

# *Native planting 350 ft.<sup>2</sup> best practice overview*



**Strengthening  
Natural  
Resources  
through  
Collaboration**

**78th Midwest Fish and Wildlife Conference**  
Milwaukee, Wisconsin | January 28-31, 2018



**University of Wisconsin-Stevens Point**  
College of Natural Resources

# Talk outline

## Native planting best practice overview:

- How did we get to championing this best practice in the initiative?
- Barriers we addressed with native planting best practice
  1. Technical assistance and guidance [via fact sheets and companion documents that coach landowners through best practice use];
  2. Scale challenge;
  3. Simplify native plant list - 6 options to choose from property owners;
  4. DIY option - take technical assistance tools and run with it vs. grant support
  5. Aesthetics / visualizing the planting;
  6. Plant selection criteria: applicability statewide / nursery availability / using work horse species; water fluctuation challenge
  7. Helping lakeshore property owners solve problems on their shorelands while controlling runoff and/or bolstering habitat
- Cues to care phenomenon / native garden verbiage
- Watering and maintenance needs [Inc. temporary fencing example]
- What about rivers and streams?
- Future goals / growing movement of native plant use
- Examples from other states / TEK incorporation



# *Values and functions of a vegetated lakeshore area*

## Shoreland Vegetation

(intercepts dirt and water runoff for cleaner lake water, roots stabilize bank, structure provides wildlife habitat)

## Emergent Vegetation

(intercepts lakeshore sediment runoff, provides cover for assorted fish, and spawning and nesting structure, and other wildlife habitat)

## Tree Stumps

(wildlife habitat & wave retention)

## Drifted-in / fallen-in logs and snags

(wildlife habitat, erosion control & water quality)

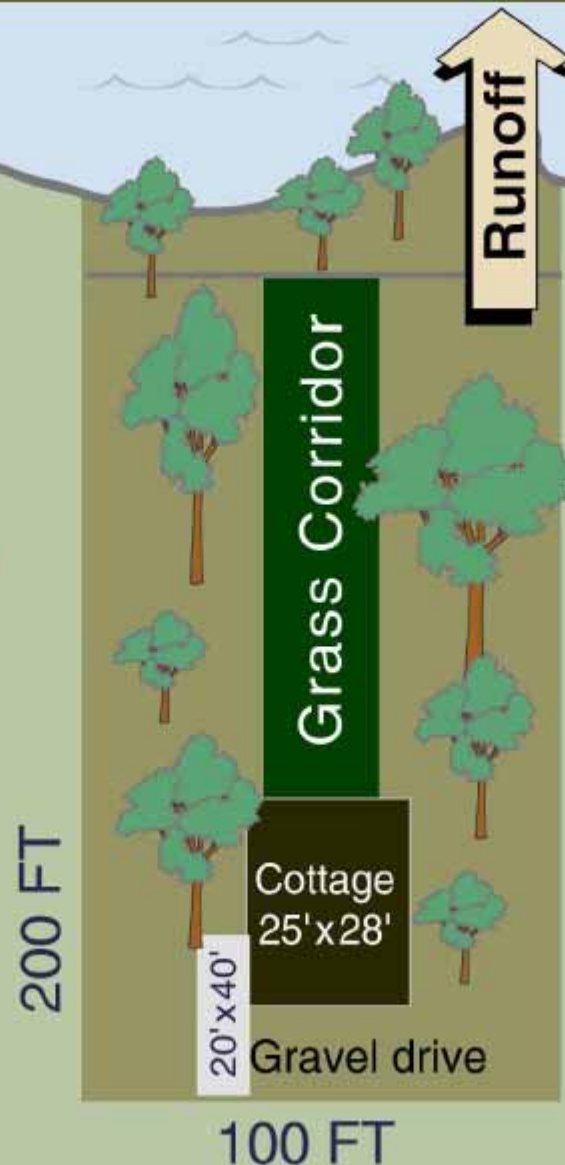
80-90% of all lake life is born, raised and/or fed in the area where land and water meet



***Laine Cabin, Long Lake Chippewa County***

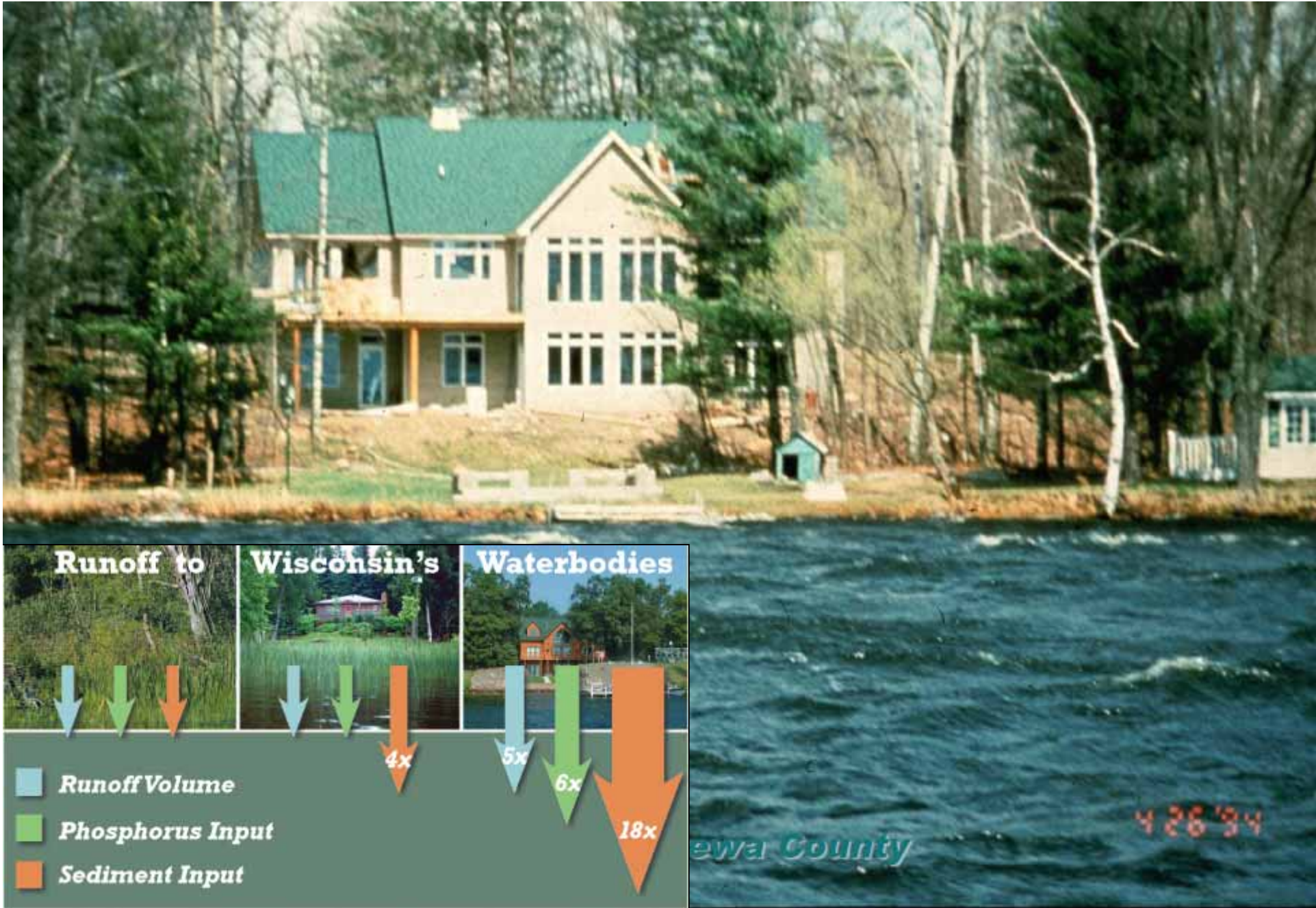
# 1940s development – Apr.-Oct. phosphorus/sediment runoff model

- maple-beech forest
- 6% slope to lake
- grass corridor 20'-wide
- cottage 700 ft<sup>2</sup> perimeter
- gravel drive 800 ft<sup>2</sup>
- 35'-wide buffer strip



## IMPACT ON LAKE (April - Oct.)

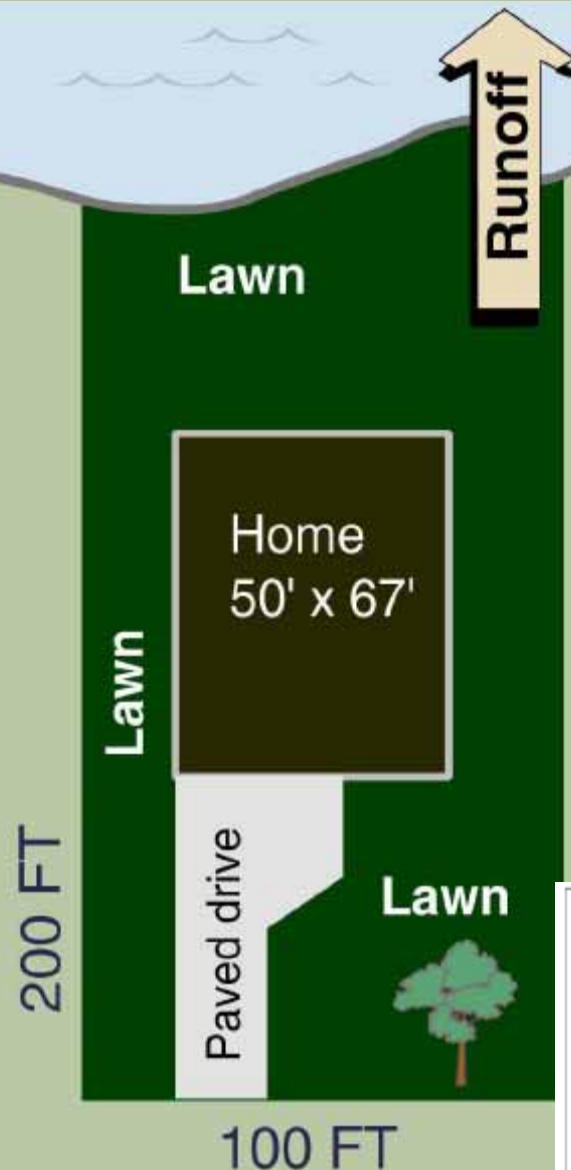
- 1,000 ft<sup>3</sup> runoff to lake
- 0.03 lbs. phos. to lake
- 20 lbs. sediment to lake



Wisconsin Department of Natural Resources memo from John Panuska 11/6/94. Graphic by Wisconsin Lakes Partnership.

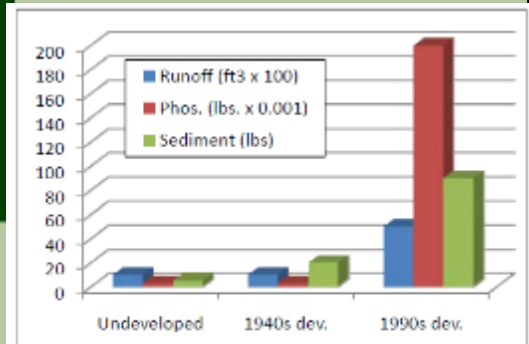
# 1990s development – Apr.-Oct. phosphorus/sediment runoff model

- maintained lawn, soil graded
- 6% slope to lake
- home 3,350 ft<sup>2</sup> perimeter
- paved drive 770 ft<sup>2</sup>



## IMPACT ON LAKE (April - Oct.)

- 5,000 ft<sup>3</sup> runoff to lake
- 0.20 lbs. phos. to lake
- 90 lbs. sediment to lake

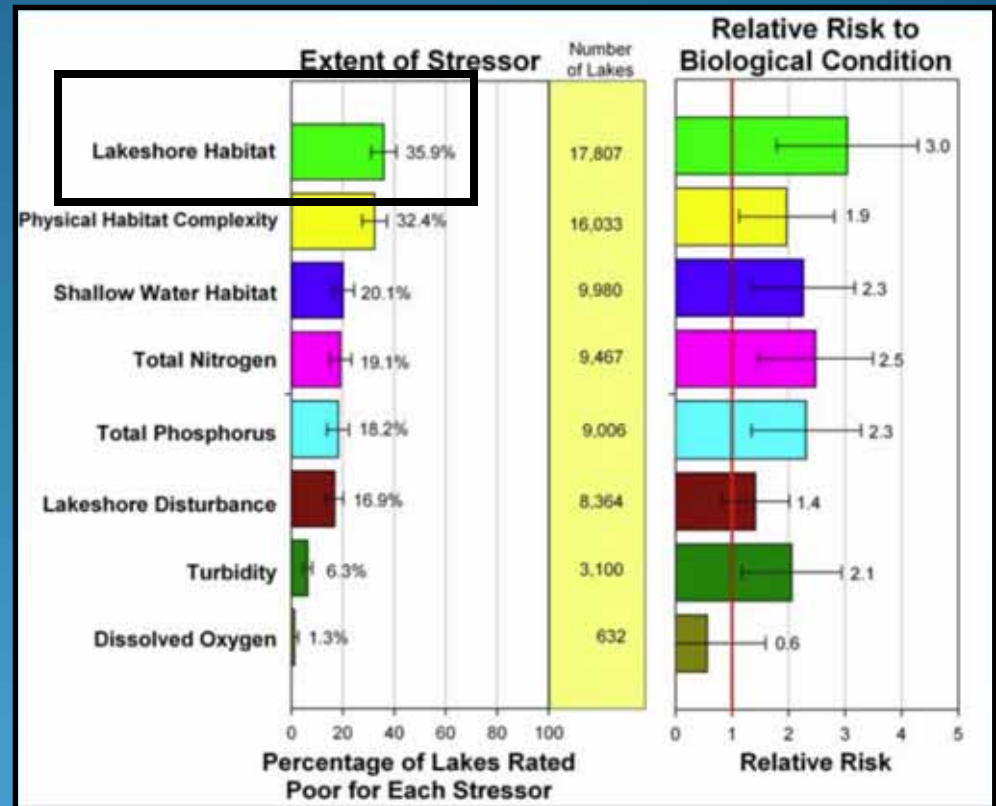


Source: Wisconsin Dept. of Natural Resources

Figure 2. A modern, developed lakefront property contributes a significant amount of runoff, sediments, and nutrients to the lake. Adapted from: WI Lakes Partnership.

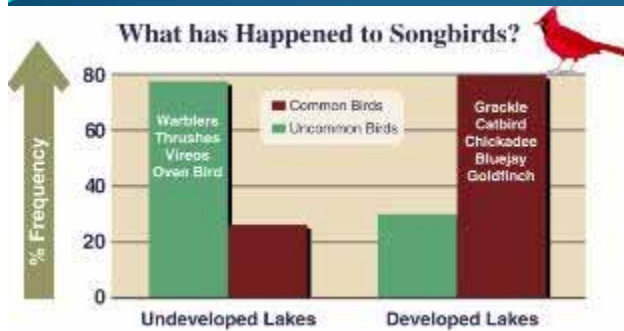
# National Lakes Assessment (NLA)

- First-ever baseline study of the condition of the nation's lakes.
- The latest in a series of surveys of the nation's aquatic resources.
- Unbiased estimates of the condition of natural and man-made freshwater lakes, ponds, and reservoirs greater than 10 acres and at least one meter deep.
- A total of 1,028 lakes were sampled for the NLA during summer 2007, representing the condition of about 50,000 lakes nationwide.

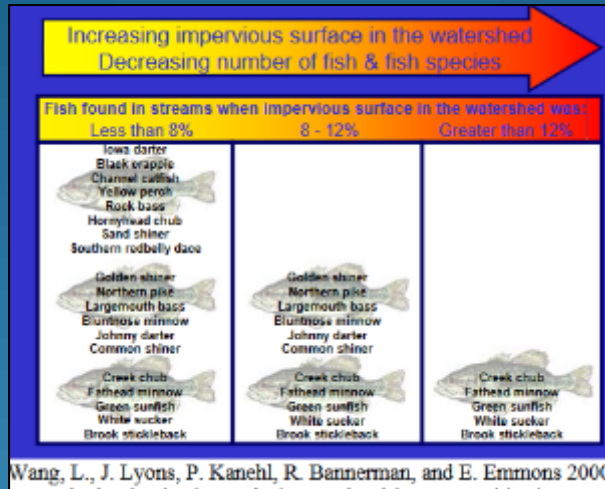




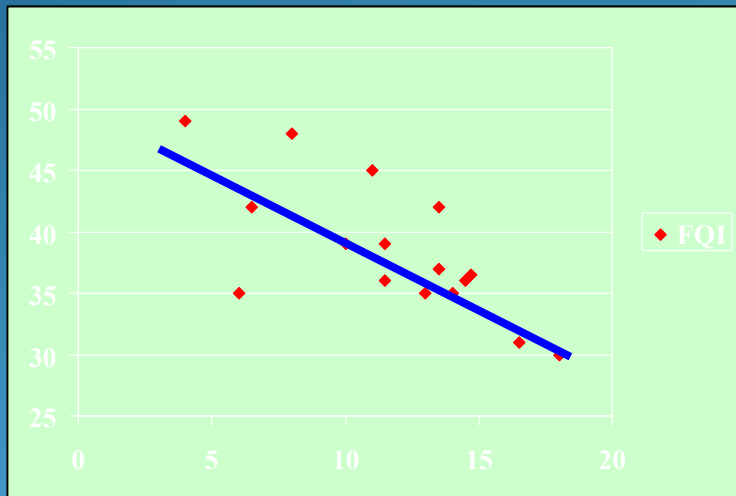
# Various research over the last few decades helps to illuminate the effects of unsound development



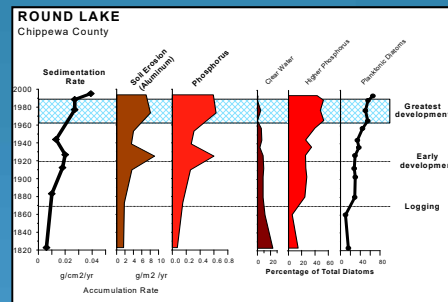
Lindsay et al. 2003



Elias et al. 2003

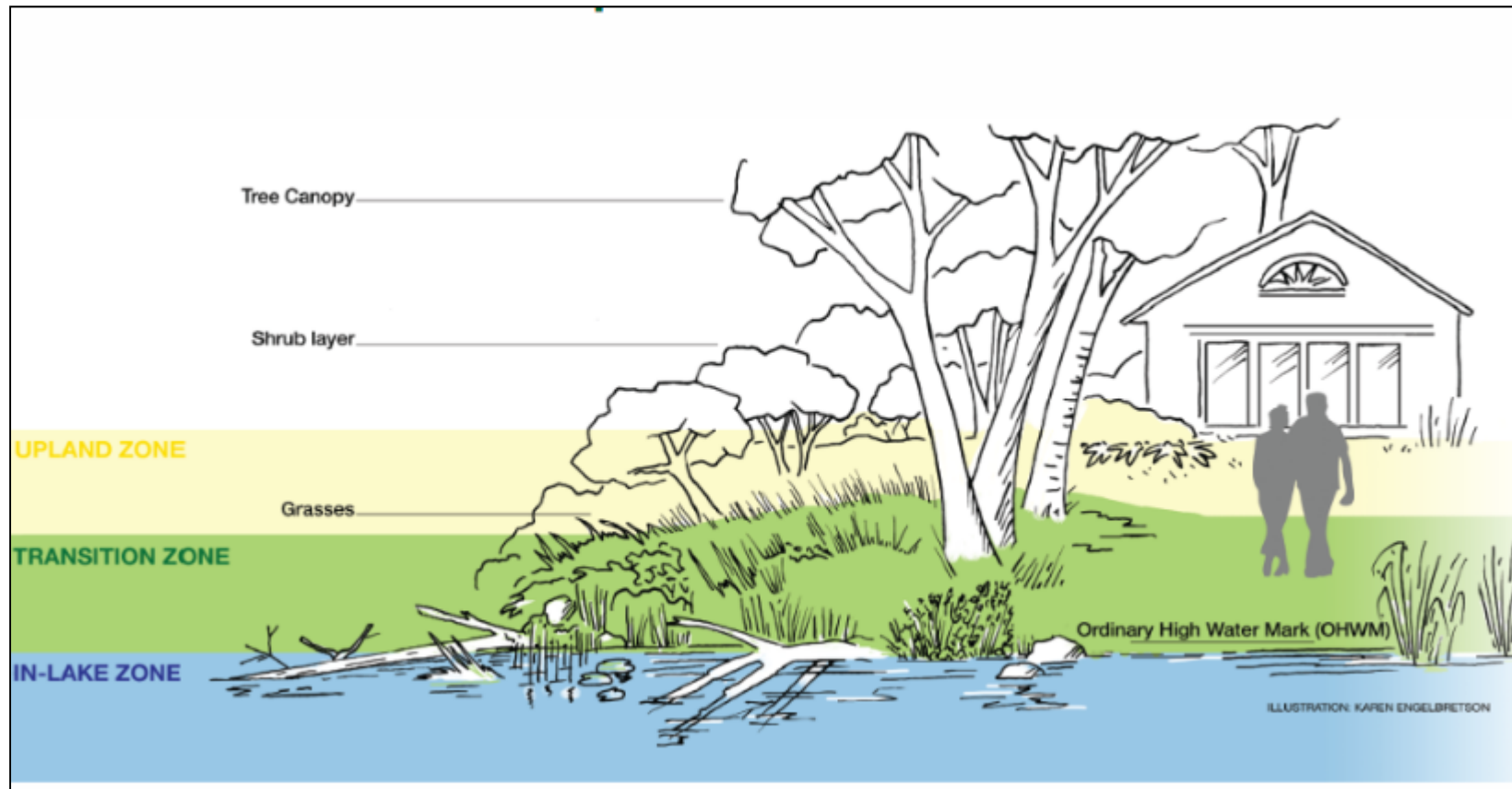


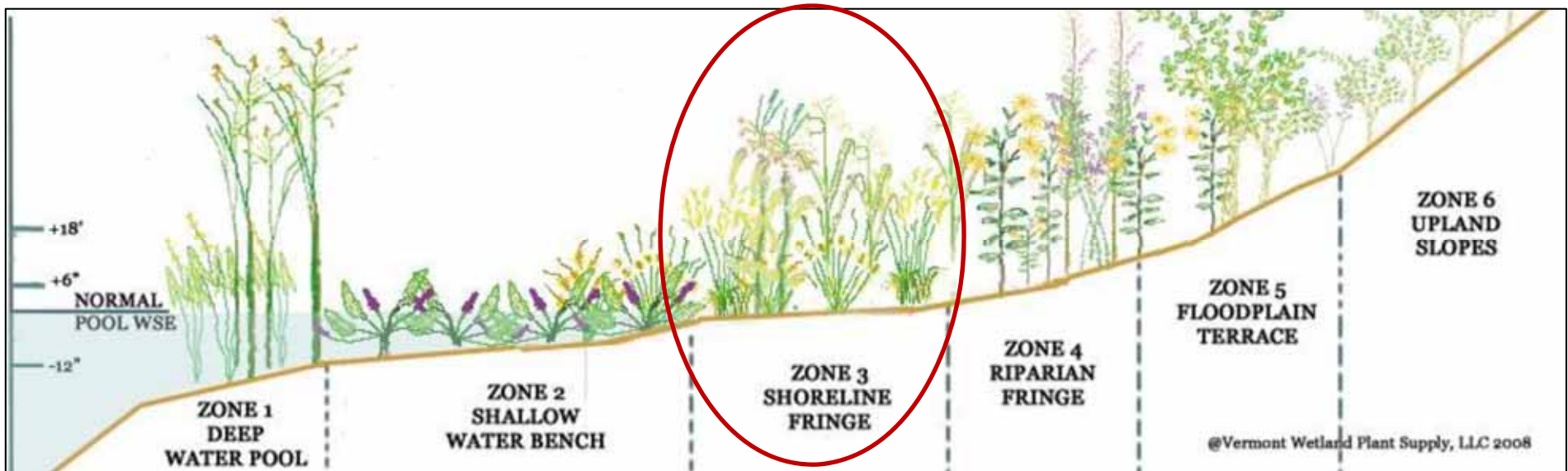
Dwellings/km shoreline  
Hatzenbeler et al. 2004



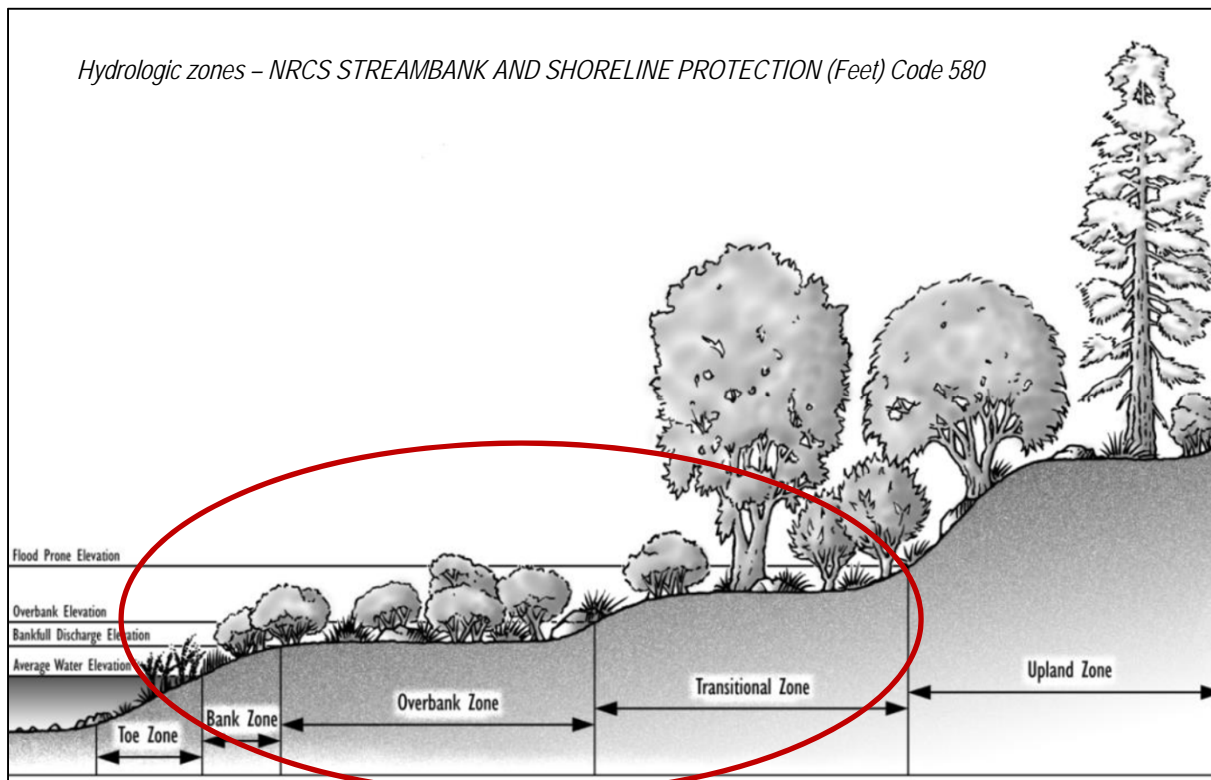
Woodford et al. 2002

# Healthy Lakes Best Practices





Hydrologic zones – NRCS STREAMBANK AND SHORELINE PROTECTION (Feet) Code 580



**Transition zone**

# 350 ft<sup>2</sup> Native Plantings

- 350 contiguous ft<sup>2</sup> at least 10 feet wide
- 6 planting options to choose from for landowner
- Fencing may be required





FACT SHEET SERIES:

## NATIVE PLANTINGS



Great Lakes Great Lakes - Lisa Re

**NATIVE PLANTINGS**, a transition zone best practice, are template planting plans designed for a contiguous area of at least 350 ft<sup>2</sup>. Each template has a corresponding list of native plants suited to the given soil conditions and function of the plan, including lakeshore, bird/butterfly habitat, woodland, low-growing, deer resistant, and bare soil area plantings.

### PURPOSE

Native plantings improve wildlife habitat, slow runoff water, and promote natural beauty. Each template described above serves all of these functions to some degree, but one may be better than another given your property's unique site characteristics and areas of concern. For example, the bird/butterfly template includes flowers that attract these types of wildlife.

### HOW TO BUILD

It may be necessary to work with your local land and water conservation department or a landscaper to design and/or install these plantings. Check with your local zoning department to determine if any permits are necessary. Planting specifications and densities follow Wisconsin Biology Technical Note 1: Shoreland Habitat.

Detailed guidance is found here: <http://healthy.lakesnet.com>.

#### 1. Find a location

350 ft<sup>2</sup> native plantings should begin, if possible, at the typical lakeshore edge (i.e. Ordinary High Water Mark), be at least 10 feet wide — parallel or perpendicular to the shore, and contiguous rather than planted in patches. The final shape and orientation to the lakeshore are up to you. Choose an area of turf grass you wish to revert back to a more natural state or an already vegetated area you would like to augment. Try to choose a location in full or partial sun.

#### 2. Determine soil type

It's important to understand what type of soil is in the planting location because that will determine which native plants can survive and thrive. The fact sheet links provide tools and guidance to help determine your soil type. Most of the template plans have two plant lists — one for moister soils and one for drier soils.

### MAINTENANCE

### COSTS

- Range: \$480 – \$2400 (average = \$1000)
- Healthy Lakes grant funding available: \$1,000 per 350 ft<sup>2</sup> area

### MATERIALS

- Black plastic or herbicide
- Native plants
- Bulb auger or hand trowel
- Mulch
- Watering equipment

DNR PERMIT

POSSIBLY REQUIRED

(if using herbicides in or adjacent to lakeshore)

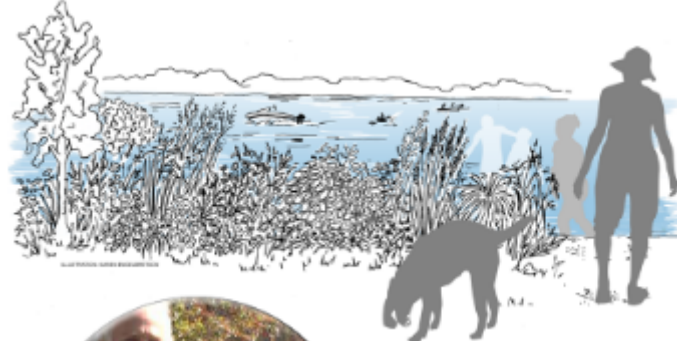
### PROJECT TIMELINE

SITE PREP	INSTALLATION	MAINTENANCE	PROJECT END	
6 WEEKS - 6 MONTHS	1-2 DAYS	2 YEARS	3 YEARS	Ongoing weeding may be necessary in subsequent years.



## Healthy Lakes 350 ft<sup>2</sup> Native Planting Companion Guide

Improve wildlife habitat, natural beauty and privacy, and decrease runoff.



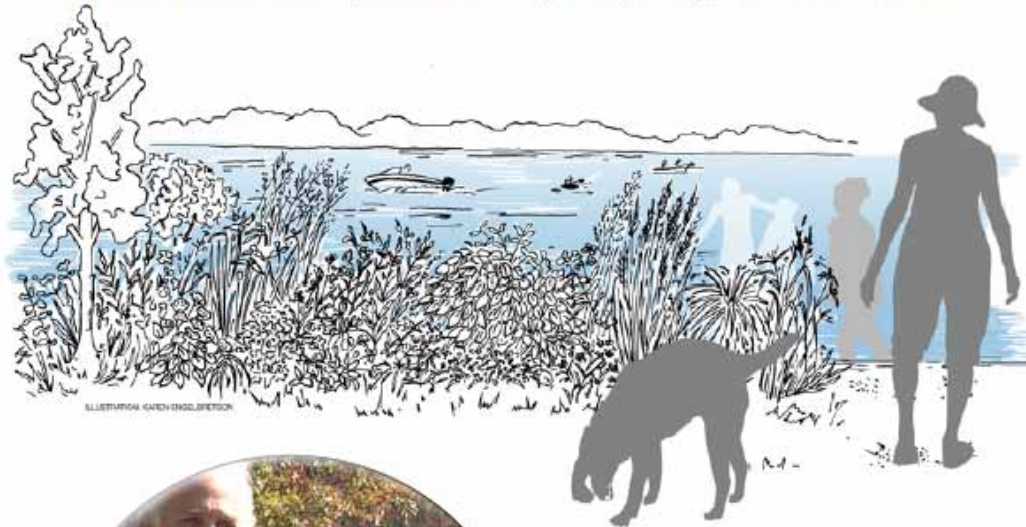
Native plantings include grasses and wildflowers with shrubs and trees. Choose one of the six native plant options provided — based on your property specifications and interests — from bird/butterfly habitat to a low-growing native garden showcasing your lake view.

Fact sheet & companion technical guidance for each of the five Healthy Lakes best practices















# Healthy Lakes 350 ft<sup>2</sup> Native Planting Companion Guide

*Improve wildlife habitat, natural beauty and privacy, and decrease runoff.*



**Native plantings include grasses and wildflowers with shrubs and trees. Choose one of the six native plant options provided – based on your property specifications and interests – from bird/butterfly habitat to a low-growing native garden showcasing your lake view.**

## 6 planting options to choose from

<p>1. <b>Lakeshore Edge</b></p>	<p>2. <b>Bird/ Butterfly</b></p>	<p>3. <b>Bare Soil</b></p>	<p>4. <b>Low-growing</b></p>	<p>5. <b>Deer Resistant</b></p>	<p>6. <b>Woodland</b></p>
					
<p><b>Restore Vegetation at the Water's Edge</b></p>	<p><b>Attract Birds and Butterflies</b></p>	<p><b>Stabilize Areas of Bare Dirt</b></p>	<p><b>Maintain a View of the Lake (Ideal for Access Corridor)</b></p>	<p><b>Deter Deer and Other Critter Browsing</b></p>	<p><b>Re-vegetate a Shady Area</b></p>
					
<p>Go to page 8</p>	<p>Go to page 10</p>	<p>Go to page 12</p>	<p>Go to page 14</p>	<p>Go to page 16</p>	<p>Go to page 18</p>

### Barriers broken down / best practice upsides for landowners

1. Looks matter—paying attention to aesthetics
2. Using "native garden" verbiage
3. Helping landowners address challenges around water runoff and habitat rehabilitation



# Lakeshore Edge

Restore vegetation at the water's edge.

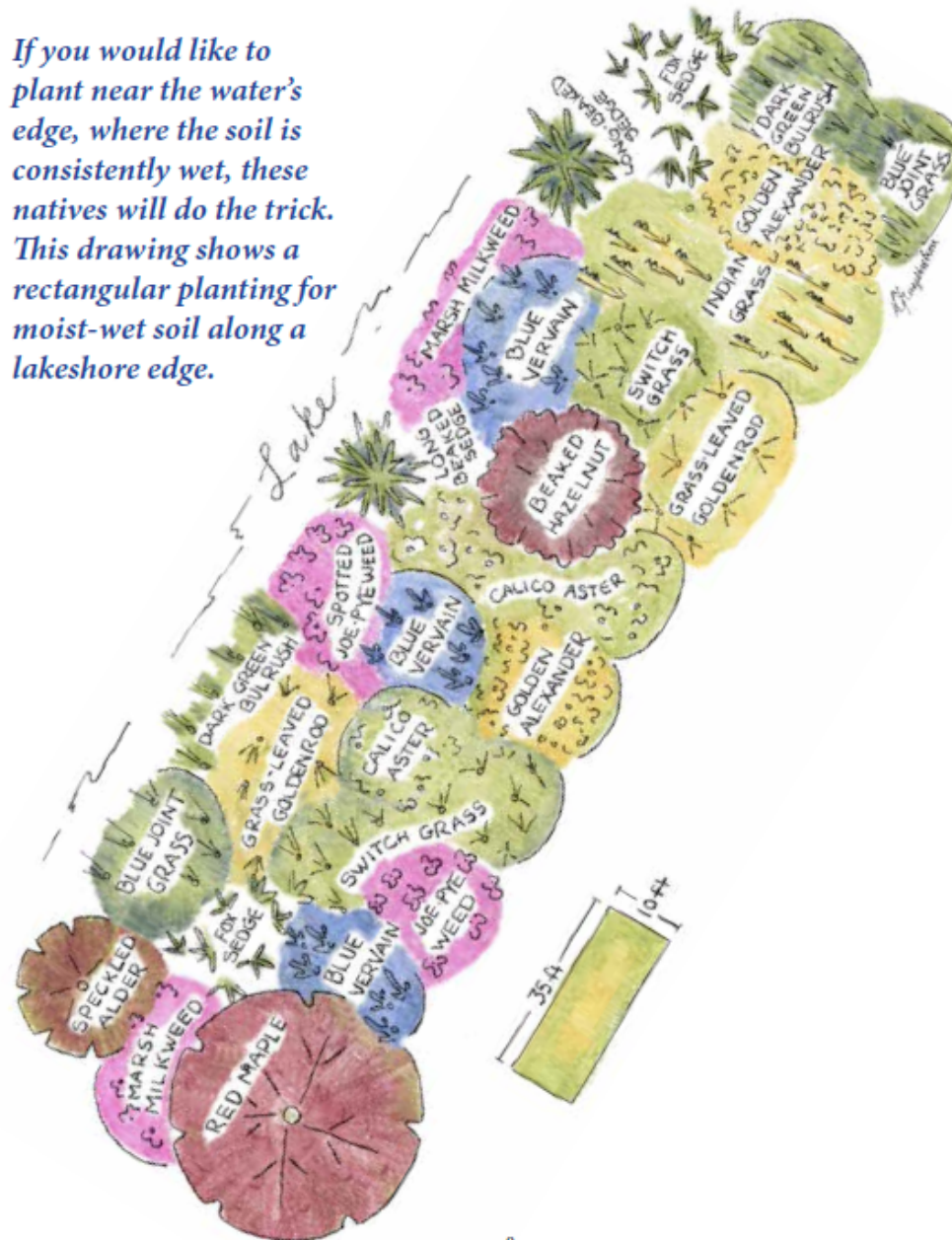


FULL SUN



PARTIAL SUN

*If you would like to plant near the water's edge, where the soil is consistently wet, these natives will do the trick. This drawing shows a rectangular planting for moist-wet soil along a lakeshore edge.*







# Bird/Butterfly

Attract birds and butterflies.

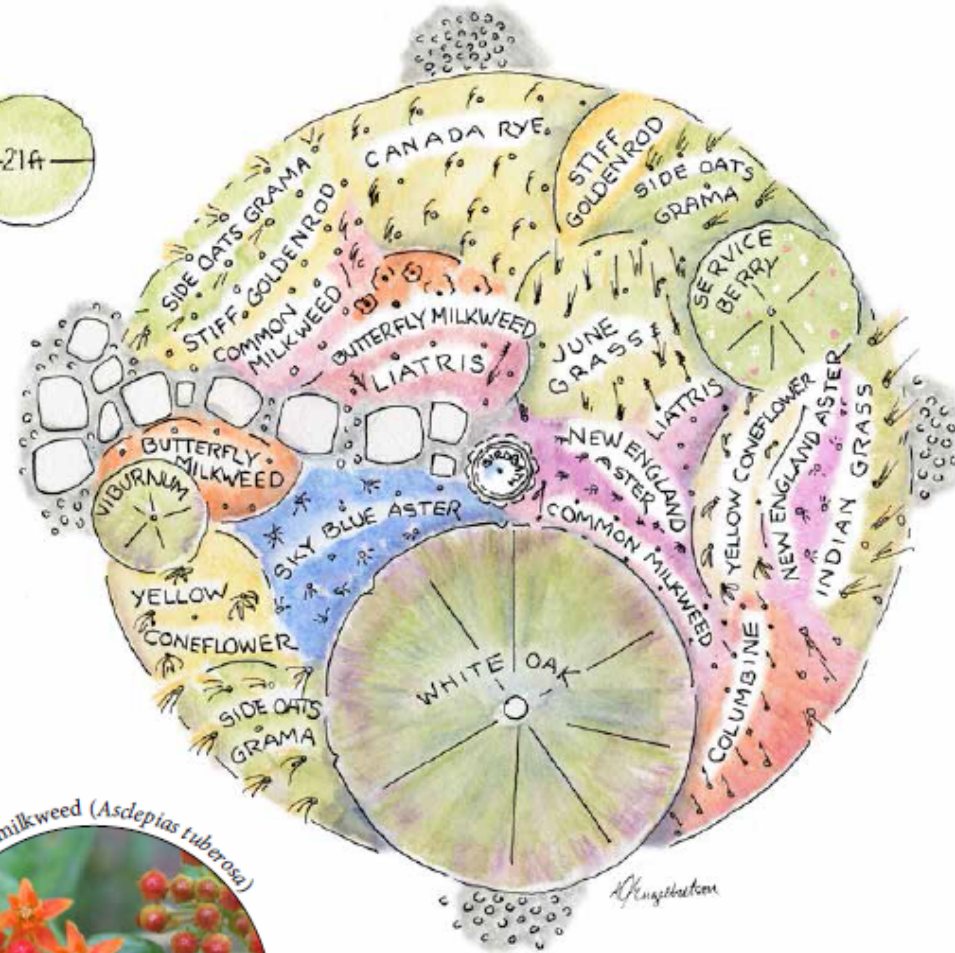
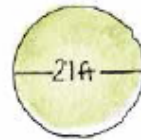


FULL SUN



PARTIAL SUN

L A K E



*If you would like to attract songbirds, moths, butterflies, and hummingbirds, this option has flowering plants that will do just that. This circular drawing for dry-medium soil invites a flow of pollinators and migratory birds.*



# Bare Soil

Stabilize areas of bare dirt.



FULL SUN



PARTIAL SUN



*These natives will help to stabilize exposed ground or other soil with erosion challenges. This triangular drawing for moist-wet soils shows how you can beautify a bare lot corner along the lakeshore.*

## Buffers affect birds

- Shoreline buffers provide habitat for
  - Eagles, loons, great blue herons, wood ducks and more

- Lawns provide habitat for
  - Canada geese





Geese avoid buffers because they can conceal predators such as coyotes, foxes and raccoons

Geese video at [youtube.com/watch?v=90W4IC-KPVI](https://www.youtube.com/watch?v=90W4IC-KPVI)


## Barriers addressed / upsides of best practice for landowners

- View corridor maintained: see swimming children
- Water / migratory bird support
- Geese / merganser deterrence / ticks
- Scale – smaller 350 ft.<sup>2</sup>

 FULL SUN
  PARTIAL SUN

### Low-growing

Maintain a clear view of the lake.



*Black-eyed Susan (Rudbeckia hirta)*

14 ft  
24 ft

*If your property is fairly flat and you only have a small amount of lakeshore frontage, this low-growing native garden is perfect to keep your view of the lake. This drawing shows low-growing plants for moist-wet soil.*

## Barriers addressed / upsides of best practice for landowners

1. Deer and rabbit browse  
deterrence
2. Aesthetics



## Deer Resistant

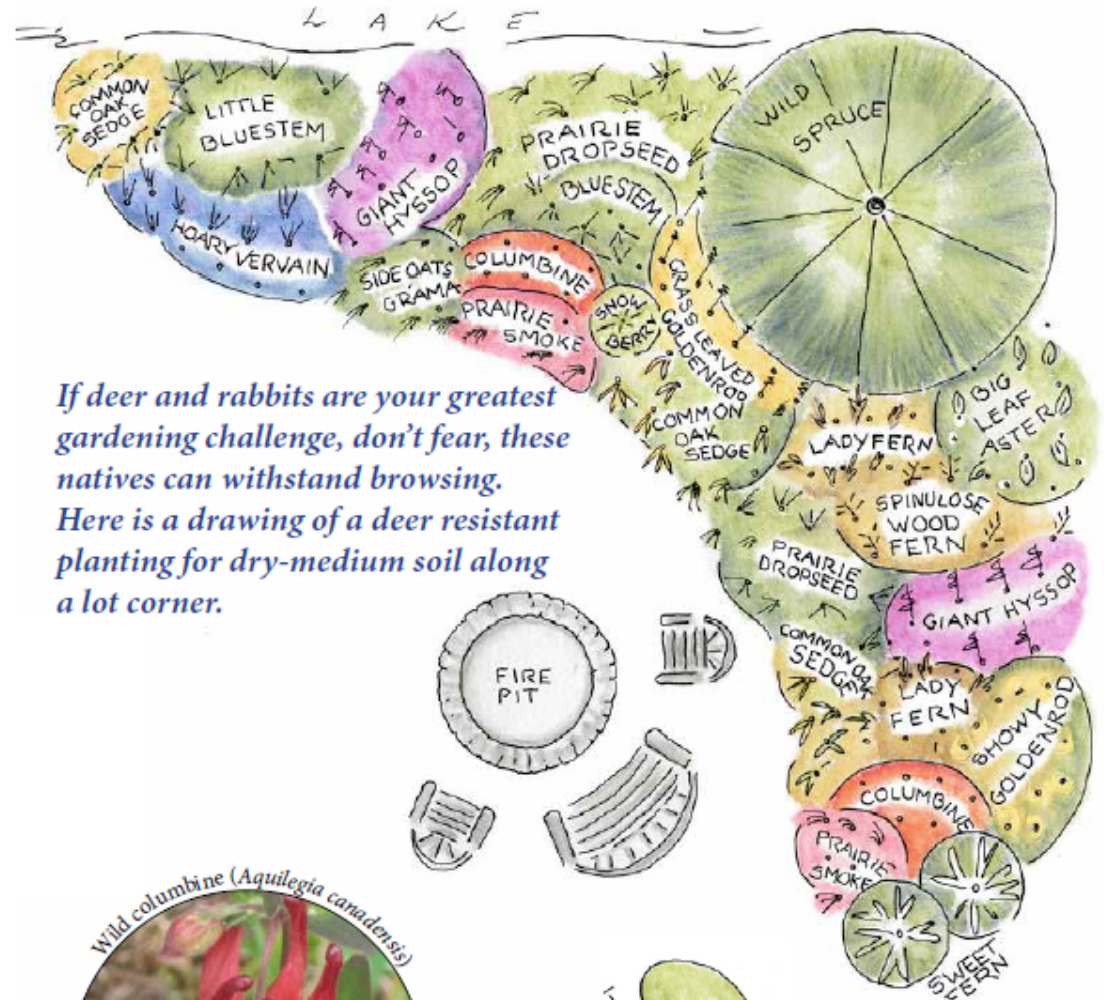
Deter deer and other critter browsing.



FULL SUN



PARTIAL SUN



*If deer and rabbits are your greatest gardening challenge, don't fear, these natives can withstand browsing. Here is a drawing of a deer resistant planting for dry-medium soil along a lot corner.*

Wild columbine (*Aquilegia canadensis*)



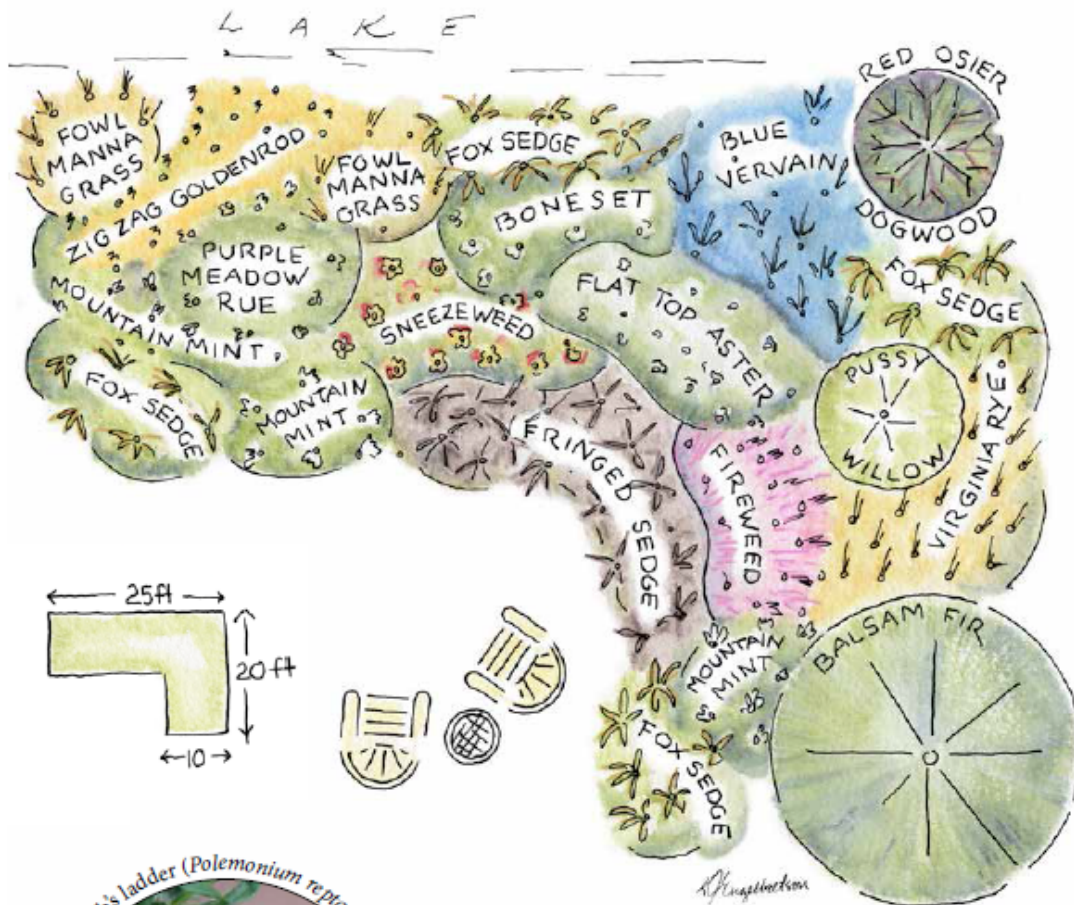


# Woodland

Re-vegetate a shady area.



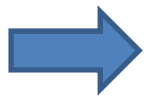
SHADE



*If your lakeshore is wooded and shady, these native plants are hearty enough to survive with less than four hours of sunlight each day. This drawing shows what you would plant in moist-wet soil in a shady corner.*

**Healthy Lakes grant funding requires all the plants in the list to be used unless an approved substitution is made (page 20).**

<b>DRY-MEDIUM SOIL</b>					
	PLANT TYPE	FLOWER COLOR	BLOOM TIME	HEIGHT RANGE	TOTAL PLANTS
<b>Woody</b>	Wild spruce ( <i>Picea glauca</i> )	Cones	May-June	90-110 feet	1 tree
	Common snowberry ( <i>Symphoricarpos albus</i> )	White	June-July	2-3 feet	1 shrub
	Sweet fern ( <i>Comptonia peregrina</i> )	Red	May-June	2-3 feet	2 shrubs
<b>1 TREE AND 3 SHRUBS</b>					
<b>Grasses</b>	Common oak sedge ( <i>Carex pensylvanica</i> )	Green/Tan	May-June	5-1 foot	6/spot x 3 spots = 18 total
	Little bluestem grass ( <i>Schizachyrium scoparium</i> )	White	June-Aug.	2-3 feet	6/spot x 3 spots = 18 total
	Prairie dropseed ( <i>Sporobolus heterolepis</i> )	Tan	July-Aug.	2-3 feet	6/spot x 3 spots = 18 total
	Side oats grama grass ( <i>Bouteloua curtipendula</i> )	Tan	July-Aug.	1-3 feet	6/spot x 3 spots = 18 total
<b>72 GRASSES, RUSHES, &amp; SEDGES</b>					
<b>Wildflowers</b>	Big-leaved aster ( <i>Aster macrophyllus</i> )	White	Aug.-Oct.	1 foot	6/spot x 2 spots = 12 total
	Common lady fern ( <i>Athyrium filix-femina</i> )	Brown sori	n/a	2-3 feet	3/spot x 2 spots = 6 total
	Grass-leaved goldenrod ( <i>Euthamia graminifolia</i> )	Yellow	July-Aug.	1-3 feet	6/spot x 2 spots = 12 total
	Hairy vervain ( <i>Verbena stricta</i> )	Blue	July-Sept.	1-3 feet	6/spot x 2 spots = 12 total
	Prairie-smoke ( <i>Geum triflorum</i> )	Pink to purplish	April-June	4-16 inches	6/spot x 2 spots = 12 total
	Purple giant hyssop ( <i>Agastache scrophulariifolia</i> )	Pink	Aug.-Sept.	3-5 feet	6/spot x 2 spots = 12 total
	Showy goldenrod ( <i>Solidago speciosa</i> )	Yellow	July-Oct.	3-5 feet	6/spot x 2 spots = 12 total
	Wild columbine ( <i>Aquilegia canadensis</i> )	Red	April-June	1-3 feet	6/spot x 2 spots = 12 total
	Spiny wood fern ( <i>Dryopteris carthagenica</i> )	Brown sori	n/a	2-3 feet	3/spot x 2 spots = 6 total
	<b>96 WILDFLOWERS</b>				
<b>MOIST-WET SOIL</b>					
	PLANT TYPE	FLOWER COLOR	BLOOM TIME	HEIGHT RANGE	TOTAL PLANTS
<b>Woody</b>	Tamarack ( <i>Larix laricina</i> )	Cones	(pollen shed)	40-80 feet	1 tree
	Barked hazelnut ( <i>Corylus cornuta</i> )	Reddish-brown	March-May	10-16 feet	1 shrub
	Black chokeberry ( <i>Aronia melanocarpa</i> )	White	May-July	6-8 feet	1 shrub
<b>1 TREE AND 2 SHRUBS</b>					
<b>Grasses</b>	Common fox sedge ( <i>Carex stipula</i> )	Brown leaves	June-July	1-3 feet	6/spot x 3 spots = 18 total
	Fox sedge ( <i>Carex vulpinoidea</i> )	Brown leaves	April-May	2-3 feet	6/spot x 3 spots = 18 total
	Indian grass ( <i>Sorghastrum nutans</i> )	Brown leaves	Aug.-Sept.	4-6 feet	6/spot x 3 spots = 18 total
	Prairie cordgrass ( <i>Spartina pectinata</i> )	Tan leaves	Aug.-Sept.	6-8 feet	6/spot x 3 spots = 18 total
<b>72 GRASSES, RUSHES, &amp; SEDGES</b>					
<b>Wildflowers</b>	Blue vervain ( <i>Verbena hastata</i> )	Blue	July-Sept.	3-5 feet	6/spot x 2 spots = 12 total
	Common ironweed ( <i>Vernonia fasciculata</i> )	Violet / purple	July-Sept.	2-6 feet	6/spot x 2 spots = 12 total
	Great St. John's wort ( <i>Hypericum pyramidatum</i> )	Yellow	May-July	4-6 feet	6/spot x 2 spots = 12 total
	Interrupted fern ( <i>Onoclea claytoniana</i> )	Brown sori	n/a	4-6 feet	3/spot x 2 spots = 6 total
	Ostrich fern ( <i>Massefia struthiopteris</i> )	Brown sori	n/a	3-4 feet	3/spot x 2 spots = 6 total
	Spotted Joe-pye-weed ( <i>Eupatorium maculatum</i> )	Pink	July-Sept.	4-6 feet	6/spot x 2 spots = 12 total
	Stiff goldenrod ( <i>Solidago rigida</i> )	Yellow	Aug.-Oct.	3-4 feet	6/spot x 2 spots = 12 total
	Wild bergamot ( <i>Monarda fistulosa</i> )	Lavender	June-Aug.	2-4 feet	6/spot x 2 spots = 12 total
	Yellow avens ( <i>Geum alepiticum</i> )	Yellow	June-Aug.	2-3 feet	6/spot x 2 spots = 12 total
	<b>96 WILDFLOWERS</b>				



### SHORELAND HABITAT

(Interim)  
CODE 643A (Interim)

NATURAL RESOURCES CONSERVATION SERVICE  
Conservation Practice Document

**I. Definition**

Area adjacent to a waterbody or watercourse in a non-agricultural setting that is vegetated with a diverse mixture of native species that can include grasses, grass-like species, herbs, shrubs, and trees.

**A. Purpose**

Provide habitat for aquatic and terrestrial biota; enhance adjacent shallow water habitat by providing shade and overhanging vegetation and promoting natural recovery of nonpoint species.

**B. Enhance bank stability** before harvest for a broad range of nonpoint and nonpoint species by providing shade and cover with overhanging vegetation, and promoting natural recovery of nonpoint species.

**C. Provide a source of detritus** (decaying organic matter) and large woody cover for aquatic organisms.

**D. Provide shade to lower water temperatures** and facilitate higher dissolved oxygen concentrations to improve habitat for aquatic organisms.

**E. Promote dissolved oxygen** for aquatic and terrestrial biota.

**F. Increase the presence and diversity of native plant and animal species** in shoreland areas.

**G. Reduce the environmental and visual impact of human activities** in the shoreland area.

**H. Improve water quality** by reducing the amount of sediment and other pollutants, such as pesticides and nutrients, in surface waters.

**I. Enhance bank stability** by installing shorelines and reducing erosion impact.

**II. Conditions where practice applies**

This practice applies, but is not limited to areas of shoreland development where it is desired for habitat.

or where active natural vegetation for the improvement of bank and soil stabilization, water quality and bank stability.

Where the primary purpose is to control sediment to nonpoint species in areas, refer to the National Resources Conservation Service (NRCS) Field Office Technical Guide Section IV (FOTG), Standard 302, Filter Strip.

Where the primary purpose is to control bank erosion, refer to NRCS FOTG Standard 303, Groundbank and Shoreline Protection to be used in conjunction with this standard.

**IV. Federal, State, and Local Laws**

Installation and maintenance of shoreland habitat shall comply with all federal, state, and local laws, rules, or regulations. The landowner is responsible for ensuring required permits. This standard does not exempt land of any federal, state, or local laws.

**V. Criteria**

The Wisconsin Biology Technical Note 1: Shoreland Habitat is an important practice document to this standard. This can be found online in the NRCS Field Office Technical Guide (FOTG) or on the NRCS website. [http://www.nrcs.usda.gov/gsp/fieldoffice/land]

**A. Establishment**

- Shoreland habitat shall be established by planting a diverse mix of native species that are adapted to site conditions and are representative of local plant communities. Where appropriate, natural recovery techniques may be utilized where site planting. Refer to energy species lists and the Wisconsin Biology Technical Note 1: Shoreland Habitat, where applicable.
- Monitor to ensure the functional value of a shoreland habitat, vegetation shall be vigorous, diverse and structurally complex.

Conservation Practice Document on natural resources and habitat management. For more information on this practice, contact your local NRCS office or visit the National Resources Conservation Service website at [www.nrcs.usda.gov](http://www.nrcs.usda.gov).  
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### Wisconsin Biology Technical Note 1: Shoreland Habitat

**Introduction**

**Definition of Shoreland Habitat:**  
An area adjacent to a water body in a non-agricultural setting that is vegetated with a diverse mixture of native species that include grasses, grass-like species, herbs, shrubs, and trees.

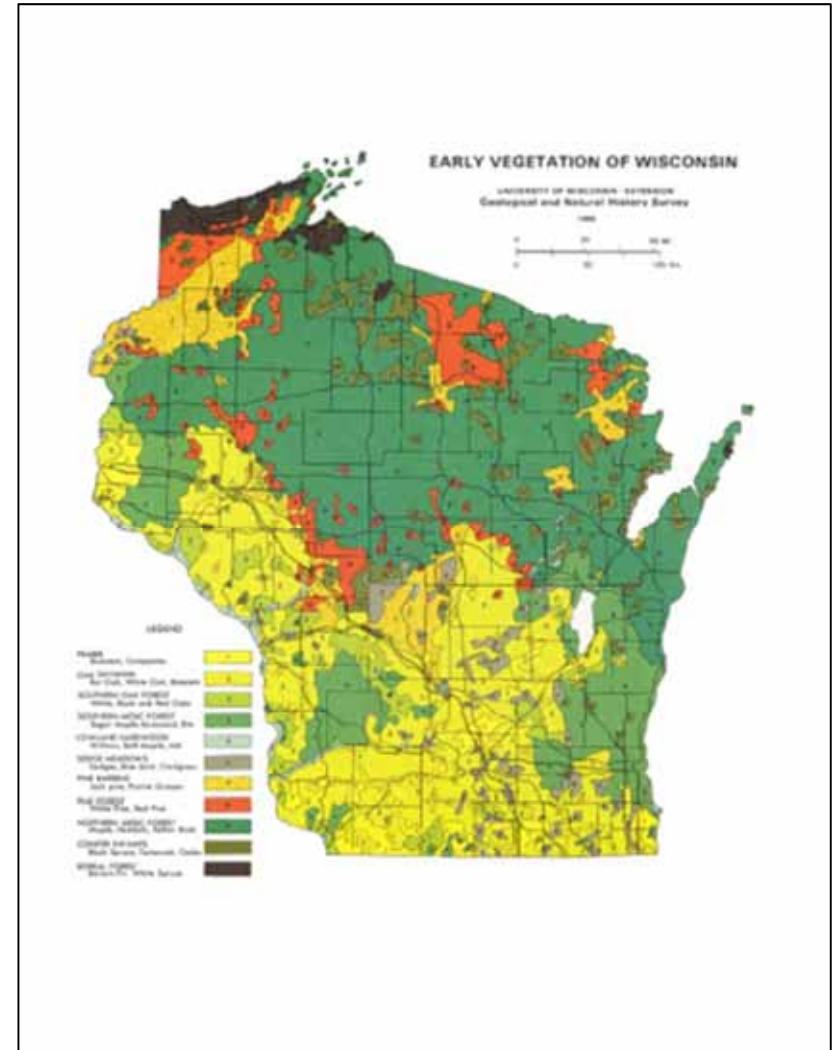
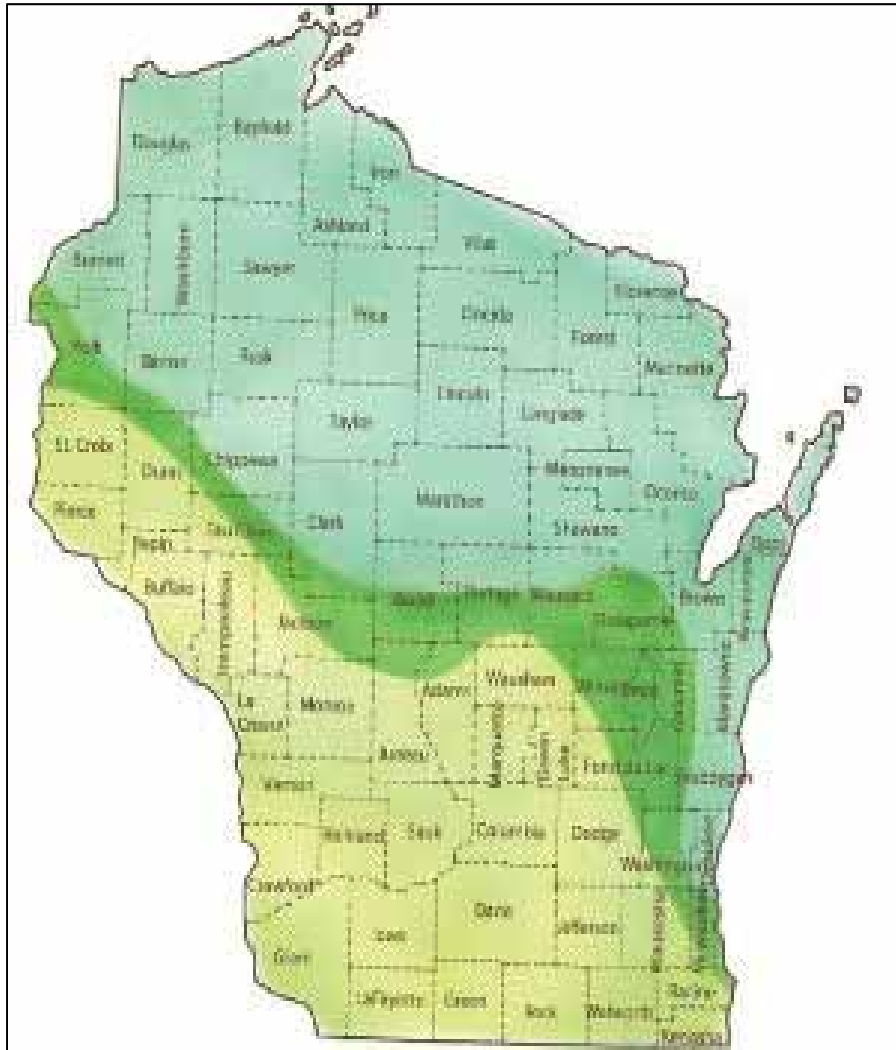
**Purposes:**

- Provide habitat for aquatic and terrestrial biota
- Enhance adjacent shallow water habitat by providing shade and overhanging vegetation and promoting natural recovery of nonpoint species
- Promote shoreland corridors
- Increase the presence and diversity of native species
- Reduce the environmental and visual impact of nearby human activities
- Improve water quality
- Enhance bank stability

Interim Standard # 643A, Shoreland Habitat provides specific criteria for Shoreland Habitat establishment and for determining the dimensions of the practice (Section V). It identifies the necessary components of a Shoreland Habitat establishment plan (Section VII), and lists criteria for operation and maintenance of the practice (Section VIII). Local shoreland zoning ordinances and local shoreland restoration design standards may provide additional requirements and guidance. These may include greater buffer depths, more restrictive requirements for viewing access corridors, and plant selection.

This technical note provides detailed guidance on the following:

Vegetation Establishment Technique	p. 2
Plan Components	p. 3
Plant Materials Selection and Density	p. 4
Additional Planning Considerations	p. 5
Steps for Accelerated Recovery	p. 9
• Site Preparation	
• Planting Techniques	
Site Care and Maintenance	p. 14
References	p. 17
Appendices	p. 18



## Plant lists

Simplification with statewide applicability, substitutions allowed



### **Plant lists – work horse species traits:**

- Perform in a wide range of ecological settings and climatic conditions
- Provide protection from erosive forces with structure above ground and below—three layers of vegetation
- Penetrating, deep root structures that have rhizomatous, fibrous root systems
- Support wildlife for food and shelter(host/nectar plants for pollinators, migratory birds, etc.)
- Can be propagated relatively easily for sale at native plant nurseries





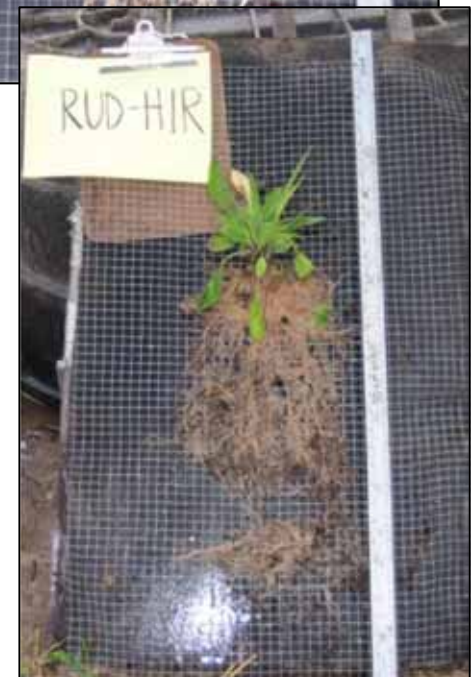
## Root structures important

Fibrous roots that hold soil and absorb energy



**Root structures  
important**

Fibrous roots that hold  
soil and absorb energy







# Maintenance – deer and rabbit protection



## **Why successful projects are important to agencies**

- Accomplishing goals in statewide plans
- Meeting agency “program goals”
- Ensuring accomplishment of planned “outcomes” for projects
- Ensuring effective use of public funding



**We monitor 5% of our sites each year with Healthy Lakes team**

# NATIVE Caterpillars Moths and Butterflies and host NATIVE Woodies



Double-toothed Prominent



Honey locust Moth caterpillar



Hackberry Emperor larva photo: Douglas Tallamy



Hackberry Emperor photo: Megan McCarty



Big Poplar Sphinx



### Number of species of Caterpillars

Oaks (Quercus)	557	Beeches (Fagus)	127	Honey-locusts (Gleditsia)	46	Magnolias (Magnolia)	21
Cherries (Prunus)	456	Serviceberry (Amelanchier)	124	New Jersey Tea (Ceanothus)	45	Buttonbush (Cephalanthus)	19
Willows (Salix)	455	Larches or Tamaracks (Larix)	121	Sycamores (Platanus)	45	Redbuds (Cercis)	19
Birches (Betula)	411	Dogwoods (Cornus)	118	Huckleberry (Gaylussacia)	44	Green-briar (Smilax)	19
Poplars (Populus)	367	Firs (Abies)	117	Hackberry (Celtis)	43	Wisterias (Wisteria)	19
Crahapples (Malus)	308	Bayberries (Myrica)	108	Junipers (Juniperus)	42	Redbay (native) (Persea)	18
Maples (Acer)	297	Viburnums (Viburnum)	104	Elders (Sambucus)	42	Bearberry (Arctostaphylos)	17
Blueberries (Vaccinium)	294	Currants (Ribes)	99	Ninebark (Physocarpus)	41	Bald cypresses (Taxodium)	16
Alders (Alnus)	255	Hop Hornbeam (Ostrya)	94	Lilacs (Syringa)	40	Leatherleaf (Chamaedaphne)	15
Hickories (Carya)	235	Hemlocks (Tsuga)	92	Hollies (Ilex)	39	Poison Ivy (Toxicodendron)	15
Elms (Ulmus)	215	Spineas (Spinaea)	89	Sassafras (Sassafras)	38	Sonwood (Oxydendrum)	14
Pines (Pinus)	201	Grapes (Vitis)	79	Honeysuckles (Lonicera)	37	Pepper vine (Ampelopsis)	13
Hawthorns (Crataegus)	168	Douglas-fir (Pseudotsuga)	76	Sweet-gums (Liquidambar)	35	Madrone (Arbutus)	12
Berries (Rubus)	163	Locusts (Robinia)	72	Mountain-lavret (Kalmia)	33	Pawpaw (Asimina)	12
Spruces (Picea)	150	Hornbeams (Carpinus)	68	Buckeyes (Aesculus)	33	Colorado Highberry (Berberis)	12
Ashes (Fraxinus)	149	Mountain ashes (Sorbus)	68	Virginia Creeper (Parthenocissus)	32	Prairie Acacia (Acacia)	11
Linden or Basswood (Tilia)	149	Sweetfern (Comptonia)	64	Red and Black Chokeberries (Photinia)	29	Euconymus (Eunymus)	11
Pears (Pyrus)	138	Witch-hazels (Hamamelis)	63	Black Gums or Tipelo (Nyssa)	26	Buckthorn** (Frangula)	11
Roses (Rosa)	135	Sumacs (Rhus)	58	Rhododendrons (Rhododendron)	51	Spicebush (Lindera)	11
Filberts (Corylus)	131	Arborvitae (Thuja)	50	Buffalo-berries (Shepherdia)	22	Fetterbush (Lyonia)	11
Walnut (Juglans)	129	Persimmons (Diospyron)	46	Tulip-trees (Liriodendron)	21	Summersweet (Clethra)	10
Chestnuts (Castanea)	127					Buckthorns** (Rhamnus)	10

Double-toothed Prominent (*Nemir bidmata*) larvae feed exclusively on elms (*Ulmus*), and can be found June through October. Their body shape mimics the toothed shape of American elm, making them hard to spot. The adult moth is small with a wingspan of 3-4 cm.

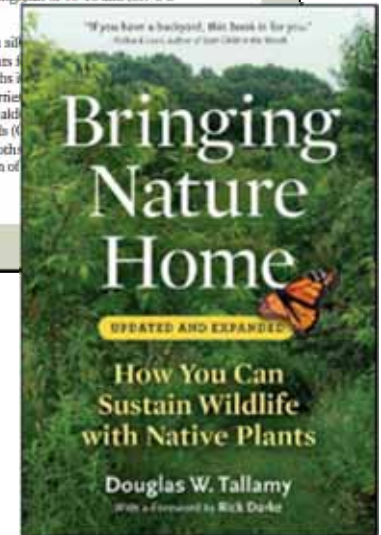
Honey locust caterpillar feeds on honey locust, and Kentucky coffee trees.

*Asterocampa arbi*, the Hackberry Emperor caterpillar, feeds exclusively on Hackberry (*Celtis*) species. Cats overwinter in groups, inside rolled, dead leaves.

Big poplar sphinx larvae (*Pachyphoma sciadami*) feed on poplars (*Populus*), and willows (*Salix*). The adult moth's wingspan is an impressive 13-15 cm. (5-6 inches).

Giant swallowtail (*Papilio cresphontes*) larvae feed on trees and herbs of the citrus family (*Rutaceae*), prickly ash, hop tree, and common rue. The adult is the largest butterfly in Canada and United States, with a wingspan of 10-16 cm. (3.9-6.3 inches).

*Cecropia* silk caterpillars feed on shrubs and wild cherries (*Malus*), and dogwoods (*Cornus*). Adult moths have a wingspan of 10-12 cm. (4-5 inches).



Keep this list in mind as you think about replacing the ash trees that have succumbed to the emerald ash borer. <http://plants.usda.gov> is an excellent site to check-out any uncertainties.



Giant Swallowtail larva defensive red hairs extended



Giant Swallowtail photo: Christel Johnson



Cecropia caterpillar



Cecropia newly emerged male photo: Charles Benjamin Schwartz

[www.wildones.org](http://www.wildones.org) | Wild Ones Journal | March/April 2014

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## Beyond nuts and berries – Tallamy research

Caterpillars and other protein rich critters



## Cues to care examples



- "In settled landscapes, urban or countryside, people expect to see the look of human intention."
- "To avoid looking neglected, ecologically innovative designs can incorporate cues to care that clearly connote an intentional landscape pattern that conveys the reassuring presence of caretakers."
- Mowing; flowering plants and shrubs; wildlife feeders and houses; trimmed shrubs; plants in rows/drifts; fences/mulch; architectural details/artwork; masonry work; sports team flags; signage; lawn ornaments; fresh painting; sounds, smells





## **No shrub layer or groundlayer for erosion control / habitat**

Canopy of trees allowed to grow up while maintaining view



## Candidates

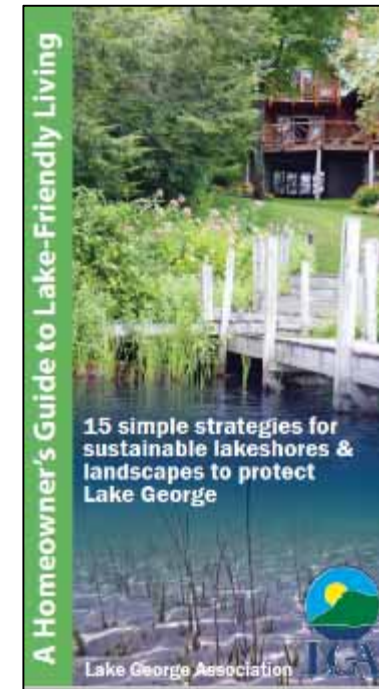
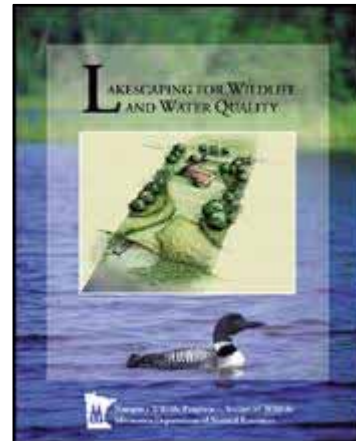
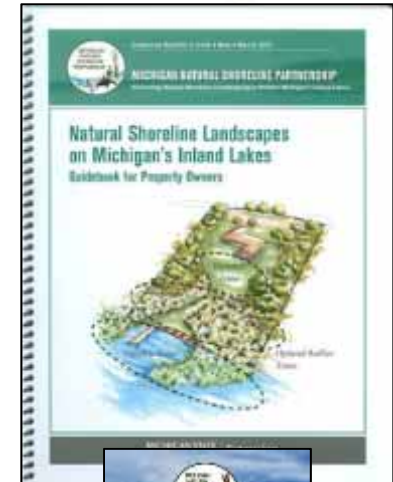
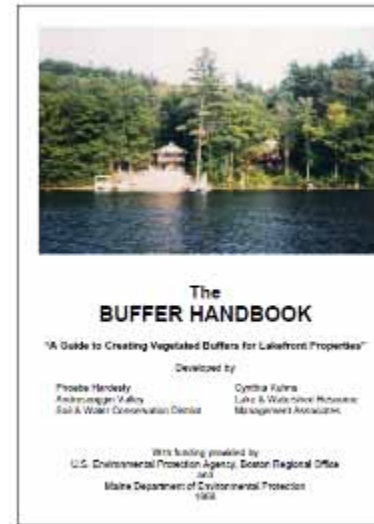
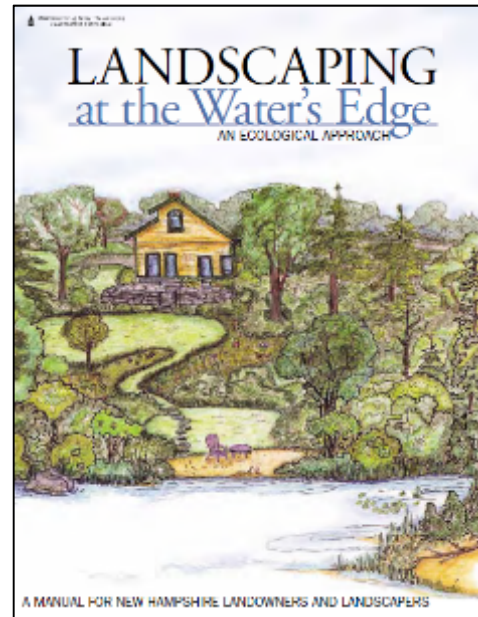
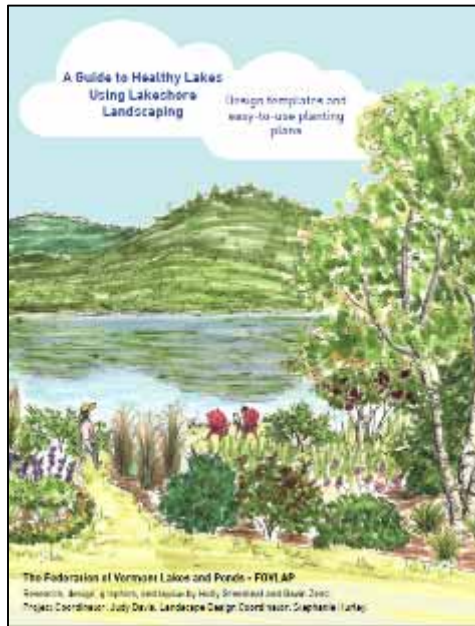
youth and scout camps, resorts, bars, municipal parks and boat landings,  
cabin / house shoreland property owners



**Bars/resorts with boat landings**







## Example lakeshore related guides from other states

Vermont, Minnesota, Michigan, Illinois, New Hampshire, New York, Maine, etc.



## **Healthy Lakes champions**

Participants in program help us market it locally and statewide

**Artwork of Lake Leader KE – aesthetical attractive/  
glipse of what it will look like along their shore**