

# LANDSCAPE TREES AND THEIR SUSCEPTIBILITY TO INVASIVE INSECTS



ASIAN LONGHORNED BEETLE



HEMLOCK WOOLLY ADELGID



EMERALD ASH BORER



ELONGATE HEMLOCK SCALE

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## In recent years several exotic insects have either entered NH or are nearby on our doorsteps.

Native plants have no natural defenses against exotic insects, which makes these invasive pests so devastating and able to spread so rapidly once they are introduced. These invaders include the Asian longhorned beetle (ALB), emerald ash borer (EAB), hemlock woolly adelgid (HWA), and elongate hemlock scale (EHS). All four insects are pests of forest and landscape trees, and they will have economic impacts on the landscape and economy of New Hampshire.

New Hampshire is more than 80% forested. The New Hampshire forest, tourist, maple syrup, landscape, and nursery industries are valued at more than \$2 billion a year and provide 15,000 jobs. Additionally, invasive insects may severely impact native and natural forest areas, interrupting natural succession, opening areas up to non-native invasive plants, and subsequently disrupting the ecology and food web. We must do our best to prevent the invasion of the harmful exotic insects that aren't yet here, like the ALB, and manage those that are, including the EAB, HWA and EHS.

The ALB isn't currently known to be in New Hampshire, but it has been detected as close by as Worcester, MA, and in the Boston metropolitan area. In an attempt to eradicate ALB in Worcester, thousands of host trees were removed and chipped. The eradication process is ongoing.

The EAB attacks all species of ash (*Fraxinus* spp.) trees. Since its initial detection in Michigan in 2002, it has spread across the Midwest, killing millions of trees. The EAB was first found in New Hampshire in March 2013 and it continues to spread within the state. Unlike the ALB, the EAB isn't a pest targeted for eradication, but it can be managed to slow its spread, reducing the economic burden associated with this insect.

The HWA and EHS are two insects that have begun to spread in New Hampshire. The HWA was first detected in 2000 and is spreading throughout southern and central New Hampshire. The EHS was first detected in 2008 and is mostly located in a few areas in south central NH.

Both pests can be transported by birds, and infestation with either pest can cause tree mortality. Neither the HWA nor the EHS can be eradicated. However, you shouldn't be discouraged

from buying hemlocks since HWA or EHS might not infest your tree. If your tree is infested, there are management options available and biological controls may be developed in the future.

This publication isn't meant to discourage the purchase of susceptible trees, but to inform the consumer of the relative risks. In addition to the four invasive insects already mentioned, this publication also lists other key pests and diseases that may significantly affect the health and aesthetic quality of these plants if they become infested. With this knowledge, consumers can weigh the many benefits of trees against the risk of damage or loss due to these insects and diseases. Promoting biodiversity through planting and maintaining mixed species is our best defense against widespread pest epidemics.

This fact sheet lists some native and adapted recommended trees for New Hampshire and rates their susceptibility to attack by the ALB, EAB, HWA, and EHS as well as other pests and diseases.

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Genus	Species	Common Name	Mature size (ht x width, in feet)	Light	Soil/Site	USDA Cold Hardiness Zone	NH Native?	Pest Susceptibility Ranking (2-0)				Other Key Pests and Diseases	Other Notes
								ALB	EAB	HWA	EHS		
<b>FLOWERING TREES</b>													
Amelanchier	species and hybrids	Serviceberry, Juneberry	25 or under	FS-PS	MS	3(4)	yes	0	0	0	0	mites, Japanese beetle, Gymnosporangium rusts	Edible fruit, orange-red fall foliage
Cercis	canadensis	Eastern redbud	25 x 25	FS-PS	MS, WDS	4	no	0	0	0	0	spider mite, leafhoppers, scales, stem canker, Verticillium wilt	Beautiful reddish-pink bloom before leaves appear in spring; hardiness depends on seed source and microclimate
Chionanthus	virginicus	White fringetree	20 x 20	FS-PS	MS, W	4	no	0	1	0	0	mites	Large shrub or small tree; host suitability information for EAB is pending
Cornus	alternifolia	Pagoda dogwood	25 x 30	FS-S	MS	3	yes	0	0	0	0	borers, sawfly	Good for naturalizing; small white flowers, red-black fruit, reddish fall foliage
Cornus	kousa	Kousa dogwood	30 x 30	FS-PS	WDS	5	no	0	0	0	0	borers, sawfly	Creamy white flowers, red fruit; more hardy and not as disease-prone as flowering dogwood (C. florida)
Crataegus	viridis 'Winter King'	Green hawthorn, Winter king	20 x 20	FS	WDS, DT	4	no	0	0	0	0	lacebug, borer, aphids, Japanese beetle, Gymnosporangium rusts	White flowers, small red fruit, peeling bark
Magnolia	stellata	Star magnolia	20 x 15	FS	MS	5	no	0	0	0	0	scale	Beautiful early spring blooms can be destroyed by late frost
Malus	species and hybrids	Crabapple	25 x 25 (varies w cultivar)	FS	WDS	3-5	no	0	0	0	0	tent caterpillars, webworms, Japanese beetle, aphids, borers, mites, apple scab, fire blight, powdery mildew	Flowers white or pink; fruit red or gold; plant disease-resistant cultivars
Prunus	cerasifera	Purple leaf plum	20 x 10	FS	WDS	5	no	0	0	0	0	Japanese beetle, monilinia blight	Hardest of the flowering plums; use only in southern NH; may be short-lived
Prunus	sargentii	Sargent cherry	40 x 35	FS	WDS	4	no	0	0	0	0	tent caterpillar, webworm, borer, lacebug	Large pink flowers in spring, bronze fall foliage, shiny bark
Sorbus	alnifolia	Korean mountain ash	40 x 30	FS	WDS	3	no	1	0	0	0	borers, fire blight, Japanese beetle	White flowers in spring, golden fall foliage
Syringa	reticulata	Japanese tree lilac	30 x 20	FS	WDS	3	no	0	0	0	0	scales, borers, leafminers, webworm	Large white flower panicles; not fragrant like common lilac
<b>SHADE OR SPECIMEN TREES</b>													
Acer	ginnala	Amur maple	20 x 20	FS-PS	WDS, DT, ST	3	no	2	0	0	0	aphids, leafhoppers	Small leaves, red fall foliage
Acer	griseum	Paperbark maple	30 x 20	FS	WDS	5	no	2	0	0	0	aphids, leafhoppers	Peeling cinnamon/copper bark; good for small space
Acer	palmatum	Japanese maple	25 x 25 or less	FS-PS	MS, WDS	5	no	2	0	0	0	aphids, leafhopper, Verticillium wilt	Green or red leaves; only a few cultivars are cold hardy for NH; best in protected sites
Acer	rubrum	Red maple, Swamp maple	70 x 40	FS-PS	W	3	yes	2	0	0	0	aphids, leafhoppers, anthracnose	Trees appear red when in bloom in early spring

**KEY**

**LIGHT**  
**FS** full sun  
**PS** partial sun/shade  
**Sh** shade

**DT** drought tolerant  
**MS** moist soils  
**ST** salt tolerant

**SOIL/SITE**

**W** good for wet areas  
**WDS** well-drained soils

**PEST SUSCEPTIBILITY RANKING (2-0)**

**2=** good host      **0** = not a known host  
**1=** occasional host

Footnote:

<sup>1</sup> Find your plant hardiness zone at <http://planthardiness.ars.usda.gov/>

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<b>SHADE OR SPECIMEN TREES cont.</b>													
Acer	saccharum	Sugar maple, Rock maple	100 x 75	FS-PS	WDS	4	yes	2	0	0	0	aphids, leafhoppers, anthracnose	Yellow-orange fall foliage; susceptible to salt injury near roads
Betula	nigra	River birch	70 x 50	FS	MS, W	3	no	2	0	0	0	Japanese beetle, gypsy moth, leafhoppers	Attractive peeling bark; yellow fall foliage; deer resistant
Betula	papyrifera	Paper birch, canoe birch	70 x 50	FS	MS, WDS, ST	2	yes	2	0	0	0	borers, leafminers, Japanese beetle, gypsy moth, leafhoppers, anthracnose	White papery bark and yellow fall foliage
Carpinus	caroliniana	American hornbeam, Blue beech	25 x 25	FS-S	MS	3	yes	0	0	0	0		Slow-growing, bluish gray bark, yellow-orange fall foliage
Cercidi- phyllum	japonicum	Katsuratree	50 x 30	FS	MS	4	no	1	0	0	0		Leaves yellow in fall; deer resistant
Celtis	occidentalis	Common hackberry	60 x 60	FS		3	yes	1	0	0	0	galls	Tolerates wind and adverse conditions
Cladrastis	kentukea	American yellowwood	50 x 50	FS	WDS	4	no	0	0	0	0	scales, borers, leafminers, webworm	Fragrant white flowers in spring, yellow leaves in fall
Fagus	grandifolia	American beech	70 x 50	FS	WDS	4	yes	0	0	0	0	beech bark disease, beech scale, aphids, Phytophthora canker	Slow-growing but massive when mature; European beech is similar but has some purple-leaf or weeping cultivars
Fraxinus	pennsylvanica	Green ash	60 x 50	FS	W, DT, ST	3	yes	1	2	0	0	plantbug, lacebug, ash decline, anthracnose	Seedless selections preferred; yellow fall foliage
Ginkgo	biloba	Ginkgo	80 x 40	FS	ST, DT	4	no	0	0	0	0		Slow-growing; plant male trees only to avoid malodorous, messy fruit; yellow fall foliage
Gleditsia	triacanthos inermis	Thornless, common honeylocust	70 x 70	FS	WDS, ST, DT	4	no	0	0	0	0	webworm, mites, plantbug, gall midge	Adaptable
Gymnocladus	dioicus	Kentucky coffeetree	75 x 50	FS	DT	3	no	0	0	0	0		Use male cultivar to avoid messy pods/seeds (which may be toxic)
Liriodendron	tulipifera	Tuliptree	90 x 50	FS	WDS	4	no	0	0	0	0	aphids, scale	Use only in large areas; tulip-like flowers are attractive but very high up in tree
Nyssa	sylvatica	Tupelo, black gum	50 x 30	FS-PS	MS, ST	4	yes	0	0	0	0	leafminer, scale	Attractive, slow-growing tree, excellent fall foliage
Quercus	bicolor	Swamp white oak	60 x 60	FS	MS, W, ST	4	yes	0	0	0	0	leafrollers, lacebug, scales, galls, gypsy moth, mites	Easier to transplant than many other oaks, often chlorotic on high pH soils
Quercus	palustris	Pin oak	70 x 40	FS	MS, W	4	no	0	0	0	0	leafrollers, lacebug, scales, galls, gypsy moth, mites	Faster-growing and easier to transplant than many other oaks, often chlorotic on high pH soils
Quercus	rubra	Northern red oak	70 x 70	FS	FS, ST	4	yes	0	0	0	0	leafrollers, lacebug, scales, galls, gypsy moth, mites, anthracnose	All oaks produce acorns
Tilia	cordata	Littleleaf linden	70 x 40		MS, WDS	3	no	0	0	0	0	Japanese beetle, aphids, borer, gypsy moth	Dense crown, adaptable

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<b>CONIFERS</b>													
Abies	balsamea	Balsam fir	50 x 25	FS	MS	3	yes	0	0	0	2	hemlock looper, twig aphids, spider mites, Rhizosphaera needle blight, fir-fern rust	Grows best in cool areas
Abies	concolor	White fir, concolor fir	75 x 40	FS-PS	WDS, DT	4	no	0	0	0	2	hemlock looper, aphids, Phyllosticta & Rhizosphaera needle blights	Deer damage is rare on firs
Abies	fraseri	Fraser fir	40 x 25	FS-S	MS, WDS	4	no	0	0	0	2	hemlock looper, aphids, spider mites, Phyllosticta & Rhizosphaera needle blights, Phytophthora root rot	More heat tolerant than balsam fir
Chamaecyparis	nootkatisensis	Nootka falsecypress, Alaska cedar	45 x 20	FS	MS	4	no	0	0	0	0	spider mites, juniper scale, tip blights	'Pendula' weeping form, 20' tall
Chamaecyparis	obtusa	Hinoki falsecypress	75 x 20	FS-PS	MS, WDS	4	no	0	0	0	0	spider mites, juniper scale, tip blights	Dwarf forms available
Chamaecyparis	thyoides	Atlantic whitecedar	50 x 20	FS	W, MS	4	yes	0	0	0	0	spider mites, tip blights	One of the best evergreens for wet sites
Juniperus	virginiana	Eastern redcedar	40 x 20 (varies)	FS	WDS, DT, ST	3	yes	0	0	0	0	mites, tip blights, Gymnosporangium rusts	Tolerates poor soils; good for screen or windbreak
Larix	species and hybrids	Larch, Tamarack	75 x 30 (varies)	FS	MS	2	yes	0	0	0	0	casebearer, looper	Deciduous conifer, fast growing in cold climates; weeping & dwarf forms popular
Metasequoia	glyptostroboides	Dawn redwood	100 x 25	FS-PS	MS	5	no	0	0	0	0	Japanese beetle, mites	Fast-growing deciduous conifer; needs space, good along streambeds
Picea	abies	Norway spruce	60 x 30	FS	MS, WDS	2	no	0	0	0	2	shoot galls, white pine weevil, spider mites, Rhizosphaera needle cast	Prefers acidic, moist soils, cool temperatures, deer damage is rare on spruce
Picea	glauca	White spruce	60 x 20	FS-PS	WDS, DT	2	yes	0	0	0	2	sawflies, looper, shoot galls, white pine weevil, spider mites	Tolerates adverse conditions better than other spruces
Picea	omorika	Serbian spruce	60 x 25	FS-PS	WDS, DT	4	no	0	0	0	2	shoot galls, white pine weevil, spider mites	
Picea	orientalis	Oriental spruce	60 x 15	FS-PS	DT	4	no	0	0	0	2	shoot galls, white pine weevil, spider mites	Very narrow pyramidal form
Picea	pungens	Colorado spruce	60 x 20	FS	WDS, DT, ST	2	no	0	0	0	2	shoot galls, white pine weevil, spider mites, Rhizosphaera needle cast, stigma needle blight, Weir's cushion rust	Blue-needled cultivars are popular; dwarf forms available
Pinus	strobus	Eastern white pine	80 x 40	FS	WDS	3	yes	0	0	0	1	sawflies, shoot borers, weevil, aphids, scales, needlecasts	Fast grower, very large when mature
Thuja	occidentalis	Eastern or American arborvitae, White cedar	40 x 15	FS-PS	DT, W	3	yes	0	0	0	0	hemlock looper, spider mites, leafminer	Subject to deer browse and winter browning; commonly used as a hedge
Tsuga	canadensis	Eastern/Canadian hemlock	70 x 35	FS-S	MS	3	yes	0	0	2	2	hemlock looper, spider mites, needleminer, borer	Best in sheltered locations, not exposed to drought or wind

<b>KEY</b>	<b>LIGHT</b>	<b>SOIL/SITE</b>	<b>PEST SUSCEPTIBILITY RANKING (2-0)</b>
	FS full sun PS partial sun/shade Sh shade	DT drought tolerant MS moist soils ST salt tolerant	W good for wet areas WDS well-drained soils 2= good host      0 = not a known host 1= occasional host