

Buffer Zone Restoration Guidelines

“Wetlands are the kidneys of nature.”

Maintaining or restoring a small living filter of native vegetation along wetlands will intercept pollutants, slow down runoff from adjacent land, provide some wildlife habitat, and reduce the use of watering, pesticides and herbicides.

What is a Native Plant? Native plants (also called indigenous plants) are plants that have evolved over thousands of years to adapt to the geography, hydrology, and climate of a particular region. As a result, native plants form communities with other plants that provide habitat for a variety of local wildlife species such as songbirds and butterflies.



Tulip Tree

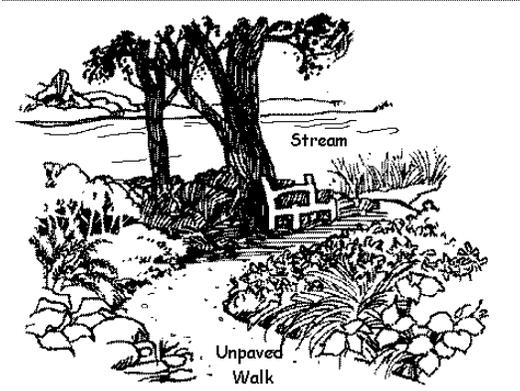
Why Use Native Plants? Because native plants are adapted to local conditions, they provide a beautiful, hardy, drought resistant, low maintenance landscape while benefiting the environment. Once established, they can save time and money by eliminating the need for fertilizers, pesticides, water, and lawn maintenance equipment.

NATIVE PLANTS:
<ul style="list-style-type: none">▪ Do not require fertilizers▪ Require fewer, if any, pesticides than lawns▪ Require less water than lawns▪ Help reduce air pollution▪ Provide shelter and food for wildlife

What is a Buffer Zone and why is it so important that it be “restored”? Wetlands, rivers, streams and ponds don’t thrive in isolation, but depend on the land surrounding them to keep them healthy. Buffer Zones were set up by the Commonwealth and Town to help keep wetlands healthy and do what they do best. Putting native plants back into the Buffer Zone helps to maintain ponds, streams and wetlands in their natural state by filtering out pollutants, providing habitats for wildlife, and securing stream banks against erosion.

PUTTING A RESTORATION PLAN TOGETHER

1 - DETERMINE SIZE & LOCATION OF RESTORATION



A Buffer Zone doesn't have to look awful. It can be a place to enjoy, as this picture shows.

If restoration is a requirement of a Conservation Permit, please discuss the restoration location with the Conservation Administrator.

Generally, the Conservation Commission requires the landowner to restore an area at a ratio of 1:1 of altered area to native vegetation. For example, if a homeowner wishes to construct a 10x10' shed on existing lawn ten feet from the wetland edge, then the commission may allow the shed if the homeowner converts a 100 sq foot area of lawn to native plants.

PREFERRED RESTORATION LOCATIONS:

- Areas that abut existing native vegetation
- Lawn that exists within the 25-foot No Disturb Zone.

2 - CALCULATE THE NUMBER OF PLANTS NEEDED

CATEGORIES OF PLANTS USED IN A RESTORATION:

- **Trees** are the top story that provides habitat for birds, shade for wetlands. Common native trees are Red Maple, Oaks, Sassafras.
- **Shrubs** are the middle story that feeds a variety of animals and prevents erosion. Common shrubs are witch hazel, viburnams, blueberries.
- **Herbaceous Plants** are the lower story and include ferns, wildflowers, and groundcover.

The number of plants from each category (trees, shrubs and herbaceous plants) depends on the total square footage to be restored. The Commission's general rule requires plants from each category based on the total square footage:

- One (1) sapling, 6-8' tall, for every 150 square feet.
- One (1) shrub, at least 24" tall, for every 80 square feet.
- One (1) herbaceous or groundcover plant for every 25 square feet, **OR** a native plant seed mix at the recommended coverage rate.

Therefore if proposed area to be restored equals 300 square feet, the land owner should plant 2 saplings, 4 shrubs, and 12 ferns, wild flowers or groundcover.

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BUFFER ZONE RESTORATION GUIDELINES**

3 - SELECT THE TYPE OF NATIVE PLANTS



When selecting plants, keep in mind the amount of light and water the location gets as well as the type of soil. A sunny, dry location with sandy soil will need different plants from a shady, wet one with acid soil. Also keep in mind plants that provide natural foods for wildlife such as fruits, seeds, nuts, and nectar.

The way plants spread is another consideration. Native plants that are annuals spread their seeds and die. Perennials can also spread by seed dispersal, but some can multiply by sending out underground runners. A runner plant like hayscented fern can take over quickly. Witch hazel or Joe pye weed is much better behaved.

4 - SUBMIT A PLAN

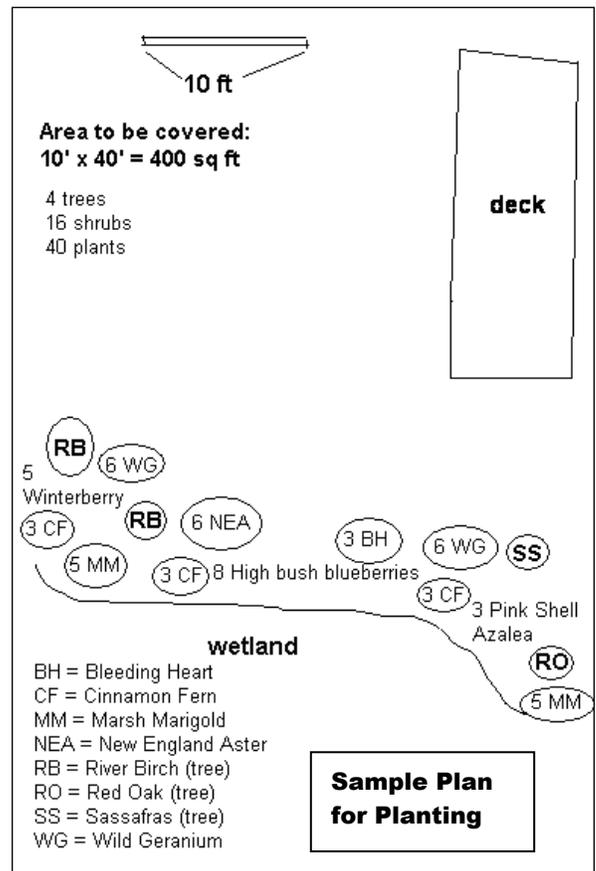
After selecting the plants, draw up a sketch plan at a scale of 1" = 10'. Show approximately where the plants will go. Put the plants in clumps in your restoration area rather than planting them equidistant from each other. Some plants, though, need more room than others.

Fill out the form in Appendix 4 and submit that, with your plan, to the Conservation office.

RESOURCES IN THE GUIDE:

- **Appendix 1** is a list of Internet Resources for how-to's.
- **Appendix 2** is a list of trees, shrubs and groundcover based on their moisture and light requirements.
- **Appendix 3** has a list of local nurseries that sell native plants.

- Vegetation should be planted in a "naturalistic manner" (i.e. clumping, mini-communities, etc.).



DOING THE WORK

1 - TIMES TO PLANT

Planting is largely a late fall or early spring activity occurring at the beginning or end of the growing season. The growing season for Middlesex County goes from April 16 – October 18. Planting in hot, dry summer conditions may delay seed germination and plant growth, or require extensive watering.

As with any planting, watering may be necessary while the plants are becoming established, especially during a drought or heat wave. Watering seeded areas, however, is usually not mandatory as native species will usually germinate when conditions are most appropriate. Mulch of dead leaves or compost helps to retain moisture in the soil for a young transplant.

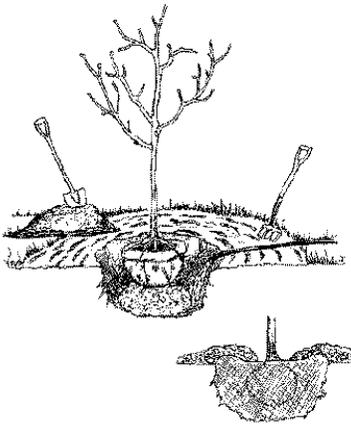
Fall plantings should be done before the first frost which occurs sometime around October 18. Shrubs and trees, however, may be planted up to November 15, weather permitting. It should be noted, however, that some plant species are ill-suited to fall plant

2 - REPLACING YOUR LAWN, IF NECESSARY

Proper soil preparation is the most important factor in the success of a native planting.

Use a sod cutter - which can be rented to remove sections of your existing lawn. Do not turn over the exposed soil. Disturbing the soil will expose weed seeds and encourage their growth. The weeds, especially non-native ones, will compete with new native seedlings for nutrients, water, and sunlight.

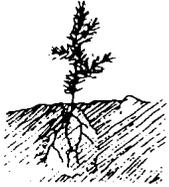
3 - PLANTING TREES AND SHRUBS



Native plants are installed the same way as any other potted or bare root stock by digging a hole large enough so it will not constrict root systems. Mulching is often necessary to ameliorate soil and moisture conditions and ensure successful seed germination and early growth. You will want to use proper tree planting procedures - to make sure the tree has the best chance for a long life.

- Dig the hole as deep as the root ball and twice as wide.
- Check to see if the soil around the hole is too hard - if it is, loosen it up a bit with the shovel.

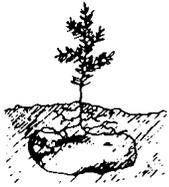
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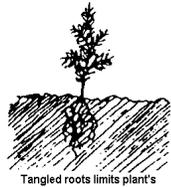
Air pockets leaves roots without soil



Upturned roots leaves plant without water and soil



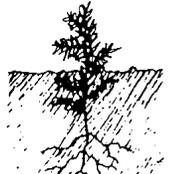
Rock blocks plant's growth



Tangled roots limits plant's reach for water



Too shallow planting leaves roots exposed



Too deep planting strangles the plant

- Remove the container from the root ball. - The roots are like the plant's blood vessels and they work best if they are not all twisted and knotted up, so you might need to straighten them out if they are circling around after having grown in the container.
- Place the tree in the hole, making sure the soil is at the same level on the tree as when the tree grew in the garden center. If your tree has burlap around the root ball, place the tree in the hole and then carefully untie the burlap. Leave the burlap lying in the bottom of the hole - this is okay - the burlap will simply turn into organic matter over a period of time.
- Fill in around the root ball with soil and pack the soil with your hands and feet to make sure that there are no air pockets.
- Make a little dam around the base of the plant as wide as the hole with left over soil or grass clumps to hold in the water.
- Place fine and coarse woody debris within the restored area. There should be logs, various sized branches, and even leaf litter placed in the area to provide these habitat features.

4 - MONITORING OF RESTORED AREA

Applications of fertilizers or pesticides should be avoided once the buffer is established. Maintenance should be limited to invasive species removal to maintain native plant diversity. It is the responsibility of the land owner to ensure that at least 75% of the surface area of the restoration area be re-established with native plants within two growing seasons. The landowner shall remove invasive species that grow within the restoration area. It is the land owner's responsibility to replace trees and shrubs that do not survive.



Summary

By choosing native plants suited to the site conditions, little maintenance, chemical fertilizers, herbicides, or additional watering will be necessary for the plants to thrive. This all adds up to time and cost savings as well as a healthier habitat for you and the wildlife that inhabit your yard.

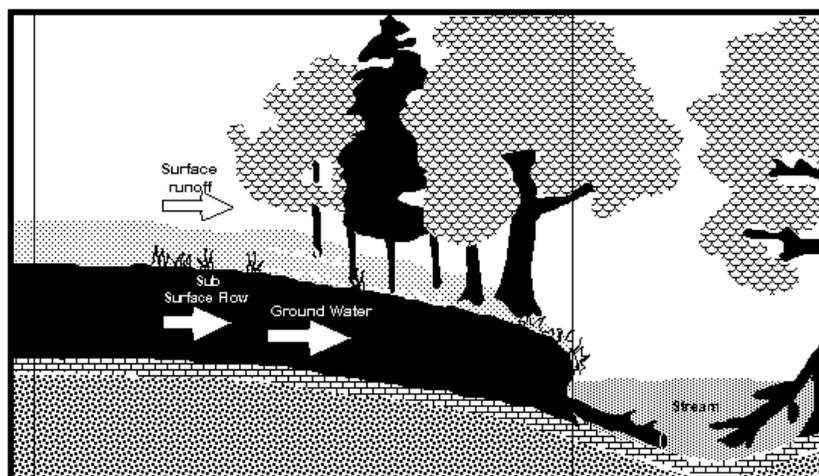
CONSERVATION COMMISSION
BUFFER ZONE RESTORATION GUIDELINES

INTERNET REFERENCES

Choosing the Right Plant for Your Place - Check out these key resources to help identify plants for your home garden:

- **Go Botany** - Learn about native species in New England and check other common garden plants to see which are native
<https://gobotany.nativeplanttrust.org>
- **Where to Buy Native Plants** - See Native Plant Trust's ample selection of native plants on sale at Garden in the Woods and Nasami Farm Nursery, and browse our CSA and Plant Collections: <https://www.nativeplanttrust.org/for-your-garden/buy-native-plants/>
- **Invasive plants brochure** - Be sure not to plant invasive species, one of the chief threats to native plants. See:
https://www.nativeplanttrust.org/documents/321/Managing_Common_Invasives_40519.pdf
- List of landscape designers who can assist you in your buffer zone restoration project (Select "MA" but leave the zip code blank):
<https://www.ecolandscaping.org/member-directory/>

A buffer zone (between the 2 vertical lines) allows water to slow down and be filtered before it empties into the stream or wetland. This helps keep our groundwater and surface waters cleaner.



SUGGESTED NATIVE PLANTS

For a complete listing, please refer to New England Wildflower Society's native plant listing at:
<http://www.newfs.org>

Easy Plants for Dry Soils

TREES

- Sassafras albidum* - Sassafras
- Quercus Alba* - White Oak
- Quercus rubra* -
Northern Red Oak
- Pinus strobus* -
Eastern White Pine



Sassafras

SHRUBS

- Amelanchier* species -
Serviceberry
- Cornus racemosa* - Gray Dogwood
- Ilex glabra* - Inkberry Holly
- Kalmia angustifolia* - Sheep Laurel
- Myrica pensylvanica* - Morella carolinensis -
Bayberry
- Rhododendron vaseyi* - Pink-shell Azalea
- Rosa virginiana* - Virginia Rose
- Spiraea alba var latifolia* - Meadowsweet
- Vaccinium angustifolium* - Lowbush
Blueberry
- Vaccinium pallidum* - Hillside Blueberry

GROUNDCOVER AND HERBACEOUS PLANTS

- Antennaria* species - Pussy-toes
- Aquilegia* species - Columbine
- Asclepias tuberosa* - Butterfly Weed
- Carex pensylvanica* - Pennsylvania Sedge
- Gaultheria procumbens* - Wintergreen
- Helianthus maximiliani* - Maximilian
Sunflower
- Heuchera cultioars* - Alumroot, Coralbells
- Houstonia caerulea* - Bluets, Quaker Ladies
- Iris verna v. smalliana* - Clumping Dwarf Iris

- Maianthemum canadense* - Canada
Mayflower
- Potentilla tridentata* - Three-toothed
Cinquefoil
- Rudbeckia fulgida v. sullivantii* - Black-eyed
Susan
- Ruellia humilis* - Wild Petunia
- Schizachyrium scoparium* -
Little Bluestem
- Waldsteinia fragarioides* -
Barren Strawberry

FERNS

- Dennstaedtia punctilobula* - Hayscented Fern
- Polystichum acrostichoides* - Christmas Fern

Easy Plants for Moist Soils

TREES

- Acer Rubrum* - Red Maple
- Betula nigra* 'Heritage' -
River Birch
- Cercis canadensis* - Eastern
Redbud
- Liriodendron tulipifera* -
Tulip Tree
- Quercus rubra* - Red Oak
- Quercus palustris* - Pin
Oak



Red Oak

SHRUBS

- Amelanchier canadensis* - Serviceberry
- Clethra* spp. - Sweet Pepperbush
- Cornus alternifolia* - Pagoda Dogwood
- Hamamelis virginiana* - Common Witchhazel
- Ilex verticillata* - Winterberry
- Kalmia latifolia* - Mountain Laurel
- Rhododendron vaseyi* - Pink-shell Azalea

- Sambucus canadensis* - Elderberry
Vaccinium corymbosum - Highbush
 Blueberry
Viburnum dentatum - Arrowwood
Viburnum nudum - Witherod Viburnum

**GROUNDCOVER AND
 HERBACEOUS PLANTS**

- Arisaema triphyllum* - Jack-in-the-Pulpit
Symphytotrichum novae-angliae - New

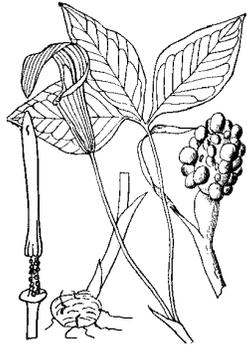
- England Aster
Camassia leichtlinii

- 'Blue Danube' -
 Camas Lily

- Coreopsis tripteris* -
 Tall Coreopsis

- Eupatorium species* -
 Joe-Pye Weed

- Geranium maculatum* -
 Wild Geranium



Jack-in-the-Pulpit

- Lobelia cardinalis* -
 Cardinal Flower

- Maianthemum* - *Smilacina stellatum* - Star
 Flower

- Parthenocissus quinquefolia* - Virginia
 Creeper

- Phlox divaricata* - Wood Phlox

- Podophyllum peltatum* - Mayapple

- Rudbeckia fulgida v. sullivantii* - Black-eyed
 Susan

- Stylophorum diphyllum* - Celandine Poppy

- Trillium grandiflorum* - Showy Trillium

- Uvularia sessilifolia* 'Variegata' - Wild Oat
 Lily

FERNS

- Athyrium filix-femina* - Lady Fern

- Matteuccia struthiopteris* - Ostrich Fern

Easy Plants for Wet Soils

TREES

- Platanus occidentalis* -
 American Sycamore

- Quercus palustris* - Pin
 Oak

- Acer Rubrum* - Red Maple

- Fraxinus Pennsylvania* -
 Green Ash



Green Ash

SHRUBS

- Aronia arbutifolia* - Red Chokeberry

- Ilex glabra* - Inkberry Holly

- Ilex verticillata* - Winterberry

- Lindera benzoin* - Spicebush

- Rhododendron viscosum* - Swamp Azalea

- Vaccinium corymbosum* - Highbush
 Blueberry

**GROUNDCOVER AND
 HERBACEOUS PLANTS**

- Asclepias incarnata* - Swamp Milkweed

- Caltha palustris* - Marsh Marigold

- Camassia species* - Camas Lily

- Iris versicolor* - Blue Flag Iris

- Liatris spicata* - Marsh Blazing Star

- Lobelia cardinalis* - Cardinal Flower

- Symplocarpus foetidus* - Skunk Cabbage

FERNS

- Osmunda cinnamomea* - Cinnamon Fern

- Osmunda claytoniana* - Interrupted Fern

- Osmunda regalis* - Royal Fern



Cinnamon Fern

Cinnamon Fern

LOCAL NURSERIES THAT SELL NATIVE PLANTS

<p>Bigelow Nurseries, Inc. 455 West Main Street - NOT Rte 20 P.O. Box 718 Northboro, MA 01532 Phone: 508-845-2143 FAX: 508-842-9245</p>	<p>This is a semi-local nursery that has a standard variety of native - and non-native plants. http://www.bigelownurseries.com/</p>
<p>New England Wetland Plants, Inc 820 West St. Amherst, MA 01002 Phone: 413-548-8000 Fax: 413-549-4000</p>	<p>These are the experts in wetland plants and will answer questions. They have seed mixes for a variety of conditions. They will ship seed & plants, but they encourage you to pick them up. About 1 ½ hours from Framingham. http://www.newp.com/</p>
<p>Native Plant Trust 180 Hemenway Road Framingham, MA 01701 Phone: 508-877-7630 TTY: 508-877-6553</p>	<p>Native Plant Trust runs 2 nurseries specializing in native plants of all kinds. One is in Framingham at the <i>Garden in the Woods</i>, the Trust's museum - and garden idea center for wildflowers and other native plants. Their other nursery, <i>Nasami Farms</i>, is in Whately, MA. If you want to get creative this is the place for you. https://www.nativeplanttrust.org/for-your-garden/buy-native-plants/</p>
<p>Russell's Garden Center 397 Boston Post Rd - Rt. 20 Wayland, MA 01778 Phone: 508-358-2283 FAX: 508-358-2473</p>	<p>This is a semi-local nursery that has a standard variety of native - and non-native plants. A treat to walk in the greenhouses in winter. http://www.russellsgardencenter.com/</p>
<p>Weston Nurseries of Hopkinton, Inc. 93 East Main Street - Rte. 135 P.O. Box 186 Hopkinton, MA 01748 Phone: 508-435-3414</p>	<p>This is also a semi-local nursery which does some of its own hybridizing. It has a variety of native - and non-native plants. http://www.westonnurseries.com/</p>

**Conservation Commission
Native Plant Restoration Form**

Name _____

Address _____

Location of Restoration Area _____

Size of Restoration Area - square feet _____

Name and Type of native vegetation to be planted

Tree Saplings; 6-8' tall; 1 for every 150 square feet

Common Name	Latin Name	Quantity
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_____	_____	_____
_____	_____	_____

Shrubs; 24" tall; 1 shrub for every 80 square feet

Common Name	Latin Name	Quantity
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_____	_____	_____
_____	_____	_____
_____	_____	_____

Groundcover; 1 herbaceous plant for every 25 square feet

Common Name	Latin Name	Quantity
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_____	_____	_____
_____	_____	_____
_____	_____	_____

Nursery where plants will be purchased _____

7 Please submit receipt to Conservation Office

Proposed date of planting _____

**Please attach a sketch plan of Restoration Area
With the approximate location of plantings
at a scale of 1"=10'.**