

**A RESOLUTION CALLING A PUBLIC HEARING ON A LAND USE ORDINANCE
TEXT AMENDMENT TO REVISE THE LISTS OF INVASIVE PLANT SPECIES
AND RECOMMENDED TREES AND SHRUBS**

Resolution No. 147/2003-04

WHEREAS, the Carrboro Board of Aldermen seeks to provide ample opportunities for the public to consider modifications to existing policies and regulations; and

NOW, THEREFORE BE IT RESOLVED that the Board of Aldermen calls a public hearing on June 22, 2004 to consider adopting "An Ordinance Amending the Carrboro Land Use Ordinance to Revise the Lists of Invasive Plant Species and Recommended Trees and Shrubs"

BE IT FURTHER RESOLVED that the draft amendment is referred to Orange County for review per the Joint Planning Agreement and to the Town of Carrboro Planning Board for its recommendations.

This is the 4th day of May in the year 2004.

**** DRAFT 04-29-04 ****

**AN ORDINANCE AMENDING THE LISTS OF RECOMMENDED TREES SHRUBS AND
PROHIBITED INVASIVE SPECIES PROVISIONS SPECIFIED IN APPENDIX E OF THE
CARRBORO LAND USE ORDINANCE**

Section 1. Appendix E-10, Lists of Recommended Trees and Shrubs, is amended by the additions (*italic text*) and the deletions (~~strikethrough text~~) to read as follows:

The following lists indicate plantings which will meet the screening and shading requirements of Article XIX of the Land Use Ordinance. The lists are by no means comprehensive and are intended merely to suggest the types of flora which would be appropriate for screening and shading purposes. Plants were selected for inclusion on these lists according to four principal criteria: *i.)* general suitability for the Piedmont section of North Carolina; *ii.)* hardiness/tolerance of city conditions; *iii.)* ease of maintenance; and *iv.)* availability from area nurseries. When selecting new plantings for a particular site, a developer should first consider the type of plants which are thriving on or near the site. Accordingly, species native to North Carolina should often be favored. However, if an introduced species has proven highly effective for screening or shading in Piedmont Towns, it too may be a proper selection.

The plantings marked with an (*) on the following lists are appropriate for planting within plantings strips -- as defined under Section 15-216, Subsection (j).

Sections E-11 through E-16 contain descriptions of the trees and shrubs listed here.

(A) E-11 SMALL TREES FOR PARTIAL SCREENING

- | | |
|----------------------------------|------------------------------------|
| (1) American Holly | (11) Golden Rain Tree * |
| (2) <i>American Hop Hornbeam</i> | (12) <i>Mock Orange</i> |
| (3) American Hornbeam * | (13) <i>Paw Paw</i> |
| (4) <i>American Smoketree</i> | (14) River Birch |
| (5) Carolina Cherry Laurel | (15) Serviceberry * |
| (6) Crabapple (southern) | (16) Sourwood * |
| (7) Crepe Myrtle * | (17) <i>Viburnum</i> |
| (8) Eastern Redbud | (18) Washington Hawthorn |
| (9) Flowering dogwood | (19) <i>Yaupon</i> |
| (10) <i>Fringetree</i> | |

(B) E-12 LARGE TREES FOR EVERGREEN SCREENING

- | | |
|---------------------------------|---------------------------------|
| (1) <i>Atlantic White Cedar</i> | (5) Eastern Red Cedar |
| (2) Canadian Hemlock | (6) Laurel Oak (listed on E-13) |
| (3) Carolina Hemlock | (7) <i>Loblolly Pine</i> |
| (4) Deodar Cedar | (8) <i>Shortleaf Pine</i> |

(9) Southern Magnolia

(10) Virginia Pine

(C) **E-13 LARGE TREES FOR SHADING** - The trees on the following list marked with an (*) are appropriate selections to satisfy Section 15-315, Required Trees Along Dedicated Streets

- (1) *Basswood*
- (2) *Chestnut Oak*
- (3) *Ginkgo* (male only) *
- ~~(4) Honey Locust *~~
- (5) *Laurel Oak* *
- ~~(6) Littleleaf Linden *~~
- ~~(7) London Plane Tree *~~
- (8) *Magnolia*
- (9) *Post Oak*
- (10) *Red Maple*
- ~~(11) Red Oak (Eastern) *~~

- (12) *Scarlet Oak* *
- ~~(13) Southern Catalpa~~
- ~~(14) Southern Sugar Maple~~
- ~~(15) Swamp Chestnut Oak~~
- ~~(16) Swamp White Oak~~
- ~~(17) Sweet Gum (rotundifolia) *~~
- (18) *Sycamore*
- (19) *Tulip Poplar* *
- ~~(20) White Oak~~
- (21) *Willow Oak* *

(D) **E-14 SMALL SHRUBS FOR EVERGREEN SCREENING (AMENDED 05/25/99)**

- (1) *Convexa Japanese Holly*
- (2) *Dwarf Horned Holly*
- (3) *Glossy Abelia*
- ~~(4) *Ilex verticillata*~~
- (5) *Indian Hawthorne* *
- (6) *Japanese Yew*
- ~~(7) Littleleaf Japanese Holly~~

- (8) *Otto Lukeyn Laurel* *
- ~~(9) *Poet's Laurel*~~
- ~~(10) Warty Blueberry~~
- (11) ***Carolina Jessamine*
- (12) ***Trumpet Honeysuckle*

**Vines - which if grown on a trellis would make a nice evergreen screen.

(E) **E-15 LARGE SHRUBS FOR EVERGREEN SCREENING**

- (1) *Anise Bush* *
- ~~(2) Bamboo (Glauceseems)~~
- ~~(3) Burford Holly~~
- (4) *Carolina Cherry-Laurel* *
- (5) *Cleyera* *
- (6) *English Laurel*
- (7) *Fortune Tea Olive*

- ~~(8) *Loblolly Bay*~~
- (9) *Loropetalum* *
- ~~(10) Red Bay~~
- (11) *Schipka Laurel*
- ~~(12) Southern Wax Myrtle~~
- ~~(13) Viburnum Tinus (Lauretinus)~~
- (14) *Yaupon Holly* (standard) *

(F) E-16 ASSORTED PLANTINGS FOR BROKEN SCREENS (AMENDED 5/25/99)

- | | |
|--|--------------------------------------|
| (1) Beautyberry * | (15) Juniper (Pfitzer) * |
| (2) Blueberry | (16) Northern Bayberry |
| (3) <i>Buttonbush</i> | (17) Oakleaf Hydrangea |
| (4) Carolina Allspice (Sweetshrub) | (18) <i>Rhododendrum</i> |
| (5) <i>Carolina Rose</i> | (19) Smoketree |
| (6) Chaste Tree | (20) Star Magnolia (tree) |
| (7) Clethra | (21) <i>Sumac</i> |
| (8) <i>Devil's Walking Stick</i> | (22) <i>Swamp White Oak</i> |
| (9) Doublefile Viburnum | (23) Winter Honeysuckle * |
| (10) Drooping Leucothoe | (24) <i>Viburnum</i> |
| (11) Fringetree | (25) Witch Hazel (Common) |
| (12) Forsythia (Border) | (26) Witch Hazel (Vernal) * |
| (13) Japanese Flowering Apricot (tree) | |
| (14) Judd Viburnum | |

Section 2. Appendix E-17, List of Invasive Plant Species, is amended by the additions (*italic text*) and the deletions (~~strikethrough text~~) to read as follows:

The following plant species shall be prohibited when complying with the shading and landscaping provisions of this chapter.

Species (Latin)	Common Name
<i>Akebia quinata</i>	Chocolate vine
<i>Acer ginnala</i>	Amur Maple
<i>Acer platanoides</i>	Norway Maple
<i>Ailanthus altissima</i>	<i>Tree of Heaven</i>
<i>Ampelopsis brevipedunculata</i>	<i>Porcelainberry</i>
<i>Baccharia halimifolia</i>	<i>Baccharus spp</i>
All <i>Berberis</i> species including	
<i>Berberis julianae</i>	Wintergreen Barberry
<i>Berberis thunbergii</i>	Japanese Barberry
<i>Brousonetia papyrifera</i>	<i>Paper Mulberry</i>
<i>Celastrus orbiculatus</i>	<i>Bittersweet</i>
All <i>Cotoneaster</i> species including	
<i>Cotoneaster microphyllus</i>	Littleleaf Cotoneaster
<i>Cotoneaster horizontalis</i>	Rockspray Cotoneaster
<i>Crataegus monogyna</i>	Singleseed Hawthorn
<i>Crataegus laevigata</i>	English Hawthorn
All <i>Cytisus scoparius</i>	Scotch Broom

Species (Latin)	Common Name
<i>Eleagnus angustifolia</i>	Russian Olive
<i>Eleagnus umbellata</i>	Autumn Olive
<i>Euonymus alatus</i>	Winged Euonymus, Burning Bush
<i>Euonymus japonicus</i>	Japanese Euonymus
<i>Firmiana simplex</i>	Chinese Parasol Tree
<i>Hedera helix</i>	English Ivy
All <i>Ligustrum</i> species including	
<i>Ligustrum japonicum</i>	Japanese Privet
<i>Ligustrum lucidum</i>	Waxleaf Privet
<i>Ligustrum vulgare</i>	European Privet
<i>Ligustrum sinense</i>	Chinese Privet
<i>Ligustrum x vicari</i>	Golden Vicary Privet
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Lonicera maackii</i>	Bush Honeysuckle
<i>Lonicera nitida</i>	Boxleaf Honeysuckle
<i>Lonicera tatarica</i>	Tatarian Honeysuckle
<i>Miscanthus sinensis</i>	Eulalia, Maiden Grass
<i>Mahonia spp</i>	Oregon Grape
<i>Paulownia tomentosa</i>	Princess Tree
<i>Taxus cuspidata</i>	Japanese Yew
<i>Viburnum opulus</i>	European Cranberrybush Viburnum
<i>Vinca major</i>	Large Periwinkle
<i>Vinca minor</i>	Common Periwinkle
<i>Wisteria chinensis</i>	Chinese Wisteria
<i>Wisteria japonica</i>	Japanese Wisteria

E-10 Lists of Recommended Trees and Shrubs

The following lists indicate plantings which will meet the screening and shading requirements of Article XIX of the Land Use Ordinance. The lists are by no means comprehensive and are intended merely to suggest the types of flora which would be appropriate for screening and shading purposes. Plants were selected for inclusion on these lists according to four principal criteria: *i.*) general suitability for the Piedmont section of North Carolina; *ii.*) hardiness/tolerance of city conditions; *iii.*) ease of maintenance; and *iv.*) availability from area nurseries. When selecting new plantings for a particular site, a developer should first consider the type of plants which are thriving on or near the site. Accordingly, species native to North Carolina should often be favored. However, if an introduced species has proven highly effective for screening or shading in Piedmont Towns, it too may be a proper selection.

The plantings marked with an (*) on the following lists are appropriate for planting within plantings strips -- as defined under Section 15-216, Subsection (j).

Sections E-11 through E-16 contain descriptions of the trees and shrubs listed here.

(A) E-11 SMALL TREES FOR PARTIAL SCREENING

- | | |
|----------------------------|--------------------------|
| (1) American Holly | (7) Flowering Dogwood |
| (2) American Hornbeam * | (8) Golden Rain Tree* |
| (3) Carolina Cherry-Laurel | (9) River Birch |
| (4) Crabapple (southern) | (10) Serviceberry * |
| (5) Crape Myrtle * | (11) Sourwood * |
| (6) Eastern Redbud | (12) Washington Hawthorn |

(B) E-12 LARGE TREES FOR EVERGREEN SCREENING

- | | |
|-----------------------|--|
| (1) Canadian Hemlock | (5) Laurel Oak (<i>listed on E-13</i>) |
| (2) Carolina Hemlock | (6) Southern Magnolia |
| (3) Deodar Cedar | (7) Virginia Pine |
| (4) Eastern Red Cedar | |

(C) E-13 LARGE TREES FOR SHADING - The trees on the following list marked with an (*) are appropriate selections to satisfy Section 15-315, Required Trees Along Dedicated Streets

- | | |
|--------------------------|---|
| (1) Ginkgo (male only) * | (7) Red Oak (Eastern) * |
| (2) Honey Locust * | (8) Scarlet Oak * |
| (3) Laurel Oak * | (9) Sweet Gum (<i>rotundifolia</i>) * |
| (4) Littleleaf Linden * | (10) Sycamore |
| (5) London Plane-Tree * | (11) Tulip Poplar * |
| (6) Red Maple | (12) Willow Oak * |

(D) E-14 SMALL SHRUBS FOR EVERGREEN SCREENING (AMENDED 05/25/99)

- | | |
|----------------------------|-------------------------------|
| (1) Convexa Japanese Holly | (6) Littleleaf Japanese Holly |
| (2) Dwarf Horned Holly | (7) Otto Lukeyn Laurel * |
| (3) Glossy Abelia | (8) Warty Barberry |
| (4) Indian Hawthorn * | (9) **Carolina Jessamine |
| (5) Japanese Yew | (10) **Trumpet Honeysuckle |
- **Vines - which if grown on a trellis would make a nice evergreen screen.

(E) E-15 LARGE SHRUBS FOR EVERGREEN SCREENING

- | | |
|------------------------------|----------------------------------|
| (1) Anise Bush * | (7) Fortune Tea Olive |
| (2) Bamboo (Glaucescens) | (8) Loropetalum * |
| (3) Burford Holly | (9) Schipka Laurel |
| (4) Carolina Cherry-laurel * | (10) Viburnum Tinus (Lauretinus) |
| (5) Cleyera * | (11) Yaupon Holly (standard) * |
| (6) English Laurel | |

(F) E-16 ASSORTED PLANTINGS FOR BROKEN SCREENS (AMENDED 5/25/99)

- | | |
|--|-----------------------------|
| (1) Beautyberry * | (11) Judd Viburnum |
| (2) Blueberry | (12) Juniper (Pfitzer) * |
| (3) Carolina Allspice (Sweetshrub) | (13) Northern Bayberry |
| (4) Chaste Tree | (14) Oakleaf Hydrangea |
| (5) Clethra | (15) Smoketree |
| (6) Doublefile Viburnum | (16) Star Magnolia (tree) |
| (7) Drooping Leucothoe | (17) Winter Honeysuckle * |
| (8) Fringetree | (18) Witch Hazel (Common) |
| (9) Forsythia (Border) | (19) Witch Hazel (Vernal) * |
| (10) Japanese Flowering Apricot (tree) | |

E-11 Small Trees for Partial Screening

The following trees are recommended for use in all types of screens. Though smaller than the trees listed in planting lists E-12 and E-13, each of these trees will reach a height of at least 20 feet. Selections marked with an (*) are also recommended as shade trees and may be credited for meeting the 20% shading requirement for paved parking lots.

AMERICAN HOLLY (*Ilex opaca*) Height: 15-30'; Spread: 10-20'.

This familiar native tree possesses a pyramidal evergreen crown with abundant red berries in the winter. It grows best in full sun and prefers moist yet well drained soils. If the lower limbs are allowed to grow naturally, they will branch to the ground. Hollies should be protected from high winds. The American Holly is a relatively slow grower.

***AMERICAN HORNBEAM (*Carpinus carolinia*) Height: 20-30'; Spread: 15-20'.**

This native tree has a natural yet refined appearance. It is slow growing, but at maturity it serves as an excellent small shade tree. Its fluted, "muscular" trunk is an interesting feature. In the wild, the American Hornbeam is common in moist rich soil, yet, when used in landscape design, it is soil tolerant and does not require an unusual amount of water. It has no pests and no special maintenance problems.

CAROLINA CHERRY-LAUREL (*Prunus caroliniana*) Height: 20-30'; Spread: 15-20'.

This tree is prized for its dense evergreen foliage. It may be trimmed as a hedge, but also serves as an excellent screen in its natural form. The Cherry-Laurel grows rapidly and has no pests. However, it may not be as cold hardy as other trees on this list.

CRABAPPLE, SOUTHERN (*Malus*) Height: 15'-30'; Spread 10-20'

Slow to moderate growers, with springtime flowers in colors ranging from pink to red to white. Birds are fond of fruit. Care should be taken when choosing a specific variety to make certain that it is disease resistant. Some disease resistant varieties include 'Adams', 'Callaway', and 'Sentinel'.

CRAPE MYRTLE (*Lagerstroemia indiac*) Height: 15-25'; Spread: 5-15'.

This popular flowering tree is decorative and interesting in all seasons. However, it should not be expected to stand alone as a screen. It is most effective against an evergreen background. It grows best in direct sun and may develop mildew problems when planted in shade. Crape Myrtle may be pruned to a desired shape, but when left on its own it will form a densely branching crown.

EASTERN REDBUD (*Cercis canadensis*) Height: 20-30'; Spread: 12-25'.

This native tree is covered by beautiful pink flowers in the Spring and develops a dense round crown when allowed to grow in direct sunlight. The Redbud has some pests, and its fruit pods may present a litter problems, but it recommends itself by being drought resistant and tolerant of polluted city air.

***FLOWERING DOGWOOD (*Cornus florida*) height: 15-30'; Spread: 15-20'.**

The Dogwood is a native woodland tree which is very popular for landscape planting. It is considered to be a fairly hardy tree, but, when planted in direct sun, it must be frequently watered. A healthy Dogwood will develop attractive horizontal branches and bushy crown. Dogwoods look best when planted in groups or when used as an accent in borders. These trees should be guarded against borers and other pests.

GOLDEN RAIN TREE (*Koelreuteria paniculata*) Height: 20-30'; Spread: 15- 20'.

This is an extremely hardy tree, tolerant of city conditions, drought resistant, and capable of growth in most kinds of soil. It bears beautiful yellow flowers and interesting seed pods on its rounded crown. The Golden Rain Tree is a rapid grower but is relatively short lived.

RIVER BIRCH (*Betula nigra*) Height: 20-40'; Spread: 8-16'.

The River Birch is a native tree which usually grows along stream banks. In landscape design, it is adaptable to either high or low locations, but still requires a lot of moisture. This tree has an interesting, papery bark and a graceful branching habit. It has no special pest or maintenance problems.

SERVICEBERRY (*Amelanchier canadensis*) Height: 10'-20'; Spread 8-15'

An upright shaped tree with a moderate growth rate. Serviceberry will thrive in sun or partial shade. White springtime flowers. Tolerant of most soil types, Serviceberry looks good planted along the edge of woods.

SOURWOOD (*Oxyndrum arboreum*) Height: 20-30'; Spread: 10-15'.

Sourwoods are handsome native trees which are most effective in landscape design when planted in groups. They are easy to transplant and as each tree matures it assumes a slender form with upright branches. Sourwood prefers relatively dry acid soils. Its only special maintenance problems may be infestations of webworms.

WASHINGTON HAWTHORN (*Crataegus phaenophyrum*) Height: 25-30'; Spread: 25-30'.

Hawthorns generally require spraying to prevent disease and insect infestation. However, they are an excellent choice for screening because of their extremely dense and thorny branches. They have proven to be excellent as a headlight screen on highway medians and, when planted close together, they form an impenetrable living fence. They prefer sun and are tolerant to most types of soil. The Washington Hawthorn is generally considered to be the best of the Hawthorns.

E-12 Large Trees for Evergreen Screening

The following trees are ideal for screening large scale areas such as shopping centers and industrial sites. They are also effective in combination with other, smaller screening plants. All three are moderate to fast growers. They are not considered to be shade trees.

CANADIAN HEMLOCK (*Tsuga canadensis*) - Height 30'-80'; Spread 15-30'.

A dense, pyramidal shaped tree with fine, dark green foliage, this evergreen makes an excellent screen. Will grow in shade or partial shade with well drained, acidic soil preferred. Comes in many different varieties.

CAROLINA HEMLOCK (*Tsuga caroliniana*) Height: 30-70'; Spread: 20'+.

This native of rocky locations in the North Carolina mountains adapts well to city locations. It may be sheared or pruned to any shape, but when it grows naturally, its graceful branches form an excellent high screen. The Hemlock prefers cooler, partially shaded locations and does best in highly fertile soils. It grows quite rapidly.

DEODAR CEDAR (*Cedrus deodara*) Height: 40-150'; Spread: 30'+.

The Deodar Cedar is a useful and attractive evergreen. It should be allowed plenty of room in order to assume its beautiful natural form. Its pendulous branches should be allowed to touch the ground. It prefers relatively dry soils, grows rapidly, and is easy to maintain. "True Cedars" such as the Deodar are not native to North America, but they have become quite popular in the South as a landscape tree.

EASTERN RED CEDAR (*Juniperus virginiana*) - Height 60'; Spread 15-20'.

This is a native evergreen tree that is very hardy in the area. Mature specimens have interesting bark. Has waxy fruit that birds enjoy. Slow growth.

LAUREL OAK (*Quercus laurifolia*) Height: 40-60'; Spread: 30'+.

The Laurel Oak grows more slowly than the other Oaks listed above, but it has the advantage of being nearly evergreen in Piedmont sections of North Carolina. It has proven to be a good street tree and does quite well under city conditions. It presents no special maintenance problems.

SOUTHERN MAGNOLIA (*Magnolia grandiflora*) Height: 40-60'; Spread: 25'+.

Magnolias are striking trees which serve well as screens when their branches are allowed to grow to the ground. Generally, the tree does well in city conditions, but it should be planted in quite rich acidic soils and it requires a lot of moisture. Furthermore, Magnolias require ample space for growth. If planted in full sunlight, they will grow rapidly. Because it drops large waxy leaves, seed pods, and flowers, the Magnolia may present a litter problem.

VIRGINIA PINE (*Pinus virginiana*) - Height 60'; Spread 25-35'.

A native of the area, Virginia Pine is a short needled tree that is very tolerant of clay soils. More resistant to winter weather conditions than Loblolly Pine.

E-13 Large Trees for Shading

The following trees may be used for screening, but they are recommended especially for shading streets and parking lots. Unless otherwise noted, they will grow rapidly. Each species will attain a mature spread of at least thirty feet. The trees on the following list marked with an "*" are appropriate selections to satisfy Section 15-315, Required Trees Along Dedicated Streets.

***EASTERN RED OAK (*Quercus rubra*) Height: 50-70'; Spread: 40'+.**

This tree grows faster than any other Oak, two feet or more per year. It is prized as a street tree because its high branching habit gives it an ideal shape. The Red Oak grows in almost any average soil and presents no special maintenance problems.

***GINKGO OR MAIDENHAIR TREE (*Ginkgo biloba*) Height: 40-80'; Spread: 30'+.**

The Ginkgo is a tree which is recommended for several outstanding reasons. It is one of the oldest surviving species of trees. It is adaptable to any soil, climate, or degree of exposure to the sun. It does quite well in the city. It has no pests, no diseases, and no pruning requirements. In sum, it is a tree of exceptional vitality. The N.C. Department of Forest Resources calls the Ginkgo, probably the best all around street tree. Two reservations are worth stating, however. First, only male trees should be planted because female Ginkgos bear a messy, malodorous fruit. Second, the Ginkgo is a slow grower. When young, it has a rather gangly appearance. It takes 20 to 30 years to assume its mature, symmetrically spreading form.

***HONEY LOCUST (*Gleditsia triacanthos*) Height: 50-75'; Spread: 25'+.**

Its open, spreading form and feathery leaves may give the Honeylocust a frail appearance, but it is in fact a quite sturdy tree, notable for its resistance to storm damage. It is a native tree which is drought resistant and adaptable to city conditions. Grass and shrubs thrive beneath a Honeylocust because it casts light shade. This tree is especially useful for its ability to be transplanted at a relatively advanced age. Accordingly, it may be used for immediate effect in a landscape design. The Honeylocust has its pests and diseases, but it is fairly hardy. Thornless and fruitless varieties such as "Moraine" are recommended.

***LAUREL OAK (*Quercus laurifolia*) Height: 40-60'; Spread: 30'+.**

The Laurel Oak grows more slowly than the other Oaks listed above, but it has the advantage of being nearly evergreen in Piedmont sections of North Carolina. It has proven to be a good street tree and does quite well under city conditions. It presents no special maintenance problems.

***LITTLELEAF LINDEN (*Tilia cordata*) Height: 30-50'; Spread: 25'+.**

Lindens are notable for their exceptional symmetry and their ability to grow in poor soils. The Littleleaf Linden requires plenty of moisture, but it has proven to be useful for city planting and is especially recommended as a street tree. With its many thick branches and abundant foliage, the Linden provides very dense shade. It should be sprayed for aphids in order to prevent sticky droppings from the leaves.

***LONDON PLANE-TREE (*Platanus acerifolia*) Height: 70-100'; Spread: 30'+.**

The London Plane-Tree is excellent for streets and parking lots for a variety of reasons. It puts out its branches high enough above the ground so as not to obstruct traffic. Its broadly spreading crown makes it especially useful along wide streets. The London Plane is one of the world's hardiest trees in polluted air. Although it needs plenty of sun and moisture, it is undemanding about soil. Finally, it is very long lived. The London Plane-Tree is a hybrid of the Sycamore, and like the Sycamore, it may suffer from certain diseases. However, it is more resistant to leaf blight than the Sycamore.

RED MAPLE (*Acer rubrum*) Height: 40-50'; Spread: 25'+.

This tree is an example of a Maple which is not recommended where there will be high concentrations of air pollution. However, with its excellent shading characteristics and beautiful colors, it should not be ignored. This tree grows rapidly, but unlike the Norway Maple, it does not become brittle with age. The Red Maple is a native tree which is usually found in moist, even swampy areas, but it adapts well to a variety of situations. Although subject to Maple insects and diseases, it is usually a long lived tree.

***SCARLET OAK (*Quercu Coccinea*) Height: 60-80'; Spread: 40'+.**

This is a third Oak which grows rapidly and is easy to maintain. The Scarlet Oak is more difficult to transplant than the Red or the Willow, but it may be a worthwhile selection for its excellent foliage.

***SWEET GUM (*Liquidamber styraciflua*) Height: 60-100'; Spread: 50'+.**

The Sweet Gum is a native bottomland tree which adapts to a variety of soils. Its dense foliage and balanced form make it an excellent shade tree for large open areas. The Sweet Gum needs sun and plenty of room to achieve maximum size and beauty. In the fall, its leaves turn a brilliant wine and gold color. Other than clean up of its prickly seed balls, the Sweet Gum poses no special maintenance problems.

SYCAMORE (*Platanus occidentalis*) Height: 70-100'; Spread: 60'+.

The Sycamore is probably the fastest growing shade tree on this list. Within ten years, it can grow to a height of between thirty and forty feet. It is easily transplanted, but it needs plenty of space. As one of nature's most massive trees, Sycamores have been known to grow to a height of 170 feet with a trunk 10 feet across. The Sycamore is a native tree which typically grows in flood plains, but it thrives in a variety of situations. Its tolerance of severe conditions has long made it a favorite choice as a street tree. Sycamores are susceptible to fungi and leaf blight and their large leaves and seed balls may present a litter problem.

***TULIP POPLAR (*Liriodendron tulipifera*) - Height 60'-150'; Spread 30-40'.**

Very common in eastern woodlands, this is a rapidly growing tree with colorful yellow leaves in Fall. Spring flowers, however, are not very noticeable. Difficult to transplant except when young. Excellent street tree.

***WILLOW OAK (Quercus phellos) Height: 60-80'; Spread: 30'+.**

This is another rapidly growing Oak. It has proven to be quite successful as a street and parking lot tree in the Carrboro area. Its slender leaves give it a finer texture than that of other Oaks, but it still casts excellent shade. The Willow Oak is native to bottomland soils, and thus it needs plenty of moisture. It often spreads majestically as it matures so it should be given ample room to grow. No significant pests or diseases afflict the Willow Oak.

E-14 Small Shrubs for Evergreen Screening

The following shrubs are recommended for informal (unclipped) hedges or screens. Each species grows to a height of less than six feet; therefore, these shrubs are appropriate for Semi-Opaque Screens.

CAROLINA JESSAMINE* (*Gelsemium sempervirens*) - Height up to 20'; Spread varies.

A moderate growing, mostly evergreen vine that grows very well on fences. Fragrant yellow flowers in springtime. Prefers sun or partial shade. All parts of this plant are poisonous.

CONVEXA JAPANESE HOLLY (*Ilex crenata* 'convexa') Height: 4-6'; Spread: 3-5'.

The Convexa Japanese Holly is another good Boxwood substitute. This shrub is considered to be one of the most attractive, hardy and serviceable Hollies for landscape use. It is attractive in either a clipped or unclipped form. It grows faster than the Littleleaf Japanese Holly.

DWARF HORNED HOLLY (*Ilex cornuta* 'rotunda') Height: 3'; Spread: 3-4'.

This shrub is an excellent selection for a low hedge. It is soil tolerant and requires no pruning or other special care once established. With its spiny leaves, this plant appears to be and is in fact rugged. Like all Hollies, it grows best in full sun, but unlike others of its species, it produces bright red berries without both sexes being present.

GLOSSY ABELIA (*Abelia grandiflora*) Height: 4-6'; Spread: 3-5'.

Abelia is quite common in local nurseries and tends to be less expensive than other shrubs on this list. It bears pale pink flowers throughout the summer. Although it has proven quite popular for informal hedges, it has several drawbacks. Abelia should be pruned and thinned to maintain its best form. It may drop its leaves due to low temperatures, lack of pruning, or starvation.

INDIAN HAWTHORN (*Raphiolepis indica*) Height: 3-4'; Spread: 4-5'.

With its spreading, irregular branching, the India Hawthorn makes an excellent informal hedge. It is tolerant of a variety of soils and is fairly drought resistant. However, it may not be as cold tolerant and pest resistant as other shrubs on this list.

JAPANESE YEW (*Taxus cuspidata*) Height: 4-6'; Spread: 5-7'.

The versatile Yew is commonly available from local nurseries in a wide variety of sizes and shapes. The Japanese Yew serves as excellent screening material in either a clipped or unclipped form. It tolerates poor growing conditions and flourishes in almost any kind of soil. (Soggy soil may hamper its growth, however.) It is comparatively pest free and is hardy under trying winter conditions. The Yew's best feature is its rich shiny green needles which grow densely on all varieties.

LITTLELEAF JAPANESE HOLLY (*Ilex crenata* 'microphylla') Height: 4-6'; Spread: 5-7'.

This holly is a good substitute for the more finicky and often more expensive Boxwood. It withstands pruning, but is quite attractive in its natural form. Although considered to be slow growing, it will form a stiff 6-foot-tall hedge within ten years. The Littleleaf Japanese Holly grows well in both sun and shade and does well in city conditions.

OTTO LUKEYN LAUREL (*Prunus laurocerasus* var. 'Otto Lukeyn') - Height 4'; Spread 4-7'.

A cold hardy, broad leaved evergreen shrub. Prefers sun, but will grow in fairly shady conditions. Good green color even in winter. This is a shorter growing variety of the Schipka Laurel.

TRUMPET HONEYSUCKLE* (*Lonicera sempervirens*) - Height up to 50'; Spread varies.

A rapid growing, mostly evergreen vine with beautiful orange to red to yellow flowers occurring in late spring and throughout the summer. Best in full sun.

WARTY BARBERRY (*Berberis verruculosa*) Height: 3-4'; Spread: 3-4'.

Barberrys as a group have proven to be excellent as hedge plants. With their dense, spiny limbs, they are effective barriers in public places. The Warty Barberry is a shrub with a neat, compact habit. It is soil tolerant and has no special maintenance requirements. It grows slowly, but it will reach a height of 3 to 4 feet within five years.

WINTERGREEN BARBERRY (*Berberis julianae*) Height: 4-6'; Spread: 2-5'.

This is another Barberry which forms an impenetrable thorny hedge. In fact, it grows even more densely than the Warty Barberry. It is pest resistant and is very hardy. No pruning is required. Because it is fairly slow growing, it will take eight to ten years to reach a height of 5 to 6 feet.

Note: * Vines - which if grown on a trellis would make a nice evergreen screen.

E-15 Large Shrubs for Evergreen Screening

The following shrubs are recommended for high hedges or screens. Each species grows to a height of more than 6 feet; therefore, these shrubs are appropriate for Opaque Screens.

ANISE BUSH (*Illicium anisatum*) - Height 8-12'; Spread 8-10'.

moderate growing, evergreen shrub with an open habit. Small flowers appear in mid-Summer. Prefers a fair amount of moisture, with partial to full sun. Subject to damage during very cold winters.

BURFORD HOLLY (*Ilex cornuta* 'Burfordii') Height: 8-15'; Spread: 6-8'.

The Burford Holly has been called "one of the best and most serviceable of all broad leaved evergreens for general planting in the South." It is soil tolerant, grows rapidly, requires no pruning, and usually has no pest problems. Its dark green leaves lack the usual Holly spines.

CAROLINA CHERRY-LAUREL (*Prunus caroliniana*) Height: 20-30'; Spread: 15-20'.

This tree is prized for its dense evergreen foliage. It may be trimmed as a hedge, but also serves as an excellent screen in its natural form. The Cherry-Laurel grows rapidly and has no pests. However, it may not be as cold hardy as other trees on this list.

CLEYERA (*Cleyera japonica*) - Height 8-10'; Spread 5-6'.

A slow-moderate growing evergreen shrub. Its new foliage is reddish in color, like the Photinia. However, unlike the Photinia, Cleyera is much more disease resistant and thus a better option. Prefers shade or partial shade, with moist, but well drained soil.

ENGLISH LAUREL (*Prunus laurocerasus*) - Height 10-12'; Spread 8-11'.

A large leaved, evergreen shrub with moderate growth. Prefers well drained soils. Grows best in sun or partial shade, but will survive in shade. Cold hardy. Makes an excellent evergreen screen.

FORTUNE TEA OLIVE (*Osmanthus fortunei*) Height: 9-12'; Spread: 5-7'.

This Osmanthus hybrid is a popular, though non-descript, shrub. With its vigorous growth, it will form an excellent screen or border. It is soil tolerant. The Fortune Tea Olive is most notable for its inconspicuous yet highly fragrant flowers.

HEDGE BAMBOO (*Bamboo multiplex*) Height: 10-12'; Spread: 4-6'.

Hedge Bamboo grows rapidly yet is more easily confined to a limited area than most types of Bamboo. It is adaptable to a variety of situations, but requires plenty of water. For best effect as a screen, Hedge Bamboo should be stagger planted.

LAURETINUS VIBURNUM (*Viburnum tinus*) Height: 10-12'; Spread: 10-12'.

This Viburnum is prized for its luxuriant dark green foliage. It is valuable for screens and, though sometimes clipped as a formal hedge, it can remain uncut for years and still keep its good form. It grows best in medium fertile soils and prefers dry conditions in the late summer. All Viburnums withstand city conditions well.

LOROPETALUM (Loropetalum chinese) - Height 6-10'; Spread 8-9'.

Fast growing evergreen shrub with colorful Spring flowers. Prefers sun or partial sun, in moist, but well drained soil. Excellent substitute for Photinia. Variety 'rubrum' has purplish leaves.

SCHIPKA LAUREL (Prunus laurocerasus 'shipkaensis') - height 6-8'; spread 3-5'.

A cold hardy, broad leaved evergreen shrub. Prefers sun, but will grow in fairly shady conditions. Good winter color.

YAUPON HOLLY (Ilex vomitoria) Height: 5-15'; Spread: 6-12'.

This is another versatile Holly, slower growing than the Burford, but equally as adaptable to adverse conditions. It is a native shrub which has proven to be one of the most drought resistant of all Hollies. It may be clipped to maintain any desired height. The Yaupon Holly is very heavily fruited and will attract birds.

E-16 Assorted Plantings for Broken Screens

The following is a sampling of shrubbery which would be appropriate in a Broken Screen. Because many of these plants are deciduous, they are not suitable for Opaque and Semi-Opaque Screens. (Note: Many of the evergreen shrubs described in planting lists E-14 and E-15 are also suitable for Broken Screens.)

BEAUTYBERRY (*Callicarpa americana*) - Height 6'.

Very colorful deciduous shrub with springtime flowers, followed by purple fruit which lasts into winter. Prefers full sun.

BLUEBERRY (*Vaccinium ashei*) - Height 4-6'; Spread 3-5'.

Also known as Rabbiteye blueberry, this is a heat tolerant, native shrub. White flowers in springtime followed by blue fruits that birds enjoy. Has a moderate growth rate. This shrub prefers well drained, acid soil.

BORDER FORSYTHIA (*Forsythia intermedia*) Height: 8-10'; Spread: 7- 10'.

Forsythias are well known shrubs which bloom bright yellow quite early in the Spring. There are two commonly available forms of this shrubs: the weeping *Forsythia suspensa* and the more upright *Forsythia intermedia*. The latter is preferred for screening purposes. With its graceful branches, the Border Forsythia presents a good deciduous foliage mass and should be given plenty of room to grow. It transplants easily and withstands poor growing conditions. It should be thinned occasionally to ensure vigorous growth.

CAROLINA ALLSPICE OR SWEETSHRUB (*Calycanthus floridus*) - Height 6-9'; Spread 5-8'.

This is a deciduous shrub native to the Southeast. Fragrant, maroon flowers appear in late Spring. Takes sun or shade.

CHASTE TREE (*Vitex agnus-castus*) - Height 10-12'; Spread 8-12'.

Fast growing deciduous shrub or small tree with purple flowers in mid-Summer. Has aromatic foliage. Thrives in hot weather. Prefers full or partial sun. Variety 'Alba' has white flowers.

CLETHRA (*Clethra alnifolia*) - Height 10'.

Another native of the Eastern United States, Clethra has fragrant white flowers in late Summer. Grows well in acid soils. Full sun, however in the Piedmont it would do best with some shade. Varieties are available with pink flowers.

COMMON WITCH HAZEL (*Hamamelis virginiana*) Height: 8-15'; Spread 7-14'.

This shrub is a larger version of Vernal Witch Hazel with many of the same qualities. It is another native woodland plant which has adapted well to landscaping uses. The Common Witch Hazel is recommended for shady areas, but when planted in the sun it grows to be a splendid well rounded specimen. It is especially useful in large areas.

DOUBLEFILE VIBURNUM (*Viburnum plicatum tomentosum*) Height: 8-10; Spread: 8-10'.

The Doublefile Viburnum grows larger than the Judd and is noted for its strong horizontal branching habit. It is a very serviceable accent plant in shrub borders. The Doublefile Viburnum should be carefully watered in periods of extended drought.

DROOPING LEUCOTHOE (*Leucothoe fontanesiana*) Height: 3-4'; Spread: 4-6'.

Drooping Leucothoe is a moundlike shrub which is good for planting in front of and between other flora and beneath trees. It is hardy in city conditions and gives a natural effect when planted along borders. This native evergreen is graceful and attractive in all seasons. It is easy to transplant but requires a heavy mulch and should be provided with at least partial shade. Old branches should be pruned occasionally to stimulate new growth.

FRINGETREE (*Chioanthus virginicus*) Height: 10-30'; Spread: 8-10'.

The Fringetree is known for its profusion of beautiful flowers. It is considered to be one of the most striking native American shrubs. It is relatively difficult to transplant, but once established it does well in cities as it endures heavy smoke and dust. The mature Fringetree's only drawback is that its leaves appear rather late in the Spring.

JAPANESE BARBERRY (*Berberis thunbergii*) Height: 3-5'; Spread: 3- 5'.

This extremely common deciduous shrub is considered to be one of the toughest members of the Barberry family. It survives drought, poor soils, exposures, and the worst city conditions. With its many thorns, the Japanese Barberry is often used as an impenetrable barrier, but it is attractive enough to stand alone as a specimen plant. It requires no special maintenance and, when planted singularly, needs no pruning.

JAPANESE FLOWERING APRICOT (*Prunus mume*) - Height 15' (tree).

Deciduous tree with small, but profuse flowers that have a spicy fragrance. Blooms in February or March. Varieties are available with pink, red, or white flowers. Prefers full sun or partial shade.

JUDD VIBURNUM (*Viburnum juddii*) Height: 8'; Spread: 6'.

Viburnums are sturdy shrubs which are commonly available in area nurseries. The Judd Viburnum is rounded and dense. It bears loose clusters of fragrant white flowers in the early Spring. If given plenty of water, it will grow rapidly. Its fall fruit is attractive to birds.

NORTHERN BAYBERRY (*Myrica pennsylvanica*) Height: 3-6'; Spread: 3- 8'.

This shrub, often used for windbreaks at the beach, is also effective for shrub masses in Piedmont areas. Its ability to tolerate salt and sand translates into an ability to withstanding the rigors of city life. Bayberry normally forms a dense, spreading mount. While it is evergreen at the shore, it may annually drop its leaves in less temperate climates.

OAKLEAF HYDRANGEA (*Hydrangea quercifolia*) - Height 4-6'; Spread 3-5'.

Deciduous shrub with large, white flower clusters during the Summer. Colorful crimson foliage in Fall. Makes an excellent specimen plant.

PFITZER JUNIPER (*Juniperus chinensis* "Pfitzeriana") Height: 4-6'; Spread: 6-9'.

This evergreen is recommended for Broken Screens rather than full fledged hedges because its form lends itself to massing rather than row planting. Pfitzer Juniper has been known to grow 6 feet high and spread 10 to 15 feet within ten years. Thus it should be given plenty of room to grow. Despite its exotic appearance, it is a commonly used landscape plant. Junipers, as a group, withstand hot, poor, dry soils of city areas probably better than any other evergreens. However, they do suffer from certain pest problems and should therefore be watched closely once they are planted.

SMOKETREE (*Cotinus coggygria*) - Height 10-15'; Spread 8-14'.

Large shrub or small deciduous tree with attractive round leaves. Colorful lavender panicles appear in Summer. Prefers well drained soil, but otherwise does well in poor soils. Full sun is best for this shrub.

STAR MAGNOLIA (*Magnolia stellata*) Height: 10-12'; Spread: 8-10'.

This handsome specimen shrub is considered to be the hardiest of all the Magnolias. It forms a broad, rounded mass. It becomes tree-like with age but continues to branch to the ground. Early in the spring, it produces numerous fragrant white flowers. The Star Magnolia should not be planted adjacent to shallow rooting trees. It should be allowed plenty of sun.

VERNAL WITCH HAZEL (*Hamamelis vernalis*) Height: 4-6'; Spread: 2- 3'.

This rapidly growing native shrub is excellent for bordering and naturalizing. It assumes a dense, upright form, thriving in even the most polluted air. Other than plenty of watering, the Vernal Witch Hazel requires no special maintenance.

WINTER HONEYSUCKLE (*Lonicera fragrantissima*) Height: 6-8'; Spread: 6-8'.

The only resemblance between this shrub and the more familiar Honeysuckle vine is its extremely fragrant flowers. The Winter Honeysuckle has leathery semi-evergreen leaves and assumes a globe shape as it rapidly grows. It is a tough plant, soil tolerant and virtually maintenance free.

E-17 List of Invasive Plant Species

The following plant species shall be prohibited when complying with the shading and landscaping provisions of this chapter.

Akebia quinata	Chocolate vine
Acer ginnala	Amur Maple
Acer platanoides	Norway Maple

All Berberis species including	
Berberis julianae	Wintergreen Barberry
Berberis thunbergii	Japanese Barberry

All Cotoneaster species including	
Cotoneaster microphyllus	Littleleaf Cotoneaster
Cotoneaster horizontalis	Rockspray Cotoneaster
Crataegus monogyna	Singleseed Hawthorn
Crataegus laevigata	English Hawthorn
All Cytisus scoparius	Scotch Broom
Eleagnus angustifolia	Russian Olive
Eleagnus umbellata	Autumn Olive
Euonymus alatus	Winged Euonymus, Burning Bush
Euonymus japonicus	Japanese Euonymus
Hedera helix	English Ivy

All Ligustrum species including	
Ligustrum japonicum	Japanese Privet
Ligustrum lucidum	Waxleaf Privet
Ligustrum vulgare	European Privet
Ligustrum sinense	Chinese Privet
Ligustrum x vicari	Golden Vicary Privet
Lonicera maackii	Bush Honeysuckle
Lonicera nitida	Boxleaf Honeysuckle
Lonicera tatarica	Tatarian Honeysuckle
Miscanthus sinensis	Eulalia, Maiden Grass
Taxus cuspidata	Japanese Yew
Viburnum opulus	European Cranberrybush Viburnum
Vinca major	Large Periwinkle
Vinca minor	Common Periwinkle