Some Tolerance of City Conditions, Tolerant of Sulfur Dioxide	Iron Chlorosis on Alkaline Soils, Horned Oak Gall	Descending Lower Branches Can Restrict Pedestrians	
<b>Purple Leaf Plum</b>	<i>Prunus cerasifera</i>	'Mount St. Helens', 'Newport', 'Thundercloud'	5	Full Sun	Well Drained Acidic Soil	Small, 15' to 30' tall, 15' to 25' wide	Medium to Fast	Broad, Spreading	Showy, 1", Usually Pink, Can Be White, Fragrant, Early Spring	Simple, Oval, About 2" Long, Reddish Purple, Some Are Shiny Green	1" Reddish Drupe, Matures Late Summer, Birds Like	Dark Reddish Brown	Specimen, Container	Tolerant of Drought, Intolerant of Compaction	Aphids, Borers, Scale, Caterpillars, Canker, Leaf Spot, Black Knot	Short Lived	
<b>Red Oak</b>	<i>Quercus rubra</i>		3	Full Sun	Well Drained Acidic Sandy Soil	Large, 60' to 80' tall, 40' to 65' wide	Slow After Transplanted, Then Fast	Broad Oval	Subtle	Simple, 5" to 8" Long, Pointed Lobes, Shiny Green, Fall Mix of Tan, Yellow, Red	1" Acorn	Shallow Fissures and Ridges, Inner Bark Red	Native, Lawn, Shade, Parks, Specimen, Street, Wood	Tolerant of Drought, Heat, Salt, Compaction, Pollution	Caterpillars, Oak Wilt	Acorn Litter Can Be Heavy	
<b>Sargent Cherry</b>	<i>Prunus sargentii</i>	'Accolade'	5	Full Sun to Part Shade	Moist, Acidic, Well Drained,	Small to Medium, 25' to 40' tall, 25' to 40' wide	Fast	Broad, Spreading	Showy, 2" Single Pink in May	Simple, 3" to 5" Long, Oval, Dark Green, Fall Showy Yellow, Orange or Red	1/2" Red to Black Drupe, Birds Like	Reddish Shiny Bark, Looks Polished	Specimen, Lawn, Shade, Parking Lot	Some Tolerance of Drought	Caterpillars, Black Knot Disease		

## Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern

Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
<b>Sawtooth Oak</b>	<i>Quercus acutissima</i>	'Gobbler', var. <i>chenii</i>	6	Full Sun	Well Drained Acidic Soil, Also pH Tolerant	Medium to Large, 40' to 60' tall	Medium	Rounded, Spreading	Subtle	Simple, Oblong, Toothed Margins With Bristles, Fall Brown-Yellow	1" Enclosed Acorn	Brown Ridged, Furrowed Bark	Shade, Lawn, Park, Wildlife	Tolerant of City Conditions		Some Years Acorn Litter Can Be Heavy	
<b>Scarlet Oak</b>	<i>Quercus coccinea</i>		4	Full Sun	Well Drained Sandy Acidic Soil	Large, 75' tall, 45' wide	Medium	Rounded	Subtle	Simple, 7 Lobes With Bristles, Fall Showy Scarlet	1" Acorn, Half Covered by Cup	Gray-Black, Furrows and Ridges	Native, Shade, Lawn	Intolerant of Pollution		Acorns Can be a Litter Problem	
<b>Serbian Spruce</b>	<i>Picea omorika</i>		4	Full Sun	Moist, Well Drained With Organic Material	Large, 50' to 60' tall, 20' to 25' wide	Slow	Conical	Subtle	Conifer, 1" Long Needles	1 1/2" Cones	Dark Brown to Black, Peeling Thin Scales	Specimen, Screen	Tolerant of Pollution	Sometimes Borers, Aphids, No Strong Winter Winds		
<b>Serviceberry</b>	<i>Amelanchier species</i>	<i>Amelanchier canadensis</i> and <i>Amelanchier laevis</i> have several cultivars	4	Full Sun to Shade	Well Drained, Moist, Acidic Soil	Small, 15' to 30' tall, 15' to 25' wide	Medium	Oval	White, In Hanging Clusters, Early Spring Before Leaves	Simple, 1" to 3" Long, Oval, Toothed Edge, Fall Yellow-Orange to Red	Small Red to Purple, Apple Like, Birds Like	Attractive Bark, Gray With Streaks of Color	Native* See Comments, Under Utility Lines, Confined Spaces, Street Tree, Specimen, Lawn, Woodlands	Intolerant of Heat, Sensitive to Salt, Compact on, Drought, Pollution	Fireblight, Mites and Scales A Problem if Poor Site		*Native Species Include: <i>Amelanchier arborea</i> , <i>Amelanchier alnifolia</i> , <i>Amelanchier canadensis</i> , <i>Amerlanchier laevis</i>

## Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern

Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
<b>Shagbark Hickory</b>	<i>Carya Ovata</i>		4	Full Sun to Part Shade	Deep, Fertile, Well Drained	Large, Up to 80' tall, to 50' wide	Medium	Oval	Subtle	Compound Leaves 8" to 14" Long, Leaflets Oval, Toothed Edge, Yellow-Green, Fall Showy Yellow-Gold	1 1/2" Nut, Thick Shell, Edible	Gray-Brown, Older Bark Forms Long Plates That Peel From The Tree	Native, Lawn, Shade, Specimen, Park, Wildlife, Wood			Difficult to Transplant, Fruit Can be a Litter Problem	
<b>Silver Linden</b>	<i>Tilia tomentosa</i>	'Sashazam', 'Sterling Silver'	5	Full Sun to Part Shade	Moist, Deep, Fertile, Well Drained, pH and Compaction Adaptable	Large, 60' to 70' tall, 45' to 55'	Medium	Oval	Small Yellow Flowers in Drooping Clusters, Bloom Early Summer, Bees Like	Simple, 3" Long, Rounded, Toothed Edge, Top Dark Green, Bottom Sliver, Fall Yellow-Green	1/3" Nutlet, Stays on Tree	Gray Smooth, Becoming Gray-Brown Furrowed	Specimen, Lawn, Shade, Street Tree, Parking Lots	Tolerant of Drought, Heat, Pollution	Aphids		
<b>Snow Goose Cherry</b>	<i>Prunus serrulata</i>	'Kwanzan', 'Snowgoose'	5	Full Sun	Well Drained, Adaptable	Small, 20' to 25' tall, 20' to 25' wide	Medium	Broad, Spreading	Single, White, Early Spring Before Leaves	Simple, Oval, Bright Breen, Fall Yellow to Red	1/4" Blue Black Cherries, Inconspicuous	Showy Bark, Gray-Brown to Reddish Brown With Horizontal Lines	Under Utility Lines, Confined Spaces, Street Tree, Specimen, Lawn		Many Insect and Disease Problems Including Black Knot	Short Lived	

## Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern

Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
<b>Stewartia</b>	<i>Stewartia pseudocamellia</i>	'Ballet', 'Cascade', 'Milk and Honey'	5	Full Sun, Afternoon Shade	Well Drained, Moist, Acidic Soil	Small to Medium, Up to 40' tall, 20' wide	Slow	Pyramid to Oval	Showy, Single White, June - August	Simple, Oval, Toothed Edge, Dark Green, Fall Showy Yellow, Red, Purple	Brown pointed Capsule, Persistent, Not Showy	Bark Peels to Camo Pattern of Orange, Green, Gray	Lawn, Specimen	Intolerant of Heat, Drought		Difficult to Establish, No Afternoon Sun	<i>Stewartia ovata</i> is Native
<b>Swamp White Oak</b>	<i>Quercus bicolor</i>	'Asjes', 'Long'	4	Full Sun to Part Shade	Acidic Soil, Swampy Conditions, Chlorosis at High pH	Large, 60' to 80' tall, 50' to 80' wide	Medium	Oval	Subtle	Simple, 4" to 8" Long, Rounded Lobes, Fall Yellow-Brown	1" Acorn	Gray-Brown, Deep Furrows, Short Trunk	Native, Lawn, Shade, Specimen, Park	Tolerant of Drought, Salt, Compaction	Infrequently Caterpillars, Oak Wilt, Anthracnose, and Borers	Heavy Acorn Crops Every 3 to 5 Years	
<b>Swiss Stone Pine</b>	<i>Pinus cembra</i>	'Columnaris', 'Nana'	3	Full Sun	Well Drained Loamy Soil	Small, 25' to 30' tall, 10' to 20' wide	Slow	Pyramid to Open, Flat Topped	Subtle	Conifer, 3" Long Needles, Twisted, Blue-Green to Light Green	3" Long Cones, Violet-Brown	Young Stems Orange-Brown Hairy, Mature to Dark	Screen, Specimen, Groupings			Hard to Locate to Purchase	
<b>Tulip Tree</b>	<i>Liriodendron tulipifera</i>		5	Full Sun	Deep, Fertile, Moist	Large, At Least 90' tall	Medium	Oval but Irregular	2" to 3" Yellow-Green, Tulip Shaped, At Top of Tree	Simple, 5" to 8" Long and Wide, 4 Lobed, Bright Green, Fall Showy Yellow	Cone Shaped, Matures from Green to Brown in Fall, Persistent	Gray, Furrowed, White Between Furrows	Native, Lawn, Shade, Needs Large Area	Intolerant of Hot Dry Sites	Aphids, Sooty Mold, Scale		

## Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern

Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
<b>Turkish Filbert</b>	<i>Corylus colurna</i>		4	Full Sun	Well Drained Loamy Soil	Medium to Large, 40' to 50' tall, 20' to 25' wide	Medium	Pyramid	2" to 3" Drooping Clusters, Early Spring	Simple, 6" Long, Oval, Dark Green, Fuzzy, Fall Yellow to Purple-Red	1/2" Enclosed Nut, Matures in Fall, Edible	Pale Brown Flaky Bark, Stems Gray, Fuzzy	Street Tree, Specimen, Lawn, Woodlands	Tolerant of Heat, Drought, Pollution			
<b>Upright White Pine</b>	<i>Pinus strobus</i> 'Fastigiata'	<i>Pinus strobus</i> 'Fastigiata'	3	Full Sun	Moist, Well Drained, Acidic Soil	Large, At Least 60' tall, 20' wide	Fast	Pyramid, Flat Top	Subtle	Conifer, 4" Long Needles, Medium Green	6" Brown Cone With Silver Tips	Gray-Brown Furrows	Native, Specimen, Lawn, Shade, Windbreak, Screen	Intolerant of Compaction, Salt Spray, Pollution, Poorly Drained Soils, and Alkaline pH	Blister Rust, Weevil	Not Urban Tolerant	
<b>White Fir</b>	<i>Abies concolor</i>		3	Full Sun	Deep Well Drained With Adequate Moisture	Large, 50' x 75' tall, 20' to 30' wide	Slow to Medium	Pyramid	Subtle	Conifer, 2" to 3" Long Needles, Blue-Green	4" to 5" Narrow Cones, Shatter When Mature	Light Gray, Smooth, Trunk is Short, Branches Frequently Touch Ground	Native, Lawn, Shade, Specimen, Park, Screen	Tolerant of Heat, Drought, Pollution, Intolerant of Compaction	Spruce Budworm, Tussock Moth, Bark Beetles, Fungi		
<b>White Fringetree</b>	<i>Chionanthus virginicus</i>		5	Full Sun to Part Shade	Moist, Deep, Well Drained, Acidic Soil	Small, 12' to 20' tall, 12' to 20' wide	Slow	Rounded but Irregular	Male Flowers Showier, White Long Loose Clusters, Early Spring, Slightly Fragrant	Simple, 3" to 8" Long, Oval, Dark Green, Fall Yellow	On Female Plants, 1/2" Blue-Black Round, In Clusters, Ripens Early Fall, Birds Eat, Need Male Plant Nearby	Gray, Rough, Slight Ridges	Native, Lawn, Specimen, In Natural Areas	Tolerant of Pollution		Plants From Seed, Don't Know Sex	



## Tree Species to Consider for Planting in Urban Areas Where Asian Longhorned Beetle and Emerald Ash Borer Are a Concern

Common Name	Scientific Name	Common Cultivars	Lowest Hardiness Zone	Light Requirements	Soil Preferences	Mature Size	Growth Rate	Mature Crown Shape	Flowers	Foliage	Fruit	Bark/Branch	Uses	Urban Stress Tolerance	Significant Health Issues	Possible Negative Qualities	Comments
White Oak	<i>Quercus alba</i>		4	Full Sun	Well Drained, Acidic Soil	Large, 60' to 80' tall, 60' to 80' or more wide	Slow	Rounded	Not Showy, Can Be Messy	Simple, 4" to 8" Long, Rounded Lobes, Fall Showy Purple-Red	1" Elongated Acorns	Light Gray Flaky, Irregular Branching	Native, Lawn, Shade, Specimen, Park, Wildlife, Wood		Caterpillars	Acorns Can be a Litter Problem	

### Urban Tree Replacement References Used

#### Websites:

Invasive Plant Atlas of New England: <http://www.eddmaps.org/ipane/>  
 Invasive Plant Atlas of the United States: <http://www.invasiveplantatlas.org/trees.html>  
 Landowner Fact Sheets at Virginia Tech: <http://cnre.vt.edu/dendro/LandownerFactsheets/index.htm>  
 North Carolina State University Tree Information: <http://plants.ces.ncsu.edu/plants/category/trees/>  
 Northern Nurseries, Inc. Wholesale Distribution Centers: <http://www.robertbaker.com/>  
 Recommended Alternatives to Ash Trees for Michigan's Lower Peninsula, Michigan State University: <http://www.emeraldashborer.info/files/e2925.pdf>  
 UConn Plant Database of Trees, Shrubs, and Vines: <http://www.hort.uconn.edu/plants/index.html>  
 University of Kentucky Cooperative Extension, Kentucky Trees: <http://dib.uky.edu/hort/?q=Native-Trees-of-Kentucky>  
 Urban Horticulture Institute, Cornell University: <http://www.hort.cornell.edu/uhi/outreach/recurbtree/index.html>  
 USDA Natural Resources Conservation Service Plant Database: <https://plants.usda.gov/java/>  
 Weeds Gone Wild: Alien Plant Invaders of Natural Areas: <http://www.nps.gov/plants/alien>

#### Publications:

Handbook of Landscape Tree Cultivars, Willet N. Wandell  
 Landscaper's Guide to Asian Longhorned Beetle and its Host Trees, Bruce L. Parker, Margaret Skinner  
 Manual of Woody Landscape Plants, Their Identification, Ornamental Characteristics, Culture, Propagation and Uses, Michael A. Dirr  
 Recommended Small Trees for Planting Under Low Overhead Utility Lines or Confined Spaces, National Grid  
 Selecting Trees for Urban Landscape Ecosystems: Hardy Species for Northern New England Communities, State of New Hampshire Department of Resources and Economic Development, Division of Forests and Lands  
 Street Tree Factsheets, Henry D. Gerhold, Norman L. Lacasse, Willet N. Wandell  
 Urban Tree Selection Manual, A Guide for Selecting Trees for the Urban Environment, John Alexopoulos, Paula Stahl, Robert Ricard

#### Recommended Planting Lists in Asian Longhorned Beetle Regulated Areas:

Recommended tree planting list for the ALB quarantine zone and surrounding areas compiled by the New Jersey Forest Service  
 Species Recommended for Tree Planting in ALB Regulated Areas-New York, New Jersey, Illinois  
 Handouts to Property Owners Fall 2010, Massachusetts Department of Conservation and Recreation

#### Notes:

Mature Size Ranges: Small Trees are under 30', Medium Trees are 30' to 45', Large Trees are over 45'  
 Native Classification Reference: Manual of Woody Landscape Plants, Their Identification, Ornamental Characteristics, Culture, Propagation and Uses, Michael A. Dirr