

Vermont Natural Shoreland Erosion Control Certification Training, Nov. 2016

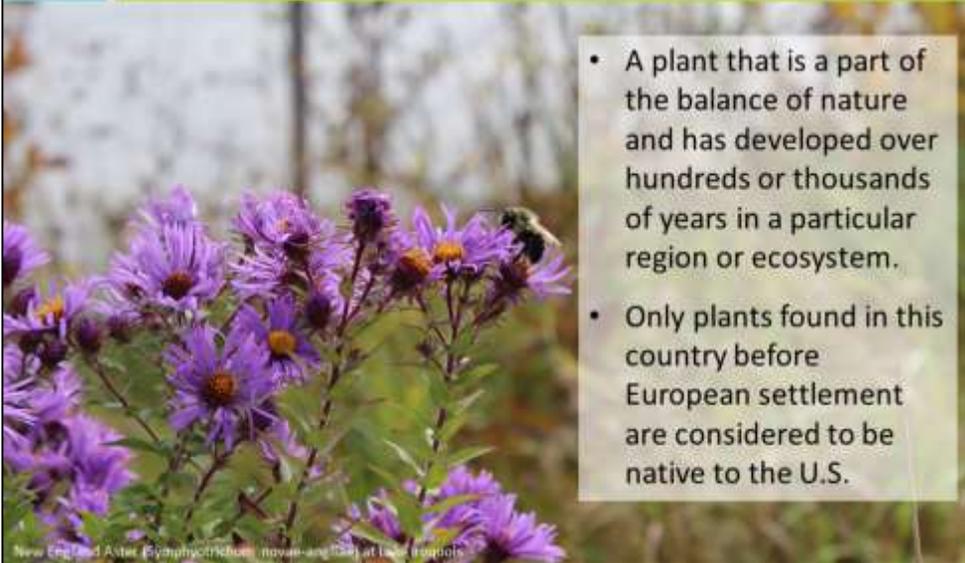
## The Importance of Native Plants



By Annie White, PhD, ASLA, Nectar Landscape Design Studio

Natural Shoreland Erosion Control Certification Training, Nov., 2016  
Vermont Lake Wise and Shoreland Protection Act Programs

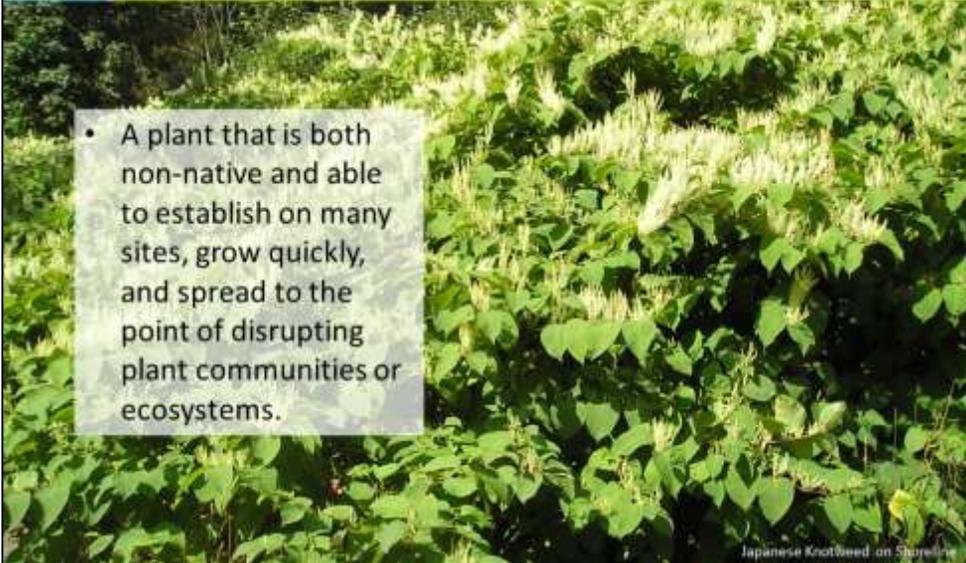
## NATIVE PLANT DEFINED



Also define non-native plant

## INVASIVE PLANT

- A plant that is both non-native and able to establish on many sites, grow quickly, and spread to the point of disrupting plant communities or ecosystems.



Upwards of 3500 introduced species have escaped cultivation. \$100 million is spent annually on controlling invasive wetland plants in the US Alone. 42% of the nation's endangered and threatened species have declined as a result of encroaching invasive plants and animals.

## CONTROLLING INVASIVES



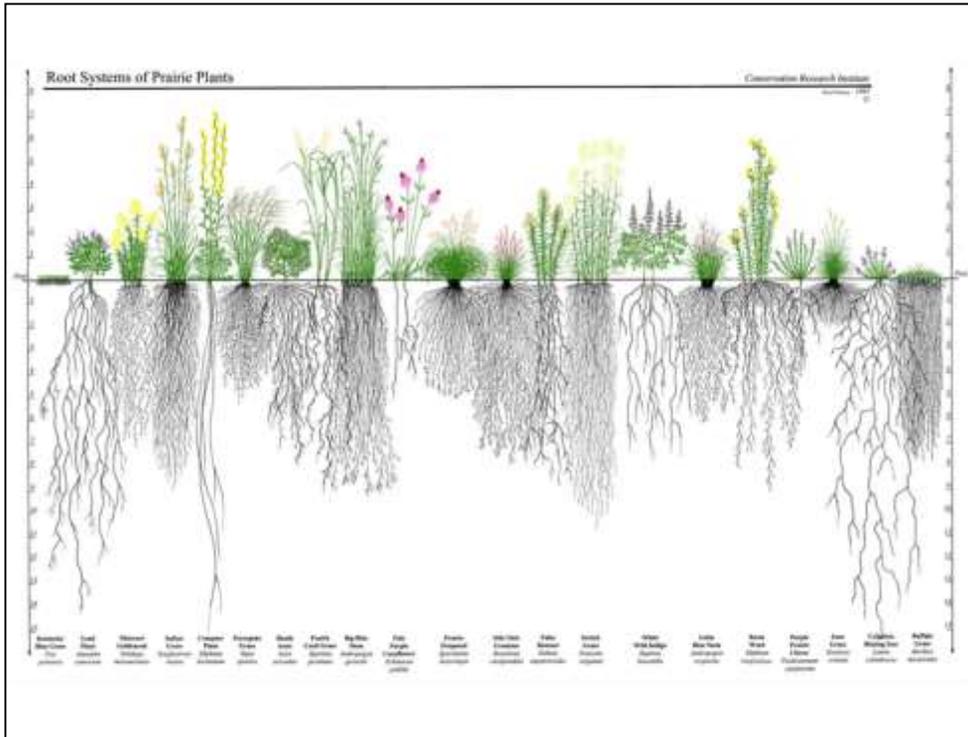
- Control for invasive plants such as Japanese Honeysuckle, Japanese Knotweed, Buckthorn, Purple Loosestrife, and Garlic Mustard
- Avoid introducing invasive landscape plants such as Norway Maple, Amur Maple, Japanese Barberry, Burning Bush, and Yellow Iris

## BENEFITS OF NATIVE PLANTS



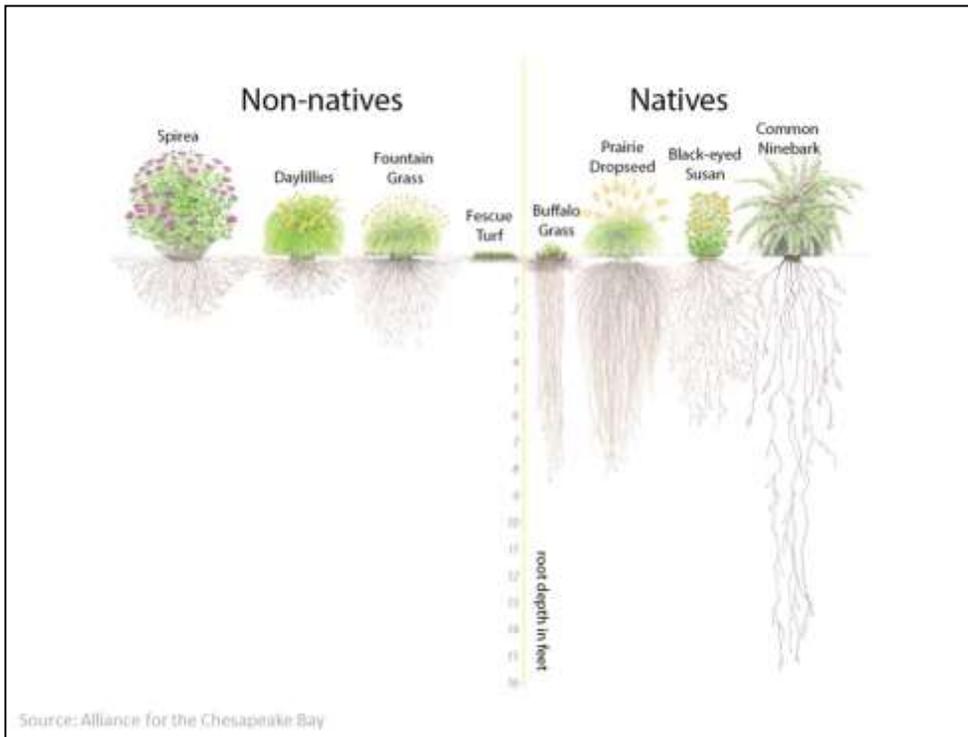
Lake Wise award-winning landscape on Lake Willoughby

- Promote biodiversity and stewardship of our natural heritage
- Preferred host plants for native insects and pollinators and food source for native birds
- Have deep root systems
- Adapted to our local soils & climate
- Do not require long-term irrigation
- More disease resistant
- Do not require fertilizer



What plants provide below the surface is equal to or in some cases more important than what they provide above the surface.

Note the typical lawn grass roots on far right of graphic and how shallow they are. Grass roots provide the least amount of root structure and soil stabilization and above ground little to no stormwater filtration. And, lawns are sterile for wildlife habitat.



Again, compare some of the popular landscaping ornamental plant roots with the depth of native plant roots.

## HABITAT BENEFITS OF NATIVE PLANTS

- Native plants are the preferred food sources for native birds and the preferred host plants for native insects and pollinators



Kousa Dogwood (Non-native)



Flowering Dogwood (Native)

Evolved together. Monarch caterpillar. Kousa Dogwood, a native of China supports no insect herbivores. Flowering dogwood, a native to the eastern US supports 117 species of moths and butterflies alone.



**Monarch caterpillar on Milkweed**



**Juniper Hairstreak on Red Cedar**



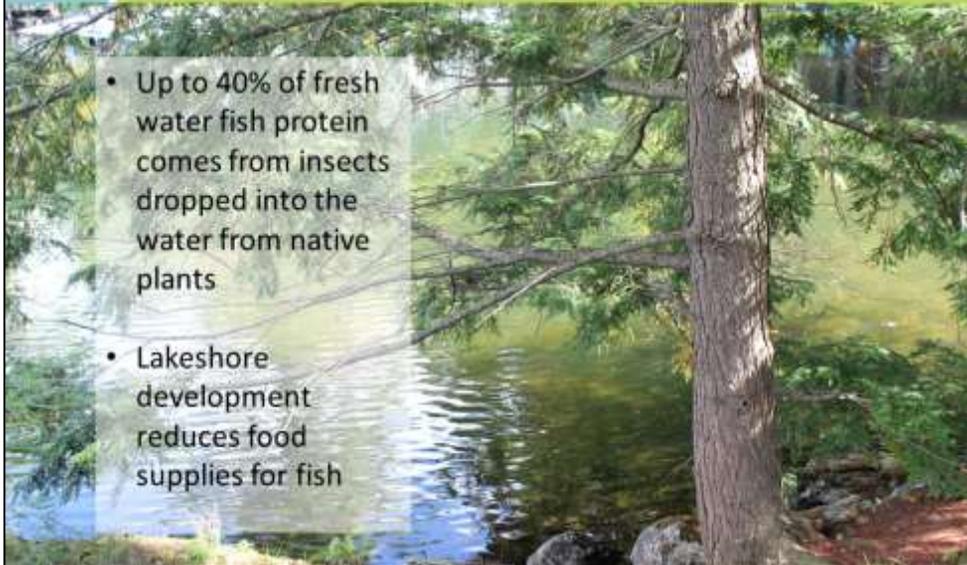
- 96% of birds depend entirely on insect protein to feed their young
- Chickadees make 146 trips per day to feed their young, collecting a total of 6,200-9,000 caterpillar larva to feed one clutch

Woody Plants			Herbaceous Plants		
Common Name	Plant Genus	Butterfly/moth species supported	Common Name	Plant Genus	Butterfly/moth species supported
Oak	Quercus	534	Goldenrod	Solidago	115
Black cherry	Prunus	436	Asters	Aster	112
Willow	Salix	455	Sunflower	Helianthus	73
Birch	Betula	413	Joe pye, Boneset	Eupatorium	42
Poplar	Populus	368	Morning glory	Ipomoea	39
Crabapple	Malus	311	Sedges	Carex	36
Blueberry	Vaccinium	288	Honeysuckle	Lonicera	36
Maple	Acer	285	Lupine	Lupinus	33
Elm	Ulmus	213	Violets	Viola	29
Pine	Pinus	203	Geraniums	Geranium	23
Hickory	Carya	200	Black-eyed susan	Rudbeckia	17
Hawthorn	Crataegus	159	Iris	Iris	17
Spruce	Picea	156	Evening primrose	Oenothera	16
Alder	Alnus	156	Milkweed	Asclepias	12
Basewood	Tilia	150	Verbena	Verbena	11
Ash	Fraxinus	150	Beardtongue	Penstemon	8
Rose	Rosa	139	Phlox	Phlox	8
Hibert	Corylus	131	See balm	Monarda	7
Walnut	Juglans	130			

Source: [www.bringingnaturehome.net](http://www.bringingnaturehome.net), based on research by Dr. Doug Tallamy

Dr. Doug Tallamy's research findings of how many moths and butterflies each native plant supports.

## NATURAL SHORELINES = HEALTHIER FISH



A study performed on lakes in the Pacific Northwest found there was a direct correlation between how developed a lakeshore was and the diets of the fish.

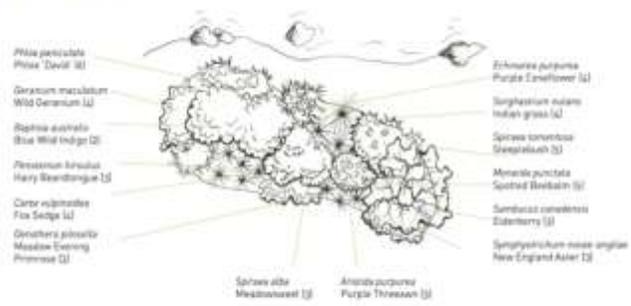
The research found that trout in developed lakes had fewer insects in their diet and an overall 50 percent lower daily intake of energy. Lower energy intake can slow growth and compromise fish reproduction, which ultimately leads to population declines.

## BEE POLLINATOR-FRIENDLY



- **90%** - Percentage of wild flowering plants that depend on animal-mediated pollination
- **75%** - Percentage of the world's food crops that depend at least in part on pollination
- **39%** - Percentage of pollinator-dependent crop area in the U.S. that suffers from a mismatch between supply of wild bees and the need for their pollination services
- Pollinators prefer, but not necessarily exclusively, to forage on the nectar and pollen from native flowering plants
- Plant a diversity of flowering plants that provide nectar and pollen to pollinators from early spring to late fall

**Planting Plan**



Source: Federation of Vermont Lakes and Ponds, *Guide to Healthy Lakes Using Lakeshore Landscaping*, Drawing by Molly Greenleaf

## AVOID LAWN TO LAKE

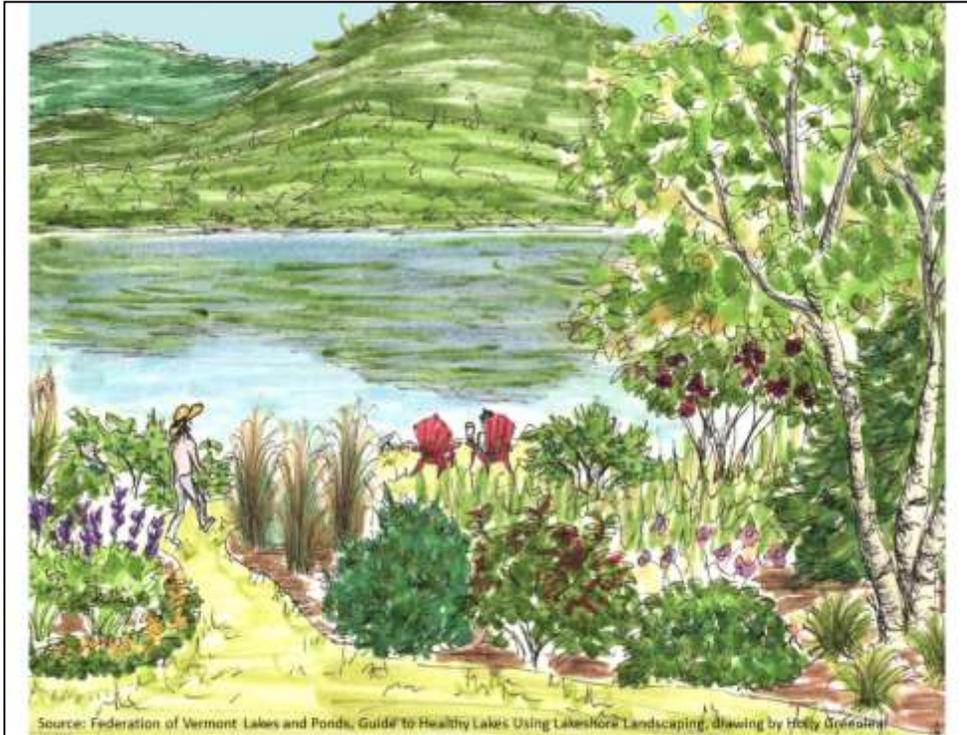


- Prone to erosion
- Provides almost no habitat value to insects, birds, and fish
- 40 million acres in the U.S.

More lawn planted in the US than all the agricultural crop land planted!



Baby steps with renaturalizing shorelands and reducing lawn to lake. Iris, redosier dogwoods coming in one year after planted.



Be intentional about lawn areas. Evaluate what kind/what size of lawn space the homeowner needs for recreational. Lawns may be best placed along pathways, but establish lawn last after protecting the assortment of native species.



Example of unused lawn areas that could be be restored/stabilized with native vegetation



**DESCRIPTION:** The Broadwater Residence is currently experiencing movement and erosion of the rocks along the shoreline. A stone apron wall currently separates the shoreline from the deck. The goal of this project are to (a) stabilize the shoreline by rebuilding theoulder wall at the toe of the slope. (b) stabilize the upslope slope by increasing the tree cover, (c) engineering the slope with native trees, shrubs, and herbaceous grasses and flowers, and (d) directing upslope stormwater runoff away from the shoreline. Access to the shoreline is preserved. All plant selections are intended to enhance the aesthetic appeal of the landscape without flooding lake views.



Project:  
Broadwater Residence  
86 Weynes Road  
Morgan, Vermont

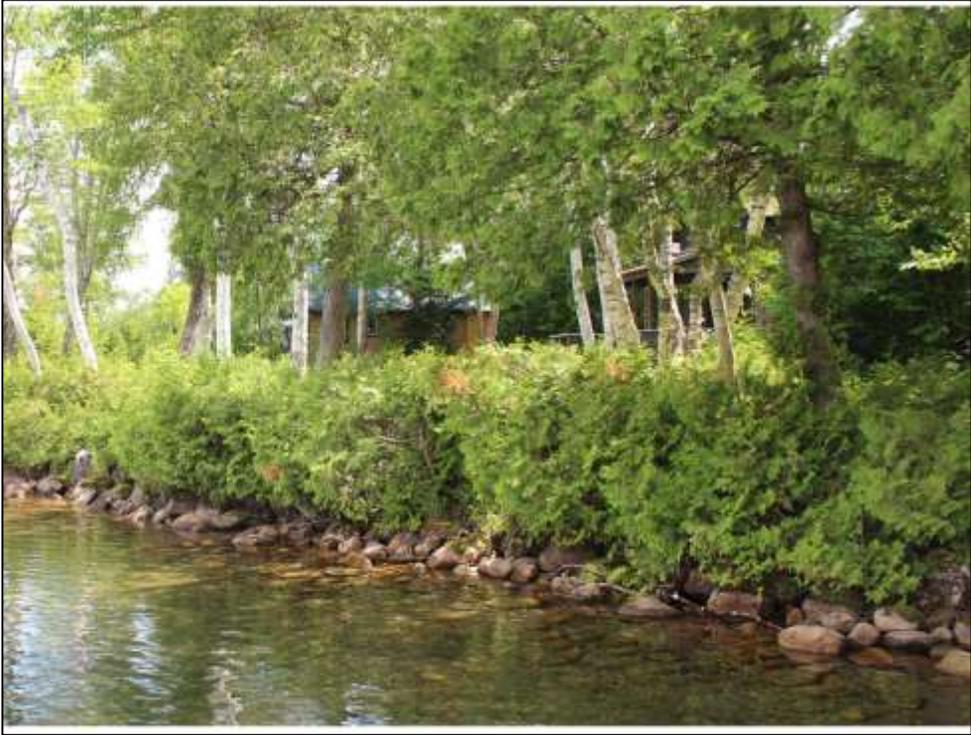


Designer:  
Annie White

PLAN  
OVERVIEW



Date: 10/20/18 Revision: Page 1 of 3



There are ways to stabilize shorelines with native vegetation AND have a tree canopy AND preserve lake views

**TREES**

soil: wet, moist, dry  
 sun: full sun, part shade, full shade  
 size: in 1000, in 2000, in 3000

**Plant Symbol Legend**

- Herbaceous Perennials
- Trees
- Shrubs
- Wetland Obligate
- Eddies
- Cut Flowers
- Wildlife Attractor
- Require Extra Care
- Winter Interest
- Rain Garden
- Drought Tolerant
- Fall Foliage

**Acer rubrum - Red Maple**  
 March-April. Street and shade tree.  
 z: 3  
 h: 42'-70'  
 s: 30'-50'

**Amelanchier lancea - Adgheey**  
 Serviceberry. March-April. Fragrant.  
 z: 3  
 h: 15'-20'  
 s: 10'-30'

**Betula papyrifera - Paper Birch**  
 April. Acidic, sandy/loamy soils.  
 z: 3  
 h: 15'-20'  
 s: 25'-30'

**Thuja occidentalis var. americana -**  
 Thornless Honey Locust. May-June.  
 Wind and salt tolerant. Good for beach/ streets.  
 z: 3  
 h: 40'-60'  
 s: 60'-80'

**Thuja occidentalis - Canadian Hemlock**  
 April. Rich, cool soils. Sensitive to salt.  
 z: 3  
 h: 50'-75'  
 s: 25'-35'

Trees have the biggest impact on the quality of the watershed. The presence of trees near shore lands provides shade for animal habitats and absorbs rain water. Their deep and spreading roots increase soil stability and prevent erosion control.



30

For help with native plant selection:

**Federation of Vermont  
 Lakes and Ponds'  
 Guide to Healthy Lakes  
 Using Lakeshore  
 Landscaping**



# SHRUBS

soil	part	exposure	size
wet	sun/	full	z: zone
moist	shade	sun	h: height
dry	shade	part	s: spread



**Aronia arbutifolia** - Red Chokeberry  
April. Erosion control, Tolerates clay.  
z: 4  
h: 5'-8'  
s: 3'-4'



**Myrica gale** - Sweetgale. July-September. Fragrant. Shorelines.  
z: 3  
h: 3'-6'  
s: 2'-8'



**Vaccinium angustifolium** - Lowbush Blueberry. May-June. Acidic soil.  
z: 3  
h: 3'-2'  
s: 2'-1'



**Aronia melanocarpa** - Black Chokeberry  
May. Fruit is edible.  
z: 3  
h: 3'-6'  
s: 2'-6'



**Ribes americanum** - Wild Black Currant  
April-May. Delicious purple berries.\*  
z: 2  
h: 3'-6'  
s: 1'-4'



**Vaccinium corymbosum** - Highbush Blueberry. May-June. Acidic.  
z: 3  
h: 4'-12'  
s: 6'-12'



**Cephalanthus occidentalis** - Buttonbush  
June. Erosion control.  
z: 4  
h: 3'-12'  
s: 2'-8'



**Salix discolor** - Pussy Willow  
April-May. Erosion control.  
z: 2  
h: 6'-15'  
s: 4'-12'



**Viburnum trilobum** - American Cranberry  
April-June.  
z: 2  
h: 6'-12'  
s: 4'-12'



**Clethra alnifolia** - Summersweet.  
July to August. Fragrant.  
z: 4  
h: 3'-8'  
s: Varies



**Sambucus canadensis** - Elderberry  
June-July. Low maintenance.  
z: 3  
h: 6'-12'  
s: 6'-12'



**Cornus sericea** - Red Osier Dogwood  
May-June. Erosion control. Spreads.  
z: 2  
h: 6'-9'  
s: 8'-12'



**Spiraea alba** - Meadowsweet  
Long blooms midsummer.  
z: 3  
h: 3'-4'  
s: 2'-4'



**Ilex verticillata** - Winterberry  
June-July. Erosion control.  
z: 3  
h: 3'-12'  
s: 3'-12'



**Spiraea tomentosa** - Sleepybush  
July-September. Mound form.  
z: 4  
h: 3'-6'  
s: 3'-6'

\* Do not plant Ribes americanum near white pine.



# HERBACEOUS PERENNIALS

soil: wet, moist, dry  
 sun: full, part, shade, shade, full  
 zone: 4, height, spread

## Flowers

Symbol legend on page 25.



*Asterone canadensis* - Windflower  
 April-June. Sandy soil. Clumping.  
 z: 4  
 h: 1'-3'  
 s: 2'



*Eupatorium maculatum* - Joe Pye Weed. July to October.  
 Adaptable. Leave flower heads in fall.  
 z: 4  
 h: 3'-5'  
 s: 1'-4'



*Manarda punctata* - Spotted Beesalm  
 July-July. Sandy soil. Clumps/strawbs.  
 z: 3  
 h: 1.5'-2'  
 s: 1'



*Aquilegia canadensis* - Columbine  
 April-May. Sandy.  
 z: 3  
 h: 2'-3'  
 s: 1'-1.5'



*Geranium maculatum* - Wild Geranium  
 April-July. Acidic soil. Clumping.  
 z: 4  
 h: 3'-5'  
 s: 1'-4'



*Dianthus barbatus* - Meadow Evening  
 Primrose. July-August. Adaptable.  
 z: 4  
 h: .5'-2'  
 s: Varies



*Asclepias incarnata* - Swamp Milkweed  
 July-August. Adaptable.  
 z: 3  
 h: 4'-5'  
 s: 2'-3'



*Iris versicolor* - Blue Flag Iris  
 May-June. Clumping.  
 z: 3  
 h: 2'-2.5'  
 s: 2'-2.5'



*Penstemon hirsutus* - Hairy Beardtongue  
 July-July. Shallow, well-drained.  
 z: 3  
 h: 1.5'-2'  
 s: Varies



*Asclepias tuberosa* - Butterfly Milkweed  
 June-August. Well-drained.  
 z: 3  
 h: 1'-3'  
 s: 1'-1.5'



*Lavandula angustifolia* - Lavender  
 June-August. Non-native.  
 z: 5  
 h: 1'-1.5'  
 s: 1'-1.5'



*Phlox paniculata* - Phlox  
 July-September. Tolerates clay.  
 z: 3  
 h: 2'-4'  
 s: 2'-3'



*Baptisia australis* - Blue Wild Indigo  
 May-June.  
 z: 4  
 h: 4.5'-5.5'  
 s: 3'-4'



*Lobelia cardinalis* - Cardinal Flower  
 July-September.  
 z: 3  
 h: 2'-4'  
 s: 1'-2'



*Rudbeckia pinnata* - Yellow Coneflower  
 July-August. Tolerates clay.  
 z: 3  
 h: 2'-4'  
 s: 2'-3'



*Echinacea purpurea* - Coneflower  
 June-August. Well-drained soil.  
 z: 3  
 h: 2'-5'  
 s: 1.5'-2'



*Lobelia siphilitica* - Great Blue Lobelia  
 July-September.  
 z: 3  
 h: 2'-4'  
 s: 1'-2'



*Symphotrichum novae-angliae* - New  
 England Aster. August-September.  
 Tolerates clay. Lots of wildlife.  
 z: 4  
 h: 2'-5'  
 s: 2'-3'



# HERBACEOUS PERENNIALS

alt	full sun	part sun	full shade	no sun	z. zone
wet	moist	dry			h. height
					to spread

## Ferns



*Tradescantia virginiana* - Spiderwort  
August-September. Acidic.  
z: 4  
h: 1.5'-3'  
s: 1'-2'



*Carex stricta* - Tussock Sedge  
May-June. Nesting habitat.  
z: 3  
h: 1'-3'  
s: 1'-2'



*Adiantum filix-ferina* - Lady Fern  
Clumping and spreading.  
z: 4  
h: 1'-3'  
s: 1'-2.5'



*Wronicastrum virginicum* - Culver's Root  
June-July. Rain gardens.  
z: 3  
h: 4'-7'  
s: 2'-4'



*Carex vulpinoidea* - Fox Sedge. July-August. Clumping. Erosion control.  
z: 3  
h: 1'-3'  
s: 5'-2'



*Matteuccia struthiopteris* - Ostrich Fern  
Tolerates clay soils. Fiddleheads.  
z: 3  
h: 3'-6'  
s: 5'-8'

## Grasses



*Andropogon gerardii* - Big Bluestem  
September-February. Erosion control. Cut to ground in spring. Winter interest.  
z: 4  
h: 4'-6'  
s: 2'-3'



*Panicum virgatum* - Switchgrass  
July-February. Erosion control. Salt tolerant. Clumping.  
z: 4  
h: 3'-4'  
s: 2'-3'



*Osunda regia* - Royal Fern  
Ferns clusters. Full sun if kept moist.  
z: 3  
h: 2'-3'  
s: 2'-3'



*Aristida purpurea* - Purple Threeseam  
May-September. Dry soils.  
z: 3  
h: 1'-3'  
s: 1'-1.5'



*Schizanthium scoparium* - Little Bluestem. August-November. Salt tolerant. Erosion control. Purplish.  
z: 3  
h: 3'-5'  
s: 1'-2'



*Polystichum acrostichoides* - Christmas Fern. Evergreen. Erosion control. Full sun if moist.  
z: 3  
h: 2'-3'  
s: 2'-3'



*Carex grayi* - Gray Sedge  
May-October. Salt tolerant.  
z: 5  
h: 2'-3'  
s: 1.5'-2'



*Sorghastrum nutans* - Indiangrass  
September-February. Erosion control.  
z: 4  
h: 2'-4'  
s: 1'-2'



*Thelypteris noveboracensis* - New York Fern. Groundcover. Grow in tufts.  
z: 3  
h: 1'-2'  
s: 1'-3'



*Carex lurida* - Lurid Sedge.  
May-September.  
z: 3  
h: 1.5'-3'  
s: 1'-2'



*Carex appalachica* - Appalachian Sedge  
May-September.  
z: 3  
h: 2'-4'  
s: 1'-2'



*Adiantum pedatum* - Maidenhair Fern  
Groundcover.  
z: 3  
h: 1'-1.5'  
s: 1'-1.5'



Beautiful example of a shoreland owner who has his views, privacy, colorful native plant blooms and has developed to maintain a natural shoreland. His property earned the Lake Wise Award, which signifies excellent stormwater management and wildlife habitat protection as his property is exemplary in lake friendly practices.