

STATE VEGETATION MANAGEMENT TASK FORCE

FINAL REPORT

**ISSUED TO THE CONNECTICUT DEPARTMENT OF
ENERGY & ENVIRONMENTAL PROTECTION**

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Right Tree, Right Place Standards

Tree-lined streets provide not only the aesthetic ‘sense of place’ that is Connecticut, but provide many benefits along roadways including reducing traffic speeds, prolonging pavement life, and improving stream quality by reducing storm water runoff. In the absence of forward looking planning and maintenance, however, these benefits are not without the potential cost of losing power and communication along with road obstruction during severe weather. Part of the solution for reducing damage caused by trees during severe weather events is to favor trees with short mature heights adjacent to roads and overhead utilities.

Trees grow. For example, very common Connecticut trees like eastern white pine and oaks can transform from small seedlings to heights overtopping utility lines within several decades, and can continue to grow to one hundred feet or more. To reduce disruption of electrical and telecommunication services during severe weather, trees adjacent to utility poles and wires should have mature heights shorter than the wires, or be set back a sufficient distance from the wires that broken branches or wind-thrown trees are unlikely contact them. This strategy will also increase access by public safety officials (police, fire) during and after storms by reducing road debris.

Over the next several decades, many of the larger trees in our maturing roadside forests will decline and will need to be replaced. This will provide an opportunity to replace tall trees that can damage critical infrastructure (utilities and roads) with shorter species that can maintain the forested aesthetic, e.g., replacing roadside Norway maples with paperbark maples or saucer magnolias. Because trees can survive for a century or more, many of the trees we

plant today will be around for decades if not well into the 22nd century.

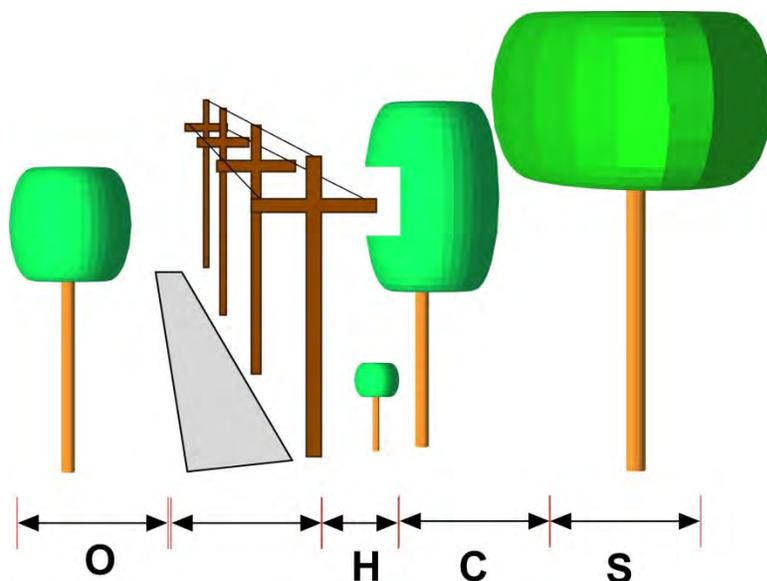


Figure 3. Critical planting zones for Right Tree, Right Place. O-Opposite zone, H-Height reduction zone, C-Clearance zone, S-Strike zone.

The concept of “Right Tree, Right Place” is that tree selection should be matched to the particular conditions at a given site. This includes planting or favoring existing species that have short mature heights adjacent to utility infrastructure and roads, while allowing progressively taller species at increasing distances from roads and wires. The utility companies have developed a zone approach for vegetation near

their wires and poles:(Fig. 3): Opposite zone – street trees on the opposite side of the road from utility wires, Height reduction zone – trees growing directly under utility wires, Side clearance zone – trees growing adjacent to utility wires whose crowns can expand horizontally into wires, and Strike zone – trees beyond the side clearance zone that may be tall enough to impact wires if they fell.

We include two lists of woody plants: shrubs that are an appropriate size for the height reduction zone (H) and small trees that are appropriate for the opposite (O) and side clearance zones (C). The lists were developed from a variety of sources including Dreyer (1991), Alexopoulos et al. (2007), and Gerhold et al. (1993) with input from the Connecticut Nursery

and Landscape Association, Audubon Connecticut, and the Connecticut Notable Trees Project.



Trees with tall mature heights, such as these pin oaks, are inappropriate for planting under utility wires.

It is hoped that this list will assist local planning officials and private residents to select species that are appropriate for a given site. It is recommended that private property owners consult with their local tree warden or others knowledgeable on growth patterns and site requirements when planting new trees to ensure the tree is tree for the location.

The optimal maximum height for vegetation in each zone will vary

depending on the width of the road (for the Opposite zone) and the actual height of the wires. As a general guideline, it is safest for a tree to be at least as far from the wires as it can get in height. So a 30 foot maximum height tree should be located at least 30 feet from a point directly below the wires. However, shrubs and small trees, especially evergreens, would be inappropriate in locations where they would block site lines for people backing out of driveways or parking lots.

No list can be fully comprehensive since mature heights will vary by local environmental conditions (soil fertility, moisture, and volume; amount of light, etc.), individual tree genetics, and care. There are a wide variety of native and non-invasive introduced shrubs that can be appropriate under utility wires. We have listed only a few with an emphasis on native species.

We do not list specific cultivated varieties (called cultivars) because plant breeders are continually introducing new types with novel flowers, growth characteristics, and increased disease resistance. There are cultivars of some species not included in this list that have short mature stature that could be used in locations near wires. In addition, many species have upright varieties, called columnar or fastigate, that have narrow growth forms and rarely get as

tall as is standard for the species. Please consult with local nursery and horticulture professionals to discuss cultivar characteristics and availability. In addition, this list should be updated regularly to keep current with new research, changing climate, and new potential non-native pests and disease.

Once again, this is a list of some, not all, of the trees and shrubs with low to medium mature heights that could be used when it is deemed appropriate to plant near roads with above ground utility equipment. It is not a comprehensive list of every possible plant for every conceivable situation. It does not only include native plants because there are a limited number of regionally native species that are appropriate for roadsides and available in nurseries, and because not all non-native species are considered to be invasive. We are not advocating the wholesale removal of existing trees and replanting with only species on this list. Where low growing trees and shrubs are currently present, they should be favored in management operations. In more natural forested roadside situations we recommend preserving or planting native species. We did not include tall trees because the purpose of the list is to draw attention to smaller size plants that are less likely to interfere with aboveground utilities.

References

Alexopoulos, J.; Stahl, P.; Ricard, R.M. 2007. Urban tree selection manual. University of Connecticut, College of Agriculture and Natural Resources, Storrs, CT. 121p.

Dreyer, G.D. 1991 Trees and shrubs for your community. Electric Council of New England. 25p.

Gerhold, H.D.; Lacasse, N.L.; Wandell, W.N. (Eds.).1993. Street tree factsheets. Publications Office, Pennsylvania State University, University Park, PA. 385p.

Trees with Short Mature Heights

Connecticut State Vegetation Management Task Force

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Jeffrey Ward² (The Connecticut Agricultural Experiment Station)

Common name	Scientific name ³	Origin ⁴	Height (ft) ⁵		Not for Urban Sites	Notes
			Typical	CT max		
Trident Maple	<i>Acer buergerianum</i>	NE Asia	20-25	57		
Hedge maple	<i>Acer campestre</i>	Europe	30+	60		Tolerates urban conditions well. No fall color.
Paperbark maple	<i>Acer griseum</i>	China	30	40		Beautiful shiny copper-colored bark
Japanese maple	<i>Acer palmatum</i>	NE Asia	15-30	48		Is spreading from planted locations; Invasive in nearby states
Tatarian maple	<i>Acer tataricum</i>	Europe	20-25			Is spreading from planted locations; Invasive in nearby states
Horsechestnut hybrids	<i>Aesculus hybrids</i>	Hybrid	30-35	45-55	?	
Common serviceberry	<i>Amelanchier arborea</i>	Native	<30	55		White flowers in late April; edible fruit in July
Allegheny serviceberry	<i>Amelanchier laevis</i>	Native	<30	50		White flowers in late April; tasty fruit in July
European hornbeam	<i>Carpinus betulus</i>	Europe	30-40	72		
American hornbeam	<i>Carpinus caroliniana</i>	Native	30+	37		Smooth, gray bark
Eastern redbud	<i>Cercis canadensis</i>	Native	25	45	?	Purple-pink spring flowers and heart-shaped leaves
Chinese Fringetree	<i>Chionanthus retusus</i>	NE Asia	15-25	17	?	Weak wood, bushy habit
Flowering dogwood	<i>Cornus florida</i>	Native	30	47	?	Showy white flowers in mid-May; (may be listed as <i>Benthamidia florida</i>)
Dogwood hybrids	<i>Cornus hybrids</i>					Dogwood hybrids

Common name	Scientific name ³	Origin ⁴	Height (ft) ⁵		Not for Urban Sites	Notes
			Typical	CT max		
Kousa dogwood	<i>Cornus kousa</i>	NE Asia	30	36		Showy white flowers in late May; (may be listed as <i>Benthamidia japonica</i>)
Cornelian cherry dogwood	<i>Cornus mas</i>	NE Asia	15-25	28		
Smokebush	<i>Cotinus coggygria</i>	Europe	15	20	?	
American smoketree	<i>Cotinus obovatus</i>	Native	30	51	?	
Hawthorn hybrids	<i>Crataegus</i> sp.	Native	25			All have some level of susceptibility to rust and a few have some resistance to leaf spot, some have thorns
Redvein Enkianthus	<i>Enkianthus campanulatus</i>	Japan	15		?	Bushy habit
Seven-son flower	<i>Heptacodium miconioides</i>	China	12	25		Fragrant, late summer flowers
American holly	<i>Ilex opaca</i>	Native	30+	47	X	
Long stalk holly	<i>Ilex pedunculosa</i>		15-20	26	X	
Eastern redcedar	<i>Juniperus virginiana</i>	Native	30+	64	X	Evergreen
Amur maackia	<i>Maackia amurensis</i>	NE Asia	30	41		Clusters of yellow flowers in July
Star magnolia	<i>Magnolia stellata</i>	Japan	20	40		Upright shrub with large white flowers
Sweetbay magnolia	<i>Magnolia virginiana</i>	Native	25	28		Creamy flowers have a sweet fragrance
Saucer magnolia	<i>Magnolia x soulangiana</i>	China	30	44		Large white or pink flowers early spring
Crabapples	<i>Malus</i> sp.	Mixed	25	55		Showy flowers in spring and persistent fruit
Hophornbeam	<i>Ostrya virginiana</i>	Native	30+	67		Rough bark
Sourwood	<i>Oxydendrum arboreum</i>	Native	25	87	?	Showy white flowers in July
Persian parrotia	<i>Parrotia persica</i>	SW Asia	20-40	28		Interesting mottled bark

Common name	Scientific name ³	Origin ⁴	Height (ft) ^{5,6}		Not for Urban Site	Notes
			Typical	CT max		
American red plum	<i>Prunus americana</i>	Native	20		?	
Cherry plum	<i>Prunus cerasifera</i>	NE Asia	25	29		White flowers in spring; purple leaved forms popular
Cherry hybrids	<i>Prunus hybrids</i>					
Sargent cherry	<i>Prunus sargentii</i>	Japan	35-40	42		
Japanese flowering cherry	<i>Prunus serrulata</i>	NE Asia	25	33		Pink early spring flowers; 'Kwanzan' a popular type
Higan cherry	<i>Prunus subhirtella</i>	Japan	30+	67		Pink spring flowers; weeping forms available
Bosc (common) pear	<i>Pyrus communis</i>	Europe	30	59	?	White spring flowers; fruit could be a problem
Pussy willow	<i>Salix discolor</i>	Native	30		?	Appreciated for its small, fuzzy early flowers
Japanese stewartia	<i>Stewartia peuedocamellia</i>	Japan	30	39		Large showy June flowers and colorful mottled bark
Japanese snowbell	<i>Styrax japonicus</i>	Japan	25	28		White bell shaped flowers in June
Japanese tree lilac	<i>Syringa reticulata</i>	Japan	25	51		Creamy flower clusters in June, very adaptable
English yew	<i>Taxus baccata</i>	Europe	30+	47	X	Evergreen
Arborvitae	<i>Thuja occidentalis</i>	Native	30	70	X	Good evergreen screen: susceptible to deer damage

³Common and scientific names from USDA Plants database (<http://plants.usda.gov>)

⁴Native refers to eastern North America

⁵Typical height from personal observation and Dirr (1998) Manual of woody landscape plants, 5th edition

⁶Maximum Connecticut height from database of Connecticut

Notable Tree Project

Selected shrubs suitable for planting near utilities

Connecticut State Vegetation Management Task Force

Glenn Dreyer¹ (Connecticut College)

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Common name	Scientific name ³	Origin ⁴	Height (ft) ⁵	Root suckers ⁵	Notes
Canadian serviceberry	<i>Amelanchier canadensis</i>	Native	15	n	White flowers in late April; edible fruit in July
Red chokeberry	<i>Aronia arbutifolia</i>	Native	6	Yes	Good flowers and fall color (may be listed as <i>Photinia pyrifolia</i>),
Black chokeberry	<i>Aronia melanocarpa</i>	Native	6	Yes	Conspicuous white flowers, formerly (may be listed as <i>Photinia melanocarpa</i>)
Carolina allspice	<i>Calycanthus floridus</i>	Native	8	n	Fragrant flowers
Chinese fringetree	<i>Chionanthus retusus</i>	NE Asia	15	n	
White fringetree	<i>Chionanthus virginicus</i>	Native	20	n	Large clusters of white flowers in June
Japanese clethra	<i>Clethra barbinervis</i>	Japan	15	n	White flowers in summer, attractive bark
Alternate-leaved dogwood	<i>Cornus alternifolia</i>	Native	20	n	Large shrub with small clusters of creamy white flowers
Redosier dogwood	<i>Cornus sericea</i>	Native	10	Yes	Bright red stems maintained by cutting older stems
American hazelnut	<i>Corylus americana</i>	Native	12	n	Edible nuts are commercially cultivated
Redvein enkianthus	<i>Enkianthus campanulatus</i>	Japan	15		Great fall color follows midsummer flowers that attract bees
Chinese witchhazel	<i>Hamamelis mollis</i>	China	15	n	Flowers in early spring
Witchhazel	<i>Hamamelis virginiana</i>	Native	15	n	Small yellow flowers in October

Common name	Scientific name ³	Origin ⁴	Height (ft) ⁵	Root suckers ⁵	Notes
Rose-of-Sharon	<i>Hibiscus syriacus</i>	SW Asia	12	n	Summer flowers in various colors
Panicked hydrangea	<i>Hydrangea paniculata</i>	Asia	10	n	Needs constant pruning
Winterberry	<i>Ilex verticillata</i>	Native	10	n	Shrub with abundant red berries
Beach plum	<i>Prunus maritima</i>	Native	12	n	White flowers in spring; edible fruit
Winged sumac	<i>Rhus copallinum</i>	Native	15	Yes	Suckering shrub with brilliant red fall foliage
Smooth sumac	<i>Rhus glabra</i>	Native	15	Yes	Suckering shrub with brilliant red fall foliage
Arrowwood	<i>Viburnum dentatum</i>	Native	6	n	Small white flowers clusters in spring
Nannyberry	<i>Viburnum lentago</i>	Native	15	n	Creamy white flower clusters in June
Withe-rod	<i>Viburnum nudum</i> var. <i>cassinoides</i>	Native	12	n	Flower clusters in June, multi-colored fruit in fall
Blackhaw viburnum	<i>Viburnum prunifolium</i>	Native	12	n	Creamy white flower clusters in June
Cranberry viburnum	<i>Viburnum trilobum</i>	Native	6	n	Edible red fruit persists into winter

³Common and scientific names from USDA Plants database (<http://plants.usda.gov>)

⁴Native refers to eastern North America

⁵Typical height and root suckering from personal observation and Dirr (1998) Manual of woody landscape plants, 5th edition