



**EXTENSION** 

### CONNECTICUT COASTAL PLANTING GUIDE

With Pollinator and Wildlife Value

Juliana Barrett and Kiernan Sellars, UConn 2020 <u>juliana.barrett@uconn.edu</u>

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This guide will be a useful tool for those interested in native landscaping within Connecticut's coastal region. It contains a list of plants that will grow well along Long Island Sound and several miles inland. Connecticut's coastal zone is defined here as the coastal ecoregion of Dowhan and Craig (1976) (Figure 1). An ecoregion is an area of similar landforms, climate, and biota. This region, divided below into eastern and western coastal ecoregions (V-A and V-B), extends 5 to 7 miles inland and has a long frost-free season (average approximately 180 days in the west, and 195 days in the east). Within this region, there are a wide variety of habitats and growing conditions, including tidal marshes and coastal forests, soils ranging from fine silts to sandy or rocky soils, and soil moisture conditions ranging from wet or moist to very dry. Vegetation in a particular area depends on a complex suite of site characteristics including geology and soils, local climate, topography, land use history and biotic factors. Therefore, the plants found growing in one location may be very different from those found one or two miles away. We have recently added information on wildlife value of the listed plants and updated their scientific names.

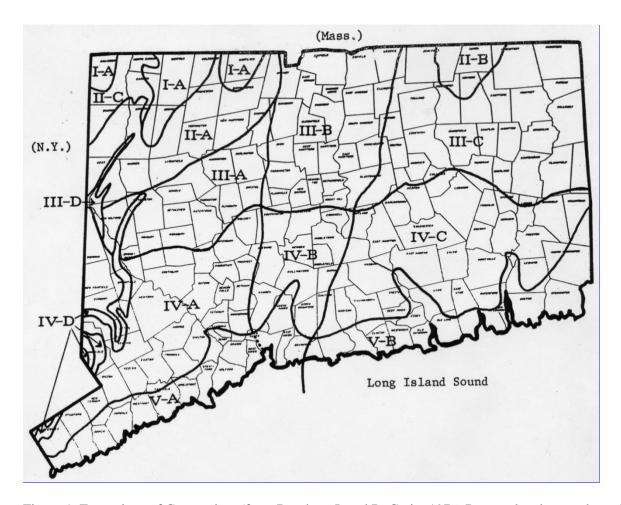


Figure 1. Ecoregions of Connecticut (from Dowhan, J. and R. Craig. 1976. Rare and endangered species of Connecticut and their habitats. Hartford, CT: Connecticut Geological and Natural History Survey. p. 135.

Plants are categorized in the following list by growth form: tree, shrub, herbaceous perennial, or vine. For each species, information is provided on general plant characteristics such as average height, growth conditions (light and soil conditions), and salinity tolerance in terms of soil salinity

and salt spray tolerance. In some cases, information is provided on negative aspects of a plant, such as whether or not it is poisonous to humans. This information on plant toxicity is included only as space permits and so should not be considered a definitive guide.

Salts from both Long Island Sound waters and pavement de-icing materials can pose challenges to those landscaping in coastal Connecticut. Salts can impact plants in the form of salt spray or can accumulate in soils. Salt spray can damage leaves and plant tissue: high soil salt concentrations can damage plant tissue and interfere with water uptake. Either can ultimately cause plant death. This publication indicates salt tolerance for the listed species both in the form of salt spray and soil salt tolerance. For some species, the data are clearly consistent and species are indicated as being salt tolerant. For some species, however, depending on how salt tolerance studies were conducted, there may be differences in the results. In these situations, the tolerance is indicated as "Some references indicate tolerance." Users of this guide know their localized landscaping area best. Information from local nurseries, taking note of which native species live and thrive nearby, combined with information offered here, may be the best guide in determining salinity tolerance for specific locations and conditions. In addition, there are cultivars and varieties of species available at local nurseries which may have higher salinity tolerances than those listed.

Plants that were not included on this list are nonnative or invasive species, certain native species that are particularly susceptible to disease or wind damage, and native plants listed by the state as endangered, threatened or of special concern. Native/Naturalized status for each species was determined using the USDA Plants Database and the Native Plant Trust, and a plant is considered "native" if it has been determined to occur naturally within Connecticut's political boundaries.

There are many other plants and horticultural varieties that you may want to use in landscaping and that are much easier to find in local nurseries than those listed here. **This list is meant to be a starting place** where you can begin thinking about the growing conditions on your property such as soil type and exposure to salt, and the mix of desired growth forms (trees, shrubs, herbaceous perennials). For example, one can create a wind break with salt spray tolerant trees and shrubs, and behind it, plant favorite landscape plants and annuals that may have little if any salt tolerance.

Within Connecticut, any area below mean high water is directly subject to state regulation under the Connecticut Coastal Management Act. Any work or planting in or near a tidal wetland or watercourse, or within the Coastal Zone, may require a state permit. Additionally, inland wetlands and watercourses are regulated by town inland wetlands commissions. Even removal of invasive species from a wetland may require commission approval. For further information contact either your town Inland Wetland Commission or Connecticut Department of Environmental Protection.

## **NATIVE TREES for Coastal Connecticut**

NAME	CHARACTERISTICS	SALINITY TOLERANCE		GROWTH CONDITIONS	POLLINATOR BENEFITS	WILDLIFE BENEFITS
		Spray	Soil			
Acer rubrum Red maple	Deciduous; height 12 – 21.3 m (40 – 70+ft); rapid growing, red fall foliage; subject to storm damage	None	None	Light: Partial shade to full sun Soil: Grows best in moist, acidic conditions, but very adaptable	Wind pollinated, but deep red flowers appear in early to mid-April offering one of the earliest nectar sources for native bees and honeybees	Seeds are eaten by squirrels and chipmunks, leaves are browsed by deer, and rabbits eat the stump sprouts especially in fall and winter
Amelanchier arborea Common serviceberry	Deciduous, multi-stemmed shrub or small tree; height to 10 m (33 ft); white flowers in early spring, red fall foliage	Some references indicate tolerance	None	Light: Shade to full sun Soil: Moist acidic soil Can grow in a variety of habitats: forest edges, dry wood, rocky and sandy bluffs, swampy lowlands	Provides useful early nectar and pollen when it flowers in April for early- emerging pollinators	Serviceberry fruits in June and birds enjoy the berries
Amelanchier laevis Allegheny serviceberry	Deciduous, small tree with multiple trunks; height 4.6 – 7.6 m (15-25 ft); white flowers in spring	Yes	Yes	Light: Shade to full sun Soil: Moist to moderately dry soils; grows in cool, rich, woods, moist to drier thickets, swamp margins, Prefers wetter sites; drought sensitive	Similar to the Common Serviceberry – early spring flowers provide food for pollinators	This Serviceberry also fruits in the summer providing food for local birds
Benthamidia florida (Cornus florida) Flowering Dogwood	Deciduous; height 6 - 9 m (20-30 ft); showy spring flowers, red fruit, red fall foliage; susceptible to anthracnose	None	None	Light: Shade to partial shade Soil: Rich well-drained, acidic soils	Early blooming flowers attract native bees, butterflies and other pollinators and is a host plant for the Spring Azure butterfly larvae.	The fruit is consumed by many birds such as cedar waxwings, catbirds and robins. Also provide excellent

						nesting for many bird species
Betula nigra River birch	Deciduous, multi-trunked with peeling bark; height to 21 m (70 ft); medium to rapid growth rate	None	None	Light: Partial shade to full sun; shade intolerant Soil: Sandy/loamy, moist soils; can tolerate periodic flooding; commonly grows in riparian areas	River birch hosts a large number of moth and butterfly caterpillars who eat the leaves; nectar source	Birds feed on the caterpillars during migration and the breeding season. In the fall and winter House Finch and American Goldfinch eat the birch seeds and Woodpeckers and Nuthatch search the loose bark for insects and spiders.
Betula populifolia Gray birch	Deciduous, small, bushy tree with white, non-peeling bark. Height to 15 m (49 ft); Fast growing but short lived	Some references indicate tolerance	None	Light: Partial shade to full sun Soil: wet to dry, poor soils often excessively drained soils; cannot withstand long periods of inundation	Insect pollinators	Similar to the River Birch, the Gray Birch hosts many bird species that eat the catkins and browsers such as deer enjoy the leaves.
Celtis occidentalis Common Hackberry	Deciduous; height 15–21 m (50-70 ft); oval lance-shaped leaves; Fruits have high wildlife value	None	None	Light: Shade to full sun Soil: Prefers rich soil, but is very adaptable; Can grow along stream banks or flood plains	May have some pollinator benefit due to its early flowering time	Provides food for deer, small mammals, birds and sometimes cattle. Some birds that enjoy common hackberry seeds include cedar waxwings, robins, bluebirds and wild turkeys.

Crataegus crus-galli Cockspur hawthorn	Deciduous; height 6 - 11 m (20-35 ft); exfoliating bark, horizontal branching, red fall foliage, thorns	Tolerant	None	Light: Partial shade to full sun Soil: variable, prefers moist, well-drained soils	Flowers bloom in May and are attractive to pollinators and other beneficial insects including native bees. Also larval host for a number of hairstreak butterflies	Hawthorns make good nesting sites for songbirds and the fruit is consumed by fruit eating birds, small mammals and deer.
Fraxinus americana White ash	Deciduous; height 20 – 30 m (66-98 ft); Often planted in large, open areas as a shade tree; medium growth rate	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun; prefers full sun Soil: Rich, moist, well- drained soils, well drained stream banks; tolerant of poorly drained soils	Tree is larval host for several moths and butterflies including the Eastern Tiger Swallowtail. Ash are highly susceptible to predation by the Emerald Ash Borer	This tree attracts wood ducks, bobwhites, purples finches, pine grosbeaks, fox squirrels, rabbits, beavers, mice, and porcupines. Seeds are food for several bird species
Fraxinus pennsylvanica Green ash	Deciduous; Height approx 15m (49 ft); Once established, very hardy to climatic extremes	Some references indicate tolerance	None	Light: Partial shade to full sun Soil: Adaptable, prefers fertile, well drained loamy soils; will tolerate seasonal flooding; intolerant of shading	Tree is larval host for several butterflies including the Eastern Tiger Swallowtail.	The seeds are eaten by wood ducks, finches and cardinals. Green ash also provides cover and nesting sites for many bird species.
Ilex opaca American holly	Evergreen; height 4.6 - 6 m (15–20 ft) but can be more; bright red berries on female plants; very slow growing; need male and female plants to produce fruits; fruits are poisonous	Some references indicate low tolerance	Some references indicate low tolerance	Light: Partial shade to full sun Soil: Moist, well-drained sandy/loamy soils; will tolerate somewhat poorly drained soils	Small flowers bloom in spring and attract pollinators and butterflies and is important for honey bees.	The bright red berries attract 20+ species of birds in the fall.  Dense branching also provides cover for birds and other wildlife.
Juglans nigra Black walnut	Deciduous; height 15 - 21 m (50-70 ft) or more; Fruits (nuts) can be messy;	Some references indicate tolerance	Some references indicate tolerance	Light: Full sun Soil: needs fertile, moist soil, grows well in riparian areas	Host plant for the Luna moth and banded hairstreak	The insects living on black walnut attract a wide array of birds. The walnut fruit is

	susceptible to anthracnose; slow growing					consumed by chipmunks and squirrels.
Juniperus virginiana Eastern red cedar	Evergreen; height generally 3 - 12 m (10-40 ft); slow growth rate	Tolerates some salt spray	Low salinity tolerance	Light: Partial shade to full sun Soil: found on a variety of soil types from dry, acidic, sandy soils; to dry limestone- based soils	This cedar is a host plant for the Juniper Hairstreak butterfly larvae.	Dense evergreen provides cover and nesting sites for birds and small mammals.
Liriodendron tulipifera Tulip poplar	Deciduous; rapid growing; height 24 -37 m (80 - 120 ft); tulip shaped green -yellow flowers	None	Low tolerance	Light: Partial shade to full sun Soil moist, deep, well-drained soils	Very popular tree with beekeepers because of how much nectar each flower produces. The flowers attract birds, bees, hummingbirds and butterflies. This tree is a larval host for the Eastern Tiger Swallowtail.	The tulip poplar makes an excellent nesting site for birds and the fruits provide food for squirrels and deer in the late fall and winter.
Nyssa sylvatica Black-gum	Deciduous, medium tree; height 9 - 15 m (30 - 50 ft) with a 6 - 9 m (20 - 30 ft) spread; red fall foliage; slow growth rate	Some references indicate tolerance	Low	Light: Partial shade to full sun Soils: prefers moist, well- drained acidic soils; will tolerate poor drainage	Small greenish flowers are an excellent nectar source for native bees, honey bees and other pollinators.	The fruit attracts many bird and mammal species. Insect eating birds also visit the tree to feed on the pollinators
Pinus rigida Pitch pine	Evergreen; height to 18 m (60 ft); a three needle species, medium growth rate	Some references indicate tolerance	Some references indicate tolerance	Light: Requires full sun Soil: Dry, gravelly or sandy soil; Intolerant of competition from other plants	Many important moths and butterflies frequent pitch pine forests.	The trees are used as cover, nesting, and foraging habitat. Deer browse seedlings and new sprouts, and small mammals and birds consume the seeds.

Platanus occidentalis American Sycamore	Deciduous; height to 30 m (100 ft); fast growing, susceptible to wind and ice damage	Some references indicate low tolerance	None	Light: Partial shade to full sun Soil: prefers moist, sandy or silty soils; can withstand extended flooding; drought tolerant	Hummingbirds eat the seeping sap from this tree.	Sycamore seeds are eaten by birds such as the purple finch, goldfinch and the dark-eyed junco, as well as by muskrats, beavers and squirrels. Cavity nesting birds such as the barred owl use Sycamore as well
Prunus virginiana Chokecherry	Deciduous, small tree; height 6-9 m (20– 30 ft); often forms thickets; parts of plant are toxic	Tolerates salt spray	None	Light: Shade to full sun  Soil: prefers rich, moist soils, but will grow under a wide variety of soil types	Fragrant white flowers in the spring are pollinated by honey bees and bumblebees and some butterfly larvae feed on the foliage	Eastern bluebirds, grouse and some mammals consume the fruit of the Chokecherry. It also provides cover and nesting sites for many species of birds and deer browse the branches in the winter.
Prunus serotina Black cherry	Deciduous, height 18-24 m (60-90 ft); rapid growth, fragrant white flowers	Some references indicate tolerance	None	Light: Sun to partial shade Soil: prefers moist well- drained soils; drought tolerant; common in CT's coastal forests	Abundant, fragrant white flowers bloom in spring and provide nectar and pollen for native bees, bumblebees, honey bees and butterflies	In late summer the purple black fruits ripen and attract over 30 species of songbirds.
Ptelea trifoliata Common hoptree	Deciduous, small tree; height to 6 m (20 ft)	None	None	Light: Partial shade to full sun Soil: Moist to dry well-drained loams (prefers moist soil) Good for both moist conditions and dry, rocky sites	Attracts butterflies and caterpillars such as the Eastern tiger swallowtail and the giant swallowtail	Provides food and shelter for many birds and mammals

Quercus alba White oak	Deciduous; height to 30 m (100 ft); long lived shade tree	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun Soil: prefers moist well- drained loams and sand	Attracts some butterflies and moths as a host plant including the Edwards Hairstreak butterfly.	Acorns are eaten by mice, squirrels, black bear, cottontail rabbits, and some birds. Deer and rabbits also browse the young trees and debris from white oak.
Quercus bicolor Swamp white oak	Deciduous; height 15 - 18 m (50 - 60 ft); moderate growth rate, leaves have whitish green undersides	None	None	Light: Partial shade to full sun Soil: prefers moist to wet acidic soil; drought tolerant	Attracts some butterflies and moths as a host plant. Small flowers bloom in April attracting pollinators.	Vireos, tanagers and warblers are attracted by the insects. Large acorns mature in early fall making providing food for squirrels, deer, turkey and black bear
Quercus montana (Q. prinus) Chestnut oak	Deciduous tree, height 18 - 21 m (60 –70 ft); moderate growth rate	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade Soil: often found on sandy, rocky or gravelly, dry soils; will grow well on well- drained lowland sites	Attracts some butterflies and moths as a host plant. Some birds and bees use chestnut oak cavities for nesting.	Acorns provide a food source for turkey, ruffed grouse, songbirds, deer, and small mammals
Quercus palustris Pin oak	Deciduous tree, height 21 - 27 m (70 -90 ft); fast growing oak, strongly pyramidal shape, red fall foliage	None	None	Light: Partial shade to sun Soil: Wet, poorly drained soils	Attracts birds, butterflies and hummingbirds. Host plant to the gray hairstreak butterfly	Acorns are an especially important food source for wood ducks and mallards during fall migration. Many other animals enjoy the acorns in the fall.
Quercus rubra Northern red oak	Deciduous, large tree; height 23 m (75 ft) +; can tolerate urban conditions	None	Some references indicate tolerance	Light: Partial shade to full sun Soil: prefers well drained, acidic sandy loams; adaptable to poorly drained or dry soils	Attracts some butterflies and moths as a host plant.	White-tailed deer commonly browse leaves and young seedlings. Acorns of the northern red oak are an important food

						source for the bobwhite, red-headed woodpecker, blue jay, tufted titmouse, wild turkey and many other birds and small mammals.
Quercus stellata Post oak	Deciduous, height 12 - 15 m (40 - 50 ft); slow growing	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade Soil: Dry to moist rocky or sandy soils	Similar to other oaks  – attracts some butterflies and moths that use the tree as a host for their larval stage.	Post oak provides cover and habitat for birds and mammals. Cavities provide nest and den sites, and leaves are used for nest construction. Acorns are an important food source for wildlife.
Quercus velutina Black oak	Deciduous, medium sized tree; height 15 - 18 m (50 - 60 ft), moderate growth rate	Low	Some references indicate tolerance	Light: Partial shade to sun Soil: dry, sandy to moist, rich, well-drained, acidic soil	Similar to other oaks  – attracts some butterflies and moths that use the tree as a host for their larval stage.	Black oak acorns provide food for numerous wildlife species including squirrels, mice, voles, white-tailed deer, and wild turkey. The catkins are also consumed by some squirrel species.
Sassafras albidum Sassafras	Deciduous; height to 18 m (59 ft); slender, pyramidal shape, with bright yellow/orange foliage in the fall; A common tree of CT's coastal forests	Some references indicate tolerance	Some references indicate tolerance)	Light: Partial shade to full sun Soil: Prefers moist well- drained soil, but adaptable High drought tolerance	Larval host for tiger swallowtail, promethea silkmoth and the spicebush swallowtail. Also a nectar source for pollinators.	Sassafras leaf browsers include squirrels, rabbits, and black bears and deer. Sassafras fruits are eaten by many species of birds including northern bobwhites,

						eastern kingbirds, great crested flycatchers, phoebes, wild turkeys, and many others.
Swida alterniflora (Cornus alternifolia) Pagoda dogwood	Deciduous; height to 7.6 m (25 ft); clusters of small, white flowers in mid to late spring; red/purple berries	Some references indicate tolerance	None	Light: Shade to partial shade Soil: Moist, well-drained, acidic soils Susceptible to wind and ice damage; tolerant of poor soils	This dogwood attracts butterflies and is a host plant for the Spring Azure butterfly larvae.	The berries fruit in late summer and attract many songbirds, grouse, turkey, pheasant and squirrels.
Tilia americana Basswood	Deciduous; height 15 - 21 m (50 - 70 ft); medium to fast growing; flowers favored by bees	None	None	Light: Partial sun to full sun Soil: Moist well-drained, loamy soils	Attract honey bees, native bees and flies to the nectar. A larval host plant for the Eastern Tiger Swallowtail.	Preferred browse plant for white-tailed deer and the easily decayed wood provides cavities for many animals including wood ducks and pileated woodpeckers

### **NATIVE SHRUBS for Coastal Connecticut**

NAME	CHARACTERISTICS	SALINITY TOLERANCE		GROWTH CONDITIONS	POLLINATOR BENEFITS	WILDLIFE BENEFITS
		Spray	Soil			
Alnus incana Speckled alder	Deciduous; Height: can reach 9m (30 ft) but often smaller; thicket forming, fast growing	Some references indicate tolerance	Some references indicate tolerance	Light: Shade to partial shade to full sun Soils: moist soils, wide range of soil types, can tolerate occasional flooding and drought; often found growing in riparian areas.	Larval host for several moth species.	Provides cover for wildlife and browse for deer and mice. Songbirds eat the seeds and squirrels consume the catkins
Alnus serrulata Smooth alder	Deciduous; Height: approx 3.7 m (12 ft) or more; thicket forming Excellent for stream banks to help reduce erosion. Nitrogen fixing	Some references indicate tolerance	None	Light: Partial shade to full sun Soils: moist to wet soils; flood tolerant, often found in riparian areas, but will grow in well-drained uplands; Susceptible to wind and ice damage	Larval host for several moth species.	Ruffed grouse, swamp sparrows, eastern goldfinch and small mammals eat the seeds and catkins and the dense branching provides cover for birds and other wildlife.
Amelanchier canadensis Canadian serviceberry	Deciduous; Height: 1.8 – 6m (6 – 20 ft), multitrunked; red fruits and orange to red fall foliage	Some references indicate tolerance	Medium tolerance	Light: Shade to partial shade to full sun Soils: moist, well-drained soils; subject to many diseases and insect problems which usually cause only cosmetic damage	Attracts a large number of native bees and beneficial insects. Host plant for viceroy and red-spotted purple butterflies.	Fruits are an important food source for birds and other wildlife.
Amelanchier spicata (A. stolonifera) Dwarf serviceberry	Deciduous: Height: 0.9 – 1.5 m (3- 5 ft), clump forming	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun Soils: Moist to dry soils	Attracts a large number of native bees	Similar to the Canadian serviceberry – fruits attract birds and wildlife

Arctostaphylos uva-ursi Red bearberry or Kinnikinnick	Evergreen; Height: 0.15 - 0.3 m (0.5 – 1 ft); ground trailing shrub with wide spread; slow growing	Tolerant	Tolerant	Light: Shade to partial shade to full sun Soils: rocky or sandy acidic soils Highly drought tolerant	Attracts butterflies, hummingbirds and native bees.	Wildlife such as black bears, ravens and other birds and wildlife enjoy the fruit of the bearberry.
Aronia arbutifolia Red chokeberry	Deciduous; Height: 1.8 – 3 m (6 to 10 ft), multistemmed; white flower clusters; red fall foliagel	Tolerant	Low tolerance	Light: Full sun Soil: dry to wet soils; adaptable to a wide variety of conditions	Clusters of flowers in spring provide nectar to butterflies, bees and other beneficial insects	Winter berries are sometimes eaten by song birds, game birds and mammals
Aronia floribunda Purple chokeberry	Deciduous; Height to 3.7 m (12 ft); white, showy flowers (hybrid of red and black chokeberries)	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun Soil: wide range of soil types: clay, loam, sand and wet to dry; tolerates seasonal flooding Moderately tolerant of shade and drought; can be found in salt marsh borders	Flowers attract pollinators including butterflies.	Fruit attracts small birds
Aronia melanocarpa Black chokecherry	Deciduous; Height 0.9 – 1.8 m (3 to 6 ft); multistemmed; small white flowers, purple fruits	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun; Best in full sun Soil: dry to wet soils, adaptable to a wide variety of conditions	Spring flowers are an excellent nectar source for many types of pollinators	Berries provide food for wildlife and birds from fall through winter.
Baccharis halimifolia Groundsel bush	Deciduous; Height: up to 3 m (10 ft); female plants have showy, cotton-like white flower clusters; fast growing	Tolerant	Tolerant	Light: Partial shade to full sun Soils: wet to dry soils often along borders of salt and brackish tidal marshes or in backdune areas	Provides nectar for bees, butterflies, moths and other insects	Provides cover and many birds eat the seeds.
Ceanothus americanus New Jersey Tea	Deciduous: Height: to 0.9 m (3 ft) tall, white flowers	None	None	Light: Shade to partial shade	Nectar source for native bees, beneficial insects and butterflies.	Food source for some mammals and birds, including turkey and quail.

Cephalanthus	Deciduous; Height: 0.9 –	None	Some	Soils: well-drained sand or loam, limey soils; drought tolerant  Light: Partial shade to	Host plant for spring azure, summer azure and mottled duskywing butterflies Beautiful flowers	Birds eat the seeds and it
occidentalis Common buttonbush	3 m (3-10 ft) tall; Fruits are 2.5 cm (1 in) round ball-like cluster		references indicate low tolerance	full sun Soil: wet soils; sandy and clay loams	with nectar that is very popular with pollinators such as bees, butterflies and hummingbirds	provides protective cover for many birds and other wildlife.
Clethra alnifolia Coastal sweet pepperbush	Deciduous; Height up to 3 m (10 ft) tall; Spikes of fragrant white flowers bloom in late summer	Tolerant	Some references indicate tolerance	Light: Partial shade to full sun. Soil: Wet to moist soils	Flower nectar source for bees, butterflies and hummingbirds.	Fruits are eaten by songbirds and other wildlife.
Comptonia peregrina Sweetfern	Deciduous; Height 0.6 – 1.2 m (2 - 4 ft); member of the bayberry family; leaves aromatic when crushed; multiple stems	Some reference indicate tolerance	Some references indicate tolerance	Light: Partial shade Soil: sandy, acidic soils	Attracts birds and butterflies. Larval host for the grey hairstreak butterfly	The fruits are eaten by flickers, and has some use as cover and food by cottontail rabbits and ruffed grouse.
Eubotrys racemosa (Leucothoe racemosa) Swamp doghobble	Deciduous; Height: 1.2 – 1.8 m (4 – 6 ft) tall; thicket forming; red fall foliage	None	Some references indicate low tolerance	Light: Partial shade Soil: wet to moist, sandy acidic soils; Riparian areas	Flowers are attractive to bees, butterflies and other pollinators	
Gaultheria procumbens Eastern wintergreen	Evergreen; Height: 0.05 – 0.15 m (2 – 6 in). Forms small colonies	None	None	Light: Partial shade to shade Soil: moist to dry, variable soil types		Birds and small mammals enjoy the fruit. Chipmunks, grouse, mice, birds and deer eat the leaves during winter.
Gaylussacia baccata Black huckleberry	Deciduous; Height: 0.3 – 0.6 m (1 – 2 ft) tall; colony forming shrub; red fall foliage	None	None	Light: Shade to partial shade to sun Soil: Wet to moist to dry, sandy or rocky, acidic soils; good ground cover for thin, rocky soils	Pollinated by bees, host plant to the Henry's elfin butterfly	Fruit and twigs are eaten by many birds and small mammals.

Gaylussacia frondosa Blue huckleberry	Deciduous in CT; Height: 0.5 – 0.9 m (1.5 – 3 ft); blue fruits	None	None	Light: Partial shade Soil: well-drained soils; often on acidic, poor soils; often found in dry to wet woods and thickets and swamp margins; high drought tolerance	It is a host plant for Henry's elfin butterfly. Butterflies are attracted to the blooms and they provide nectar for pollinators.	Provides cover for wildlife; many birds including grouse, bobwhite, scarlet tanagers and wild turkeys eat the berries.
Hamamelis virginiana American witchhazel	Deciduous; Height: 3 – 4.6 m (10 – 15 ft); multitrunked; fall flowering with yellow flowers	Some references indicate tolerance	None	Light: Shade to partial shade to full sun Soil: Prefers rich, well drained soils	Good source of nectar later in the season, the flowers are pollinated by noctuid moths	Provides nesting sites for many birds. Birds and small mammals eat the seeds and fruits.
Ilex verticillata Common winterberry	Deciduous; Height: Up to 3 m (10 ft); fruits are bright red; need male and female plants to produce fruits	Some references indicate tolerance	Some references indicate tolerance	Light: Full sun to partial shade Soil: Moist, acidic soils; tolerant of poor drainage Fruits are poisonous	Host plant for Henry's elfin butterfly and attracts other butterflies. Members of the genus Ilex support the specialized plasterer bee	Its fruits are eaten by many bird species, including cedar waxwings, and small mammals. Deer and rabbits browse the foliage.
Iva frutescens High tide bush, bigleaf marsh elder	Deciduous; Height: 0.6 – 1.8 m (2 – 6 ft), bushy, small, inconspicuous flowers	Tolerant	Tolerant	Light: Full sun Soil: Moist to wet saline soils, upland marsh border		Small mammals and birds may use marsh elder as a refuge during high tides. Provides nesting habitat for the red-winged blackbird and the marsh wren
Juniperus communis Common juniper	Evergreen; Height: 1.5 – 3 m (5 – 10 ft); slow growth rate	Some references indicate tolerance	Medium tolerance	Light: Full sun Soil: sandy, dry soils; Shade intolerant; high drought tolerance		Native birds love the berry-like cones and it provides excellent cover for birds and mammals
Juniperus horizontalis Creeping juniper	Evergreen; Height: to 0.9 m (3 ft) but forms a horizontal mat to 20 ft	Low	Some references indicate tolerance	Light: Partial shade to full sun		Provides good cover and birds enjoy the berries.

				Soil: dry, rocky soils; intolerant of shade and poor drainage		
Kalmia angustifolia Sheep laurel	Evergreen; Height: to 0.9 m (3 ft) forming a horizontal mat; pink flowers	None	None	Light: Partial shade to full sun Soil: Wet to dry soil Plant parts are poisonous	Attracts butterflies and pollinators	Grouse and some other birds forage the leaves though plants are toxic to many domestic animals.
Kalmia latifolia Mountain laurel	Evergreen; Height: 3.7 – 6 m (12 – 20 ft); thicket forming	None	None	Light: Partial shade Soil: Moist, rocky or sandy soils Plant parts are poisonous	Larval host for the laurel sphinx moth and flowers attract pollinators such as butterflies and hummingbirds.	Year-round protective cover for wildlife; White-tailed deer browse the leaves and twigs, though plants are toxic to many domestic animals.
Lindera benzoin Northern spicebush	Deciduous; Height: 1.8 – 3.7 m (6 – 12 ft); fast growing shrub; yellow flowers followed by red fruits	None	None	Light: Shade to partial shade to full sun Soil: moist, sandy, well- drained soils; Prefers moist, shady areas	Attracts butterflies and is a larval host for the spicebush swallowtail butterfly, the promethea silkmoth and the Eastern tiger swallowtail	Fruits are eaten by songbirds, especially during fall migration. White-tailed deer browse the twigs and leaves.
Lyonia ligustrina Maleberry	Deciduous; Height:0.9 – 3.7 m (3 to 12 ft); small, white flowers	None	None	Light: Partial shade Soil: Wet, poorly drained acidic soils; often found in riparian areas, and alluvial wetlands	Maleberry is a nectar plant. It attracts specialized native bees as pollinators.	Toxic to many domestic animals.
Morella caroliniensis (Myrica pensylvanica) Northern bayberry	Height: 1.5 – 2.4 m (5 – 8 ft); waxy, silver/gray berries; need male and female plants to produce berries	Tolerant	Tolerant	Light: Partial shade to full sun Soil: sandy, clay soils, wide range of growing conditions	Attracts pollinators	The fruit is consumed by many songbirds in the winter and it creates dense cover year-round.

Myrica gale Sweet gale	Deciduous; Height: 0.6 – 1.2 m (2 – 4 ft); sweet scented leaves	Some references indicate tolerance	None	Light: Shade to partial shade to full sun Soil: Wet to moist soil		Cover and food source for some small mammals and birds.
Physocarpus opulifolius Common ninebark	Deciduous; Height: 0.9 – 3 m (3 - 10 ft) whitish pink flowers; exfoliating bark	Some references indicate tolerance	None	Light: Shade to partial shade to full sun Soil: wet, moist or dry clay or loam soils, drought tolerant. Grows well in a wide range of light, soil and moisture conditions	A popular pollinator species; abundant nectar source for native and honey bees in late spring	Provides cover for birds
Prunus maritima Beach plum	Deciduous; Height: 1.8 – 3.7 m (6 - 12 ft); white flowers; fast growing	Tolerant	Low tolerance	Light: Full sun (shade intolerant) Soil: sandy or gravelly soils; sandy soils near the coast	Flowers have special value for native bees	Birds and other wildlife consume the fruit. Many birds use this tree for nesting.
<b>Quercus ilicifolia</b> Bear oak	Deciduous; Height: 3.7 – 6.1 m (12 – 20 ft), much branched	Some references indicate tolerance	Some references indicate tolerance	Light: Full sun Soil: dry sandy or gravelly acidic soils	Larval host for the sleepy duskywing and Eastern buckmoth	Acorns provide food for wildlife, especially turkey and grouse
Quercus prinoides Dwarf chestnut oak	Deciduous; Height: to 7.6 m (25 ft)	Some references indicate tolerance	Some references indicate tolerance	Sun: Shade to partial shade Soil: Dry, sandy/rocky soils	Oaks support a wide variety of butterflies and moths.	Acorns are a primary food for many bird species, including wood ducks, ruffed grouse, quail, wild turkey, grackles, jays, nuthatches, thrashers, titmice, towhees, and woodpeckers, as well as small mammals.
Rhododendron viscosum Swamp azalea	Deciduous; Height: 0.9 – 2.4 m (3-8 ft) tall; white very fragrant flowers	None	None	Light: Partial shade Soil: wet soils; flood tolerant.	Rhododendron species support specialized native bees and bumble bees as well as	Toxic for some domestic animals.

					butterflies and moths	
Rhus copallinum Winged sumac	Deciduous; Height: to 3 m (10 ft), sometimes taller; thicket forming, leaves reddish purple in fall	Some references indicate tolerance	None	Light: Full sun Soil: dry, rocky often poor soils	The nectar and pollen attract butterflies and other beneficial insects. Provides nesting material for bees. Host plant for Luna moths and the red-banded hairstreak.	The red winter fruit is relished by songbirds and other wildlife. Deer browse the twigs, bark is eaten by rabbits
Rhus glabra Smooth sumac	Deciduous; Height: 3 – 4.6 m (10 – 15 ft); thicket forming	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun Soil: most dry soils; drought tolerant	A host plant for the red-banded hairstreak. Attracts bees, butterflies and other pollinators	Its fruits are eaten by songbirds, white-tailed deer, opossums, wild turkeys and quail.
Rhus hirta (R. typhina) Staghorn sumac	Deciduous; Height: 4.6 – 9.1 m (15 – 30 ft); thicket forming	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun Soil: dry, gravelly or rocky soils	Honeybees and butterflies are attracted to the flowers in spring. Provides nesting material for native bees. Larval host plant for Luna moths and spring azure butterfly.	Important winter food source for mockingbirds, catbirds, thrushes, blue birds and 30+ other species of game and songbirds
Rosa carolina Carolina rose	Deciduous; Height: 0.3 – 0.9 m (1 – 3 ft); pink flowers	Tolerant	Tolerant	Light: Partial shade to full sun Soil: moist to dry rocky or sandy well-drained soils	Flowers provide nectar for native bees, butterflies and other beneficial insects	Hips are eaten by some birds

Rosa palustris Swamp rose	Deciduous; Height:1.8 – 2.4 m (6 – 8 ft); dark pink flowers	Some references indicate tolerance	Some references indicate tolerance	Light: Shade to partial shade to full sun Soil: wet, rich soils; found in wet thickets and riparian shorelines	Provides nectar for native bees and butterflies	Rose hips attract birds and it creates cover and nesting areas for birds.
Rosa virginiana Virginia rose	Deciduous; Height: 0.6 – 1.8 m (2 – 6 ft)	Tolerant	Tolerant	Light: Prefers full sun; will grow in partial shade Soil: well drained acidic soils; found in thickets and meadows	Attracts butterflies, native bees, bumblebees and hummingbirds	Hips are eaten by birds
Salix discolor Pussy willow	Deciduous; Height: up to 6 m (20 ft); fast growing/short lived	None	None	Light: Prefers full sun; shade tolerant Soil: Prefers damp soils;	One of the first pollen sources for specialized bees and other pollinators. Host plant for many butterfly species including the viceroy	Finches, grouse and cardinals find the flower buds tasty. Provides cover and nesting sites for birds
Sambucus nigra ssp. canadensis American black elderberry	Deciduous; Height: up to 3.7 m (12 ft) tall, white flower clusters, deep purple fruits	None	None	Light: Partial shade to full sun Soil: wet to dry soils; prefers moist, rich soils	Provides nectar to many native butterflies and other pollinators	Berries are relished by many bird species and mammals. Deer eat twigs and leaves
Spiraea alba var. latifolia White Meadowsweet	Deciduous; Height: 0.3 – 1.8 m (1 – 6 ft)	Some references indicate tolerance	None	Light: Full sun Soil: moist soils	Attracts bees, beneficial insects and butterflies. Larval host for the spring azure butterfly	Some birds use this plant for protective cover.
Spiraea tomentosa Steeplebush	Deciduous; Height: 0.6 – 1.8 m (2 – 6 ft)	Some references indicate tolerance	None	Light: Full sun Soil: moist to wet soils; found in wet meadows and riparian areas	Attracts butterflies, native bees and other insects.	

Swida amomum (Cornus amomum) Silky dogwood	Deciduous: Height 1.8 - 3 m (6 – 10 ft); small white flowers with blue fruits	Some references indicate tolerance	None	Light: Shade to partial shade Soil: wet to moist, clay. loamy and sandy soils; not drought tolerant; found in riparian areas/seasonal wetlands, fields	Flowers provide nectar for some butterflies; plant is a host for some Azure butterflies. Has been known to attract beneficial insects such as parasitoids	Fruit is enjoyed by many birds, waterfowl and wildlife.
Swida racemosa (Cornus racemosa) Gray dogwood	Deciduous; Height: 3 – 4.6 m (10 – 15 ft) tall; small, greenish white flowers	Some references indicate tolerance	Some references indicate tolerance	Light: Shade to partial shade to full sun Soil: prefers moist soils, but highly adaptable	Attracts birds, butterflies and specialized bees, and is a larval host for the spring azure butterfly.	Fruit is consumed by many birds such as the Northern cardinal, downy woodpecker, Northern flicker and Eastern bluebird and other wildlife.
Swida sericea (Cornus sericea) Red Osier dogwood	Deciduous; Height: 1.8 – 3.7 m (6 – 12 ft) tall; multi-stemmed with red branches	Some references indicate tolerance	None	Light: Partial shade Soil: moist, well-drained soils	Attracts specialized bees and is a larval host for the spring azure butterfly.	Waterfowl, marsh birds and shorebirds are major users. Some mammals use the tree as food and cover. Deer browse on dogwood year-round.
Vaccinium angustifolium Lowbush blueberry	Deciduous; Height:0.15 – 0.6 m (0.5 – 2 ft); multiple stemmed	Some references indicate tolerant	Some references indicate tolerance	Light: Partial shade to full sun Soil: best growth on well drained acidic soils	The flowers are popular with native bees and honey bees, it is also a larval food source for many butterflies	Berries are enjoyed by many birds and mammals as well as the box turtle
Vaccinium corymbosum Highbush blueberry	Deciduous; Height:1.8 – 3.7 m (6 – 12 ft)	Tolerant	Tolerant	Light: Shade to partial shade to full sun Soil: wet to moist to dry; acidic rocky soil to organic peat	Important plant for native bees, butterflies and other pollinators. Larval host for the brown elfin.	Same as the lowbush – the berries are extremely sought after by wildlife (many bird species and mammals)

Vaccinium macrocarpon Large cranberry	Evergreen; Height: less than 0.3 m (1 ft)	None	None	Light: Partial shade Soil: wet to moist, peaty soils	Provides food for many specialized native bees and other pollinators	Berries are eaten by birds and small mammals
Vaccinium pallidum Blue Ridge blueberry	Deciduous; Height 0.3 – 0.6 m (1 -2 ft); colony forming	None	None	Light: Shade to partial shade to full sun Soil: Moist to dry loamy sands; often found in dry woods	Host plant for the brown elfin butterfly. Supports many native bees and other pollinators	Fruits are eaten by songbirds, small mammals, ruffed grouse, wild turkeys and black bear.
Viburnum dentatum Smooth (southern) arrowwood V. recognitum sometimes lumped and other times considered a separate species	Deciduous; Height 0.9 – 2.7 m (3 – 9 ft); wide clusters of white flowers, dark blue fruits	Tolerant	Tolerant	Light: Partial shade to full sun. Soil: dry to wet soils and sands	Provides nectar for butterflies and bees; larval host for the spring azure	Berries are consumed by many small mammals and birds

## NATIVE GRASSES/SEDGES/RUSHES for Coastal Connecticut

NAME	CHARACTERISTICS	SALINITY TOLERANCE		GROWTH CONDITIONS	POLLINATOR BENEFITS	WILDLIFE BENEFITS
		Spray	Soil			
Ammophila breviligulata American Beach Grass	Perennial, erect grass; Height: 0.6-0.9 m (2–3 ft); spreads laterally by rhizomes; continues growth when leaves are covered by sand	Tolerant	Tolerant	Light: Full sun Soil: Dry sand or sandy, coarse textured soils; most common plant of CT's sand dunes; local genotypes should be used; plant dormant culms between Oct15 and April 1		Important dune species for bird habitat and nesting
Andropogon gerardii Big bluestem	Perennial, clump forming; height 1.2-2.4 m (4-8 ft); copper fall color	Tolerant	Tolerant	Light: Partial shade to sun. Soil: sandy to clay soils, well drained, drought tolerant once established	Attracts native bees (nesting material) and some butterflies such as the Delaware skipper and the dusted skipper	Provides cover for numerous songbirds and nesting sites or seeds for some sparrows.
Andropogon virginicus Broomsedge bluestem	Perennial, tuft forming grass; height: 0.6-1.2 m (2-4 ft); golden fall color	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun  Soils: low fertility soils, dry, sandy soils; drought tolerant	Provides nesting material for bees and is a larval host for the zabulon skipper	Provides cover and nesting material for birds. Some birds eat the seeds and deer browse the leaves
Anthoxanthum nitens (Hierochloe odorata) Sweetgrass	Perennial; slender, erect; height: 0.3-0.6 m (1-2 ft)	Tolerant	Tolerant	Light: Full sun Soil: wet soils; moist meadows, fresh/brackish shoreline		Rodents and small mammals may browse sweetgrass and it has a vast amount of cultural value to Native

						Americans across the country.
Bolboschoenus robustus Sturdy bulrush	Perennial sedge; height: up to 1 m (3.5ft), stems are triangular in cross-section	Tolerant	Tolerant	Light: Full sun Soil: wide range of wetland soils		Valuable to wildlife as cover and food. Muskrat and waterfowl eat the seeds.
Carex stricta Upright sedge or Tussock sedge	Perennial, slender leaves: Height:0.3-0.9 m (1-3 ft); forms large hummocks up to 0.9 m (3 ft) wide	None	None	Light: Full sun Soil: Wet soil to standing water	Attracts butterflies and is a larval host for the mulberry wing, the eyed brown and the black dash	Excellent nesting habitats for birds such as rails.
Deschampsia flexuosa Wavy hairgrass	Perennial; height: to 0.3 m (1 ft) with 0.3-0.5 m (1-1.5 ft) spread	None	None	Light: Shade to partial shade Soil: Well drained soils; drought tolerant		Clumping grasses like this provide nest sites and winter cover for quail and sparrows. They also provide fall and winter seeds for a number of birds including cardinals, towhees, juncos, sparrows and finches.
Distichlis spicata Marsh spikegrass	Perennial, erect and rigid; height: approx 0.3 m (1 ft) tall	Tolerant	Tolerant	Light: Full sun Soil: wet saline or alkaline soils; in CT found in salt and brackish tidal marshes; can adapt to drier soils such as sands, silts and clays		Can be a food source for waterfowl

Elymus virginicus Virginia wildrye	Perennial, erect; height: 0.6-1.2 m (2-4 ft)	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun Soil: Prefers fertile, loamy soils but will grow in many other soil types; moist conditions	Members of the grass family provide essential larval host for many species of branded skippers and satyr butterflies	Seed and forage for birds and small mammals, used for denning and nesting material.
Juncus effuses Common rush	Grass-like perennial (rush); height: to 1.2 m (4 ft), clump forming, slow spreading	Low	Low	Light: Full sun Soil: clay, loam, sand; fresh to brackish marshes; seasonal wetlands		Provides food and shelter for waterfowl and other wildlife
Juncus gerardii Saltmeadow Rush	Grass-like perennial (rush); height: 0.25 – 0.5 m(10 – 20 in); the capsule fruit turns dark brown hence the name "blackgrass"	Tolerant	Tolerant	Light: Full sun Soil: wet soils of salt and brackish marshes, found at higher elevations of the salt marsh		Some waterfowl and small mammals use it as cover and the seeds as food
Panicum virgatum Switchgrass	Perennial; height: 0.9 – 1.8 m (3 – 6 ft) grows in large clumps, stem has reddish tint	Tolerant	Some references indicate tolerance	Light: Partial shade to full sun Soil: Dry to moist soils, grows best in sandy to clay loams; can tolerate seasonal poor drainage	Larval host of the Delaware skipper and other butterflies	Provides cover and nesting material. Seeds are eaten by ground-feeding songbirds and game birds
Schizachyrium scoparium Little bluestem	Perennial, bunch grass; height: 0.5 – 0.6 m (1.5 – 2 ft) foliage turns from blue-green to copper in the fall	None	None	Light: Partial shade to full sun Soil: Well-drained, medium to dry infertile soils; wide range of soils but not wetlands; drought tolerant	Attracts butterflies; host plant to many skippers. Good nesting material for bees	Provides cover and nesting material for birds and small mammals. Some mammals and birds eat the seeds as well.
Sorghastrum nutans Indiangrass	Perennial, clumped grass; height: 0.9 – 1.5 m (3-5 ft)	Tolerant	Tolerant	Light: Partial sun to full sun Soil: grows best in moist, rich soils; tolerant of poor to excessively well-drained soils; many soil types	Larval host for the pepper-and- salt skipper and provides nesting material for native bees.	Small mammals and granivorous birds eat the seeds. It also provides cover and nesting material.

Spartina alterniflora Saltmarsh cordgrass	Perennial grass; height 0.9 – 2 m (3 -7 ft), spreads extensively via rhizomes	Tolerant	Tolerant	Light: Full sun Soil: Sandy to peaty soils; salt/brackish marshes and shorelines	Larval host to the Louisiana eyed silkmoth	Geese feed on roots in winter. Leaves eaten by muskrats and deer. Seeds eaten by a variety of birds
Spartina patens Saltmeadow cordgrass	Perennial grass; height: 0.3 – 0.5 m (1 – 1.5 ft) spreads extensively via rhizomes	Tolerant	Tolerant	Light: Full sun Soil: Sandy to peaty soils; salt/brackish marshes; tolerates irregular tidal inundation		Provides food and cover for many terrestrial and aquatic wildlife species; provides shelter/nesting for song birds

# NATIVE HERBACEOUS PERENNIALS for Coastal Connecticut

NAME	CHARACTERISTICS	SALINITY T	OLERANCE	GROWTH	POLLINATOR	WILDLIFE
		Spray	Soil	CONDITIONS	BENEFITS	BENEFITS
Asclepias tuberosa Butterfly milkweed	Height: 0.5 – 0.6 m (1.5 – 2 ft); large clusters of orange flowers	None	None	Light: Partial shade to full sun Soil: Prefers well- drained sandy soil; drought tolerant; Parts may be toxic	Host plant for Monarch and Grey Hairstreak butterflies. Flowers attract butterflies, hummingbirds and many species of bees.	
Baptisia australis Blue wild indigo  Native to eastern North America but New England occurrences are considered introduced per the Native Plant Trust; USDA PLANTS database considers it native	Bushy; height: $0.6 - 1.2$ m $(2 - 4$ ft) with $0.6 - 0.9$ m $(2 - 3$ ft) spread; blue legume flowers; fixes nitrogen making it an excellent plant for soil health	Some references indicate tolerance	None	Light: Full sun Soil: Gravelly, sandy or well-drained loamy soils; drought tolerant	Host plant for the following butterflies - Wild Indigo Duskywing, Eastern Tailed-Blue, Orange Sulphur, Clouded Sulphur, Frosted Elfin, Hoary Edge. Attracts native bees, bumble bees, butterflies and other pollinators	Can provide good ground cover
Baptisia tinctoria Yellow wild indigo	Bushy; height 0.6 – 0.9 m (2 – 3 ft); yellow flowers	Some references indicate tolerance	None	Light: Full sun Soil: acidic loams, sand Toxic if ingested	Attracts butterflies and bees. Larval host for Wild Indigo Duskywing, Frosted Elfin and Pearl Crescent butterflies	
Eupatorium perfoliatum Common Boneset	Height: $0.6 - 1.2 \text{ m} (2 - 4 \text{ ft})$ ; white flowers	None	None	Light: Partial shade to full sun	Attracts butterflies and bees to the nectar and pollen	Attracts birds

Eutrochium dubium (Eupatoriadelphus dubius) Coastal plain Joe	Height: $0.6 - 1.5$ ft $(2 - 5)$ ft); pale pink flowers	None	None	Soil: various soil types as long as wet to moist conditions Light: full sun Soil: sandy, wet soils particularly in marshes and wet meadows	Flowers attract butterflies and bees.	Seeds provide food for some songbirds
Pye Weed  Eutrochium  maculatum (Eupatoriadelphus  maculatus) Spotted Joe Pye Weed	Height: 0.9 – 1.8 m (3 – 6 ft); pale pink flowers	None	None	Light: Partial shade to full sun Soil: various soil types as long as wet to moist conditions	Attracts bees and butterflies. Larval host for some moth caterpillars	Sometimes eaten by deer, rabbits and livestock
Eutrochium pupureum (Eupatorium purpureum) Sweet scented/Purple Joe Pye Weed	Height: $0.9 - 2.1$ m $(3 - 7$ ft); pink flowers	Some references indicate tolerance	Some references indicate tolerance	Light: Partial shade to full sun Soil: various soil types with moist to average soils moisture conditions	Attracts butterflies and bees	Attracts songbirds
Hibiscus moscheutos Swamp rosemallow	Height: 1.2 – 2.1 m (4 – 7 ft); white or pink flowers	Low tolerance	Low tolerance	Light: Partial shade to full sun Soil: brackish marsh soils	Attracts hummingbirds, butterflies and other pollinators. Many butterfly and moth species use this as a caterpillar host plant. Members of the genus support at least one specialized native bee	
<i>Iris versicolor</i> Harlequin blueflag	Height: $0.3 - 0.9 \text{ m } (1 - 3 \text{ ft})$ ; blue to purple flowers	None	Some references indicate	Light: Partial shade to full sun	Attracts hummingbirds	Poisonous to livestock and some wildlife

			moderate brackish water tolerance	Soil: Moist, rich soils; can tolerate inundation		
Limonium carolinianum Carolina Sea Lavender	Height: $0.3 - 0.6$ m $(1 - 2$ ft); pale purple flowers	Tolerant	Tolerant	Light: Partial shade to full sun Soil: wet soils; common in salt marshes, and tidal shorelines	Flowers attract butterflies and other pollinators	
Lobelia cardinalis Cardinal flower	Height: 0.3 – 1.2 m (1 – 4 ft); bright red flowers	None	None	Light: Shade to partial shade to full sun Soil: wet to moist soils; riparian areas Poisonous parts	Attracts butterflies, hummingbirds and swallowtail butterflies. Pollinated primarily by the ruby throated hummingbird.	
Lobelia siphilitica Great blue lobelia	Height: $0.6 - 0.9$ m $(2 - 3$ ft); blue flowers	None	None	Light: Shade to partial shade to full sun Soil: wet to moist clay, loamy to sandy soils Poisonous parts	Attracts hummingbirds and butterflies as well as some bee species	
Lupinus perennis Sundial lupine	Height: $0.3 - 0.9 \text{ m } (1 - 3 \text{ ft})$ ; blue/purple flowers	None	None	Light: Partial shade to full sun Soil: Dry, well-drained sandy soils	It is pollinated by a wide variety of bees, butterflies and hummingbirds. It is the larval host plant for frosted elfin, wild indigo duskywing, and the persius duskywing butterflies and skippers	Provides cover for wildlife when grown in clusters. Deer browse the foliage and birds and small mammals eat the seeds
Salicornia ambigua Perennial glasswort	Height: 15-30 cm (6–12 in); forms mats to 1 m (3.2 ft) diam; fleshy,	Tolerant	Tolerant	Light: Full sun Soil: Sandy, marshy soils		

	succulent, bright green stems; red fall color					
Solidago sempervirens Seaside goldenrod	Height: 0.3 – 2.4 m (1-8 ft) tall; fleshy, waxy leaves; yellow flowers	Tolerant	Tolerant	Light: Full sun Soil: Sandy soils	Attracts butterflies and many bee species including some important native and honey bees. Larval host for the wavy-lined emerald moth; important food source for fall migrating monarch butterflies	Benefits birds and small mammals
Symphyotrichum novae-angliae New England aster	Height: $0.9 - 1.8 \text{ m } (3 - 6 \text{ ft})$ ; pink/purple flowers	None	None	Light: Partial shade Soil: Moist soils	Attracts pollinators including native/specialized bees and butterflies. The late nectar source is important for migrating monarchs. It is also the host plant for pearl crescent and checkerspot butterflies	Small mammals and songbirds eat the seeds
Symphyotrichum tenuifolium Perennial saltmarsh aster	Height: $0.3 - 0.6$ m $(1 - 2$ ft); white to pale purple flowers	Tolerant	Tolerant	Light: Partial shade to full sun Soil: salt/brackish marsh soils	Valuable pollen source for native bees	
Teucrium canadense Canada germander	Height: $0.3 - 0.9$ m $(1 - 3$ ft); pink and white flowers	Some references indicate tolerance	None	Light: Partial shade Soil: Prefers moist or shallow, submerged soils	Flowers attract butterflies and bees	

Vernonia	Height: $0.9 - 2.1 \text{ m} (3 - 7)$	None	None	Light: Full sun	Flowers attract	Songbirds eat the
noveboracensis	ft); purple flowers			Soil: Prefers moist soils,	butterflies, bees and	seeds
New York Ironweed				but will grow in average	other pollinators	
				to dry soils	including at least one	
					specialized bee.	
					_	

# **NATIVE VINES for Coastal Connecticut**

NAME	CHARACTERISTICS	SALINITY TOLERANCE		GROWTH	POLLINATOR	WILDLIFE
		SPRAY	SOIL	CONDITIONS	BENEFITS	BENEFITS
Lathyrus japonicus Beach pea	Perennial, trailing vine; to 0.6 m (2 ft) pink to purple flowers; fixes nitrogen	Tolerant	Tolerant	Light: Full sun Soil: Sandy or loamy, well-drained soils Seeds are toxic to humans	The flowers attract butterflies and other pollinators. Larval host to the Eastern tailed blue butterfly	
Lonicera sempervirens Trumpet honeysuckle	Perennial; climbing or ground cover; 0.9 – 6 m (3 - 20 ft); semi-evergreen leaves, red, tubular flowers	None	None	Light: Partial shade to full sun Soil: Moist, well-drained soils	Flowers attract hummingbirds, bees, and butterflies. Larval host for the spring azure and snowberry clearwing moth	Fruits attract quail, purple finch, goldfinch, hermit thrush, American robin. The slender stems provide cover and nesting sites for many small birds.

References used to obtain information on plant characteristics, growing conditions, salinity tolerances, and Latin/Common names:

Brand, M. 2001. UConn Plant Database. University of Connecticut. http://www.hort.uconn.edu/plants/

Connecticut Botanical Society Databases http://www.ct-botanical-society.org/

Connecticut College Arboretum publications: https://www.conncoll.edu/the-arboretum/publications/

Gordon, S., B. Maynard, G. Torphy, D. Hughes, K. Venturini, C. Chaffee. 2007. Rhode Island Coastal Plant Guide. University of Rhode Islands and Rhode Island Coastal Resources Management Council. <a href="http://cels.uri.edu/testsite/coastalPlants/CoastalPlantGuide.htm">http://cels.uri.edu/testsite/coastalPlants/CoastalPlantGuide.htm</a>

University of Florida Gardening Solutions: <a href="https://gardeningsolutions.ifas.ufl.edu/plants/trees-and-shrubs/">https://gardeningsolutions.ifas.ufl.edu/plants/trees-and-shrubs/</a>

Lady Bird Johnson Wildflower Center Database (http://www.wildflower.org/plants/)

Native Plant Trust, Go Botany website <a href="https://gobotany.nativeplanttrust.org/">https://gobotany.nativeplanttrust.org/</a>

Rollins, L. 2007. Salinity Management Guide. WateReuse Foundation. https://watereuse.org/salinity-management/index.html

USDA, NRCS. 2006. The PLANTS Database (<a href="http://plants.usda.gov">http://plants.usda.gov</a>), 21 November 2006). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

### References Used for Wildlife Values (by plant type):

**TREES** 

Red maple: <a href="https://plants.usda.gov/plantguide/pdf/pg\_acru.pdf">https://plants.usda.gov/plantguide/pdf/pg\_acru.pdf</a>

Common serviceberry: https://plants.ces.ncsu.edu/plants/amelanchier/common-name/common-serviceberry/

Alleghany serviceberry: https://www.beeculture.com/native-serviceberries/

Flowering dogwood: https://abnativeplants.com/products/cornus-florida-cloud-9? pos=5& sid=1cb3e8850& ss=r and

https://extension.psu.edu/landscaping-for-wildlife-trees-shrubs-and-vines

River Birch: http://backyardsfornature.org/?tag=river-birch

Gray Birch: https://extension.psu.edu/landscaping-for-wildlife-trees-shrubs-and-vines Common hackberry: https://www.fs.fed.us/database/feis/plants/tree/celocc/all.html

Cockspur Hawthorn: http://grownative.org/plant-picker/plant/cockspur-hawthorn/

White Ash: https://www.lakeforest.edu/academics/programs/environmental/courses/es282/fraxinus\_americana.php

Green Ash: https://www.arborday.org/trees/treeGuide/TreeDetail.cfm?ItemID=1070 and

http://www.myminnesotawoods.umn.edu/2017/07/changing-ash-habitats-and-the-wildlife-impact/

American Holly: https://abnativeplants.com/products/ilex-opaca? pos=2& sid=82c1e1e99& ss=r

Black Walnut: https://plants.ces.ncsu.edu/plants/juglans-nigra/

Eastern Red Cedar: https://abnativeplants.com/products/juniperus-virginiana-3? pos=3& sid=ad487151f& ss=r

Tulip Poplar: <a href="https://plants.usda.gov/factsheet/pdf/fs\_litu.pdf">https://plants.usda.gov/factsheet/pdf/fs\_litu.pdf</a> and

https://owlcation.com/stem/Tulip-Poplar-Tree-Facts-Uses-and-Planting-Tips

Blackgum: https://extension.psu.edu/landscaping-for-wildlife-trees-shrubs-and-vines and

https://abnativeplants.com/products/nyssa-sylvatica?\_pos=2&\_sid=456bb4c39&\_ss=r

Pitch Pine: <a href="https://www.fs.fed.us/database/feis/plants/tree/pinrig/all.html">https://www.fs.fed.us/database/feis/plants/tree/pinrig/all.html</a>

American Sycamore: http://www.eattheweeds.com/sycamores-not-just-another-plane-tree-2/ and

https://www.fs.fed.us/database/feis/plants/tree/plaocc/all.html#MANAGEMENT% 20CONSIDERATIONS

Chokecherry: https://abnativeplants.com/products/prunus-virginiana-canada-red? pos=1& sid=76555562f& ss=r\_and

https://nfs.unl.edu/woody-plants/chokecherry

Black cherry: https://abnativeplants.com/products/prunus-serotina? pos=2& sid=69ee4dcf4& ss=r

Common Hoptree: https://www.wildflower.org/plants/result.php?id\_plant=PTTR

White Oak: <a href="https://www.fs.fed.us/database/feis/plants/tree/quealb/all.html">https://www.fs.fed.us/database/feis/plants/tree/quealb/all.html</a>

Swamp White Oak: https://www.wildflower.org/plants/result.php?id\_plant=QUBI and

https://plants.ces.ncsu.edu/plants/quercus-bicolor/

Chestnut Oak: https://www.fs.fed.us/database/feis/plants/tree/guespp3/all.html and

https://www.wildflower.org/plants/result.php?id\_plant=QUMO4

Pin Oak: https://www.wildflower.org/plants/result.php?id\_plant=QUPA2 and

https://www.fs.fed.us/database/feis/plants/tree/quepal/all.html

Northern Red Oak: https://www.wildflower.org/plants/result.php?id\_plant=QURU and

https://www.fs.fed.us/database/feis/plants/tree/querub/all.html

Post Oak: https://www.fs.fed.us/database/feis/plants/tree/queste/all.html and

https://www.wildflower.org/plants/result.php?id\_plant=OURU

Black Oak: https://www.fs.fed.us/database/feis/plants/tree/quevel/all.html

Sassafras: https://gnps.org/plants/sassafras-sassafras-albidum/ and

https://www.fs.fed.us/database/feis/plants/tree/sasalb/all.html

Pagoda dogwood: https://plants.ces.ncsu.edu/plants/cornus-alternifolia/

Basswood: https://www.fs.fed.us/database/feis/plants/tree/tilame/all.html

#### **SHRUBS**

Speckled alder: https://www.fs.fed.us/database/feis/plants/tree/alninc/all.html and

https://www.wildflower.org/plants/result.php?id\_plant=ALINR

Smooth alder: https://abnativeplants.com/products/alnus-serrulata? pos=1& sid=a6e2be882& ss=r

Canadian serviceberry: <a href="https://wimastergardener.org/article/serviceberry-amalanchier-spp/">https://wimastergardener.org/article/serviceberry-amalanchier-spp/</a>
Dwarf serviceberry: <a href="https://www.wildflower.org/plants/result.php?id">https://www.wildflower.org/plants/result.php?id</a> plant=AMCA4

Dwarf servicederly. https://www.wierrower.org/plants/result.php.id\_plant=/iv/c/r

Red bearberry: https://www.fs.fed.us/database/feis/plants/shrub/arcrub/all.html#IMPORTANCE%20TO%20WILDLIFE%20AND%20LIVESTOCK

Red chokecherry: https://abnativeplants.com/products/aronia-arbutifolia? pos=6& sid=217a771fa& ss=r

Purple chokecherry: https://plants.ces.ncsu.edu/plants/aronia-x-prunifolia/

Black chokecherry: https://abnativeplants.com/products/aronia-melanocarpa?\_pos=5&\_sid=217a771fa&\_ss=r

Groundsel bush: <a href="https://www.wildflower.org/plants/result.php?id">https://www.wildflower.org/plants/result.php?id</a> plant=BAHA

New Jersey tea: <a href="https://www.wildflower.org/plants/result.php?id">https://www.wildflower.org/plants/result.php?id</a> plant=CEAM and

https://plants.usda.gov/core/profile?symbol=CEAM

Common buttonbush: https://www.wildflower.org/plants/result.php?id\_plant=CEOC2

Coastal sweet pepperbush: https://abnativeplants.com/products/clethra-alnifolia-hummingbird? pos=4& sid=fcb291a0f& ss=r and

https://www.wildflower.org/plants/result.php?id\_plant=CLAL3

Sweetfern: https://www.fs.fed.us/database/feis/plants/shrub/comper/all.html#MANAGEMENT%20CONSIDERATIONS and

https://www.wildflower.org/plants/result.php?id\_plant=COPE80

Swamp doghobble: https://plants.ces.ncsu.edu/plants/eubotrys-racemosa/

Eastern wintergreen: https://plants.ces.ncsu.edu/plants/gaultheria-procumbens/

Black huckleberry: https://plants.ces.ncsu.edu/plants/gaylussacia-baccata/ and

https://www.wildflower.org/plants/result.php?id\_plant=GABA

Blue huckleberry: https://plants.ces.ncsu.edu/plants/gaylussacia-frondosa/

American witchhazel: https://plants.ces.ncsu.edu/plants/hamamelis-virginiana/ and

https://www.wildflower.org/plants/result.php?id\_plant=havi4 and

Common winterberry: https://plants.ces.ncsu.edu/plants/ilex-verticillata/

High tide bush: https://plants.usda.gov/factsheet/pdf/fs\_ivfr.pdf

Common Juniper: https://abnativeplants.com/products/juniperus-communis-blueberry-delight-2? pos=2& sid=d5eebdb97& ss=r

Creeping juniper: https://abnativeplants.com/products/juniperus-horizontalis-blue-rug?\_pos=3&\_sid=d5eebdb97&\_ss=r

Sheep laurel: https://plants.ces.ncsu.edu/plants/kalmia-angustifolia/ Mountain laurel: https://plants.ces.ncsu.edu/plants/kalmia-latifolia/ and

https://abnativeplants.com/products/kalmia-latifolia-pink-charm-3? pos=1& sid=87439c169& ss=r

Northern spicebush: https://www.wildflower.org/plants/result.php?id\_plant=LIBE3 and

https://plants.ces.ncsu.edu/plants/lindera-benzoin/ Maleberry: https://plants.ces.ncsu.edu/plants/lyonia-ligustrina/

Northern bayberry: https://www.wildflower.org/plants/result.php?id\_plant=MOPE6 and

https://plants.ces.ncsu.edu/plants/myrica-pensylvanica/

Sweetgale: http://nativeplantspnw.com/sweet-gale-myrica-gale/#:~:text=Use%20by%20wildlife%3A%20The%20fruit,for%20salmon%20and%20water%20birds

Common ninebark; https://abnativeplants.com/products/physocarpus-opulifolius-centerglow? pos=2& sid=e84af4e31& ss=r

Beach plum: https://abnativeplants.com/products/prunus-maritima? pos=4& sid=0cd265420& ss=r and

https://www.wildflower.org/plants/result.php?id\_plant=PRMA2

Bear oak: https://www.wildflower.org/plants/result.php?id\_plant=QUIL

Dwarf chinkapin oak: https://plants.ces.ncsu.edu/plants/quercus-prinoides/

Swamp azalea: https://abnativeplants.com/products/rhododendron-arborescens? pos=15& sid=19f0e13ae& ss=r

Winged sumac: https://www.wildflower.org/plants/result.php?id\_plant=RHCO and

https://plants.ces.ncsu.edu/plants/rhus-copallinum/ and

https://abnativeplants.com/products/rhus-copallinum?\_pos=3&\_sid=c5ac88220&\_ss=r

Smooth sumac: https://plants.ces.ncsu.edu/plants/rhus-glabra/

Staghorn sumac: https://www.wildflower.org/plants/result.php?id\_plant=RHTY and

https://abnativeplants.com/products/rhus-typhina?\_pos=4&\_sid=c5ac88220&\_ss=r

Carolina rose: https://abnativeplants.com/products/rosa-carolina? pos=1& sid=14e9d177f& ss=r Swamp rose: https://abnativeplants.com/products/rosa-palustris? pos=1& sid=b80690bd7& ss=r

Virginia rose: https://www.wildflower.org/plants/result.php?id\_plant=ROVI2

Pussy willow: https://abnativeplants.com/products/salix-discolor-3? pos=3& sid=3d7bcd29b& ss=r

American black elderberry: https://abnativeplants.com/products/sambucus-canadensis? pos=5& sid=dd38b863f& ss=r and

https://www.wildflower.org/plants/result.php?id\_plant=SANIC4

White meadowsweet: https://abnativeplants.com/products/spiraea-alba-var-latifolia? pos=2& sid=2b7a6cea7& ss=r

Steeplebush: https://www.wildflower.org/plants/result.php?id\_plant=SPTO2

Silky dogwood: https://www.mortonarb.org/trees-plants/tree-plant-descriptions/silky-dogwood

Gray dogwood: <a href="https://www.wildflower.org/plants/result.php?id\_plant=CORA6">https://www.wildflower.org/plants/result.php?id\_plant=CORA6</a>
Redosier dogwood: <a href="https://www.wildflower.org/plants/result.php?id\_plant=COSE16">https://www.wildflower.org/plants/result.php?id\_plant=COSE16</a>

Lowbush blueberry: https://abnativeplants.com/products/vaccinium-angustifolium? pos=3& sid=621c974d5& ss=r and

https://www.wildflower.org/plants/result.php?id\_plant=VAAN

Highbush blueberry: https://abnativeplants.com/products/vaccinium-corymbosum-northland?\_pos=3&\_sid=f40061610&\_ss=r

Large cranberry: <a href="https://plants.ces.ncsu.edu/plants/vaccinium-macrocarpon/">https://plants.ces.ncsu.edu/plants/vaccinium-macrocarpon/</a> Blue ridge blueberry: <a href="https://plants.ces.ncsu.edu/plants/vaccinium-pallidum/">https://plants.ces.ncsu.edu/plants/vaccinium-pallidum/</a>

Smooth arrowwood: https://abnativeplants.com/products/viburnum-dentatum? pos=9& sid=1c26be9f3& ss=r

#### **GRASSES**

American Beach Grass: https://www.wildflower.org/plants/result.php?id\_plant=AMBR

Big bluestem: https://www.wildflower.org/plants/result.php?id\_plant=ANGE

Broomsedge bluestem: <a href="https://www.wildflower.org/plants/result.php?id\_plant=ANVI2">https://www.wildflower.org/plants/result.php?id\_plant=ANVI2</a>

Sweetgrass: https://plants.usda.gov/plantguide/pdf/cs\_hiod.pdf

Sturdy bulrush: https://www.fs.fed.us/database/feis/plants/graminoid/bolrob/all.html#MANAGEMENT%20CONSIDERATIONS

Tussock sedge: https://www.wildflower.org/plants/result.php?id\_plant=CAST8

Wavy hairgrass: https://abnativeplants.com/products/deschampsia-flexuosa? pos=2& sid=f9236bd5c& ss=r

Marsh spikegrass: <a href="https://www.wildflower.org/plants/result.php?id\_plant=DISP">https://www.wildflower.org/plants/result.php?id\_plant=DISP</a>
Virginia wild rye: <a href="https://www.wildflower.org/plants/result.php?id\_plant=ELVI3">https://www.wildflower.org/plants/result.php?id\_plant=JUEF</a>
Common rush: <a href="https://www.wildflower.org/plants/result.php?id\_plant=JUEF">https://www.wildflower.org/plants/result.php?id\_plant=JUEF</a>

Saltmeadow rush: https://nas.er.usgs.gov/queries/GreatLakes/FactSheet.aspx?SpeciesID=2673

Switchgrass: https://www.wildflower.org/plants/result.php?id\_plant=PAVI2 Little bluestem: https://www.wildflower.org/plants/result.php?id\_plant=SCSC Indiangrass: https://www.wildflower.org/plants/result.php?id\_plant=SONU2

indiangrass. https://www.wndnower.org/prants/result.php?id\_prant=50102

 $Saltmarsh\ cordgrass:\ \underline{https://www.wildflower.org/plants/result.php?id\_plant=SPAL}$ 

 $Salt meadow\ cord grass: \underline{https://www.fs.fed.us/database/feis/plants/graminoid/spapat/all.html \#MANAGEMENT\%20CONSIDERATIONS\ and \underline{https://www.fs.fed.us/database/feis/plants/graminoid/spapat/all.html #MANAGEMENT\%20CONSIDERATIONS\ and all all all all all all$ 

https://plants.sc.egov.usda.gov/factsheet/pdf/fs\_sppa.pdf

#### HERBACEOUS PERENNIALS

Butterfly milkweed: <a href="https://www.wildflower.org/plants/result.php?id\_plant=ASTU">https://www.wildflower.org/plants/result.php?id\_plant=ASTU</a>

Blue wild indigo: https://plants.usda.gov/plantguide/pdf/cs\_baau.pdf

Yellow wild indigo: <a href="https://www.wildflower.org/plants/result.php?id\_plant=BATI">https://www.wildflower.org/plants/result.php?id\_plant=BATI</a>

Common boneset: <a href="https://plants.ces.ncsu.edu/plants/eupatorium-perfoliatum/">https://plants.ces.ncsu.edu/plants/eupatorium-perfoliatum/</a>

Coastal plain Joe pye weed: https://plants.ces.ncsu.edu/plants/eutrochium-dubium/

Spotted Joe pye weed: https://www.wildflower.org/plants/result.php?id\_plant=EUMA9 and

### https://plants.ces.ncsu.edu/plants/eutrochium-maculatum/

Sweet scented Joe pye weed: https://plants.ces.ncsu.edu/plants/eutrochium-purpureum/

Swamp rosemallow: https://plants.ces.ncsu.edu/plants/hibiscus-moscheutos/

 $Harlequin\ blueflag: \underline{https://www.wildflower.org/plants/result.php?id\ plant=IRVE2}$ 

Carolina Sea lavender: https://www.wildflower.org/plants/result.php?id\_plant=LICA17

Cardinal flower: https://abnativeplants.com/products/lobelia-cardinalis? pos=3& sid=7f52347ad& ss=r

Great blue lobelia: <a href="https://www.wildflower.org/plants/result.php?id\_plant=LOSI">https://www.wildflower.org/plants/result.php?id\_plant=LOSI</a>
Sundial Lupine: <a href="https://www.wildflower.org/plants/result.php?id\_plant=LUPE3">https://www.wildflower.org/plants/result.php?id\_plant=LUPE3</a>
Seaside goldenrod: <a href="https://plants.ces.ncsu.edu/plants/solidago-sempervirens/">https://plants.ces.ncsu.edu/plants/solidago-sempervirens/</a> and

https://plants.usda.gov/factsheet/pdf/fs\_sose.pdf

New England aster: https://plants.ces.ncsu.edu/plants/symphyotrichum-novae-angliae/
Perennial saltmarsh aster: https://www.wildflower.org/plants/result.php?id\_plant=SYTE6
Canada germander: https://www.wildflower.org/plants/result.php?id\_plant=TECA3
New York ironweed: https://plants.ces.ncsu.edu/plants/vernonia-noveboracensis/

#### **VINES**

Beach Pea: https://www.wildflower.org/plants/result.php?id\_plant=LAJA

Trumpet honeysuckle: https://abnativeplants.com/products/lonicera-sempervirens? pos=2& sid=34f46c746& ss=r

#### Other Resources:

Native and Non-Native\* Caterpillar Host Plants for Showy Butterfly Species: <a href="https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/technical/ecoscience/?cid=nrcs142p2\_011097">https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/technical/ecoscience/?cid=nrcs142p2\_011097</a>