

Shoreland Protection Permit Application

Under Chapter 49A of Title 10, § 1441 et seq.



VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
 LAKES & PONDS PROGRAM

| | | |
|---|--|--|
| Application Number: 3976-SP For Shoreland Permitting Use Only | | |
| Submission of this application constitutes notice that the person in Section A intends to create impervious surface and/or cleared area within the Protected Shoreland Area, and certifies that the project will comply with Chapter 49A of Title 10, § 1441 et seq. All information required on this form must be provided, and the requisite fees (Section I) must be submitted made payable to the State of Vermont, to be deemed complete. Refer to the Application Instructions for guidance in completing this application. | | |
| A. Parcel Information | | |
| 1. Physical Address (911 Address): | | |
| 2. Town - County: | 3. Zip: | |
| 4. SPAN (###-###-#####): | The School Parcel Account Number can be obtained from your property tax bill or requested from your Town | |
| 5. Identify the coordinates for where the parcel is located. (decimal degrees, can be found on Google Maps) | | |
| Latitude: | | Longitude: |
| 6. Name of Lake/Pond: | 7. Total Shore Frontage: | feet |
| 8. Was the parcel of land created before July 1, 2014? | Yes | No |
| 9. Are there wetlands associated with or adjacent to this parcel? Contact the Wetlands Program (802) 828-1115 or https://dec.vermont.gov/watershed/wetlands | Yes | No |
| 10. Have you ever applied for a permit with the Agency of Natural Resources associated with this parcel? If so, please describe (e.g., Wetlands, Act 250, Wastewater, etc.). | | |
| 11a. Is this application for a Shoreland permit amendment? Yes No | 11b. What is the original permit number of your approved Shoreland permit? | 11c. Amendment type? Major Minor |
| <i><u>If no, skip 11b. and 11c.</u></i> | | |
| 12. What is the square footage of your parcel within 250 feet of mean water level (the Protected Shoreland Area)? | | Sq. ft.* |
| 13. What is the square footage of all existing impervious surfaces within 250 feet of mean water level (e.g., all structures, decks, patios, paved and unpaved driveways, parking areas, etc.)? | | Sq. ft.* |
| 14. What is the square footage of all existing cleared area within 250 feet of mean water level (cleared area includes all impervious surfaces plus maintained lawn and landscaped areas)? | | Sq. ft.* 8,050* |

*round to the nearest whole number

***update from applicant via email confirming there are 4 trees on the property - 4.24.23 - MC**

B. Project Description

1. Describe the proposed project. For this application to be considered administratively complete you must include:

- a) site plans that show the dimensions of existing and proposed cleared area and impervious surface, and distances from mean water level. **For amendments**, site plans that show proposed changes to the approved project that includes alterations to the approved cleared area and/or impervious surface footprints. Include the dimensions of approved and proposed cleared area and/or impervious surface, and distances from mean water level.
- b) no fewer than three photos of the project area.
- c) if your project includes shoreland stabilization measures that would otherwise not meet the applicable setback standard from mean water level, complete the [shoreland stabilization measures addendum](#) in addition to this form.

2. For **developed** parcels, how far is the existing habitable structure from Mean Water Level (MWL) _____(feet) and how far will new cleared area or impervious surface be from MWL _____(feet)?

OR

For **undeveloped** parcels, how far will new cleared area or impervious surface be from MWL _____(feet)?

3a. Identify the slope of the project area:
_____%

3b. Is the slope of the project area less than 20%? If yes, skip question 3c.

Yes

No

3c. If no above (3b), describe the measures taken to ensure the slope is stable, resulting in minimal erosion and impacts to water quality:

4a. What is the surface area of **new impervious surface** associated with this project or amendment?

_____ square feet*
*round to the nearest whole number

4b. Identify the **total resulting impervious surface** after completion of the project and prior to implementation of best management practices:
_____ square feet

(Question A13 + Question B4a = total resulting impervious surface)

4c. Is the total resulting impervious surface 20% or less of the parcel area within the Protected Shoreland Area? If you are not creating any new impervious surface, check N/A. If yes, skip Question 4d. Yes No N/A

(Question B4b ÷ Question A12) x 100 = _____% impervious surface within the Protected Shoreland Area

4d. If no above (4c), describe the best management practices used to manage, treat, and control erosion generated by stormwater runoff from the portion of the impervious surface that exceed 20%:

| | |
|---|--|
| <p>5a. What is the surface area of new cleared area associated with this project or amendment?</p> <p style="text-align: center;"><u>2.0</u> square feet*</p> <p style="text-align: center;"><small>*round to the nearest whole number</small></p> | <p>5b. Identify the total resulting cleared area after completion of the project and prior to implementation of best management practices:</p> <p style="text-align: center;">8,060.0 square feet</p> <p style="text-align: center;"><u>8,052</u></p> <p style="text-align: center;">(Question A14 + Question B5a = total resulting cleared area)</p> |
|---|--|

5c. Is the total resulting cleared area 40% or less of the parcel area within the Protected Shoreland Area? If you are not creating any new cleared area, check N/A. If yes, skip Question 5d. Yes No N/A

(Question B5b ÷ Question A12) x 100 = ~~100.02~~ ^{99.9%} % cleared area within the Protected Shoreland Area

5d. If no above (5c), establishing vegetative cover (revegetation) equal to or greater in surface area than the proposed new cleared area is the only acceptable best management practice. Identify the surface area and location on the parcel of the proposed revegetation.

As identified on the site plan, two saplings are to be planted in the vicinity of the tree that is to be removed. -MC

C. Landowner/Applicant Information and Certification
All landowners must sign the application. Submit additional pages if necessary.

Name: Michael S. Derby

| | | | |
|---------------------------------------|-------------------------------|-----------|------------|
| Mailing Address: 2700 Revere St. #102 | City/Town: Houston | State: TX | Zip: 77098 |
| Phone Number: 832-298-3851 | Email Address: mderbz@aol.com | | |

Have you completed the voluntary [Natural Shoreland Erosion Control Certification](#) course? Yes No

If yes, please include the location and year you attended the course. Year and location:
 A list of [certified contractors](#) is also available online.

Landowner/Applicant Certification:
 As LANDOWNER/APPLICANT, I hereby certify that the statements presented on this application are true and accurate and recognize that by signing this application, I agree to complete all aspects of the project as authorized. I understand that failure to comply with the foregoing may result in violation of the Shoreland Protection Act, 10 V.S.A. Chapter 49A, and the Vermont Agency of Natural Resources may bring an enforcement action for violations of the Act pursuant to 10 V.S.A. chapter 201.

Landowner/Applicant Signature: Michael S. Derby Date: 4/10/23

D. Application Preparer Information and Certification (check box if same as Section C.)

Name:

| | | | |
|------------------|----------------|--------|------|
| Mailing Address: | City/Town: | State: | Zip: |
| Phone Number: | Email Address: | | |

Have you completed the voluntary [Natural Shoreland Erosion Control Certification](#) course? Yes No

If yes, please include the location and year you attended the course. Year and location:

A [list of certified contractors](#) is also available online.

Application Preparer Certification:

As APPLICATION PREPARER, I hereby certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Check this box to request co-applicant status. By checking this box, you will be considered a co-permittee and are responsible for the conditions of the permit. Co-permittee status is required for any individual or entity other than the permittee that is creating new cleared area or new impervious surface.

Application Preparer Signature _____ Date: _____

E. Adjoining Property Owner Notification (Required action – the application will be incomplete without APO notification)

I certify, by initialing to the left, that I have notified adjoining property owners of the proposed project using the [letter](#) template sent by U.S. Mail, as described in the [Adjoining Property Owner Notification Guidance](#).

F. Additional Documentation (Please check to ensure you have completed the following)

- All sections of the application are complete (or otherwise indicate “not applicable”).
- Application includes site plans denoting existing and proposed cleared area and impervious surface.
- Project description includes dimensions and distances to mean water level.
- Application includes three photos of the project area.
- [Shoreland stabilization measures addendum](#) included if applicable.

G. Permit Application Fees (Administrative Processing + Application Review Fee)

| | | |
|--|-----------------------------------|-----------------|
| Administrative Processing Fee: \$125.00 | | \$125.00 |
| Application Review Fee: \$0.50 per square ft. of new impervious surface | 0.5 x _____ (from Question B4a) = | + _____ |
| Total Fee Due: | | = _____ |

Application submittal:

Please submit this form and payment using ANROnline: https://anronline.vermont.gov/?formtag=WSMD_Intake

Direct questions to: ANR.WSMDShoreland@vermont.gov. If unable to submit online mail the completed application form, all required supporting materials, and a check for the correct application fee to:

**Vermont DEC - Watershed Management Division, Shoreland Program
1 National Life Drive, Davis 3
Montpelier, VT 05620-3522.**

Make checks payable to: State of Vermont

Refund Policy

- If an application is modified, withdrawn or denied after technical review has commenced; all fees are retained.
- If an application is withdrawn prior to administrative review; all fees will be refunded.
- If an application is withdrawn after administrative review but prior to commencement of technical review, deemed administratively incomplete and returned to applicant, or determined that a permit is not required; administrative fees are retained and permit application review fees will be refunded.







Lake Wise Info Sheet



Shoreland Best Management Practices for Lake-friendly Living.

Benefits

- Water Quality
- Wildlife
- Prevents Erosion
- Slow, Spread, Sink Stormwater
- Visual Appeal
- Low Cost
- Low Maintenance
- Protection & Resiliency

Acceptable BMP under the Vermont Shoreland Protection Act

Related Info Sheets:

- Bioengineering
- Restore Natural Plant Communities
- Lake-friendly Yard Maintenance

LAKESHORE BUFFERS

Renaturalize your shoreland



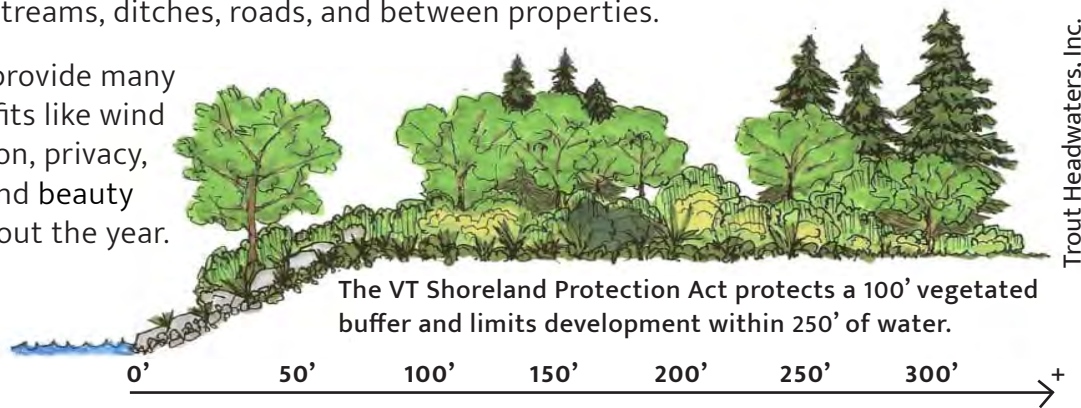
Description.

A protected or restored area of multi-layered native vegetation, organic material, and noncompacted soils that provides a protective buffer for the lake from developed areas. The vegetated buffer protects water quality, stabilizes shorelands, and provides vital habitat.

Applicability.

Lakeshore buffers act as a protective barrier for the lake from upland stormwater runoff, erosion, and impacts from storms, wave action, and ice push. A buffer area extending at least 15 feet from the top of the bank is recommended to stabilize a shoreland. A buffer of 30-50 feet can provide more effective water quality protection and a buffer of 100-300 feet or more can provide wildlife habitat. Buffers are also very beneficial around streams, ditches, roads, and between properties.

Buffers provide many co-benefits like wind protection, privacy, shade, and beauty throughout the year.



Trout Headwaters, Inc.

| | |
|---|---|
| Shoreland stability | min. 15' |
| Shoreland habitat | min. 30' |
| Stormwater treatment & water quality protection | min. 50' |
| Aquatic habitat | min. 100' |
| Wildlife habitat | min. 20' small mammals, 160' birds, 300' amphibians, 330' large mammals |

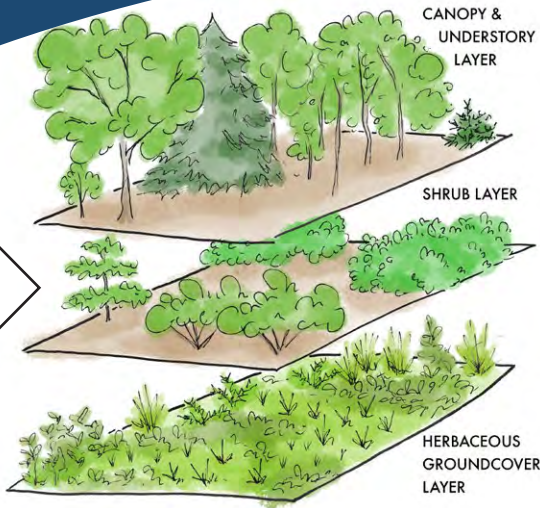
Adapted from VT DEC Lake Wise Program 'Widths of Lakeshore Vegetation for Lake Protection'

VERMONT

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION



Graphics by Greenleaf Design, LLC



Woody shrubs like red twig dogwood and viburnums provide visual interest throughout the seasons with berries, bark, foliage, and flowers.

Layers of a buffer.

Canopy. mature deciduous and evergreen trees that create forest structure and canopy cover, regulate temperature and moisture.

Understory. tree saplings (replacement trees) and small shade-tolerant trees.

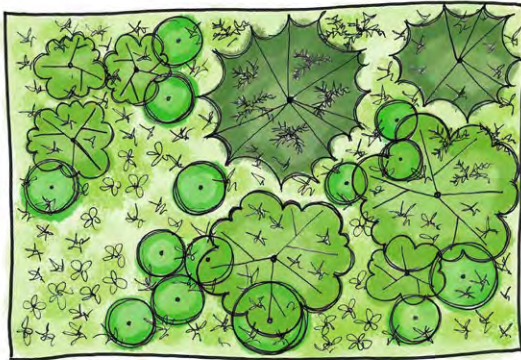
Shrubs. deciduous and evergreen woody shrubs create structure and stabilize.

Groundcover. herbaceous perennial, annual, and biennial flowers/forbs, grasses, sedges, rushes, ferns, mosses, and more cover soil.

Duff. the spongy layer of decomposing organic matter on the ground including leaf litter, woody debris, and dead plant material.

These layers hold soil in place, prevent erosion, and intercept and absorb rainwater and water runoff from upland areas, filtering out pollutants. They also create more biodiverse and resilient ecosystems that cycle nutrients and support wildlife.

VT Bioengineering Manual



MULTI-LAYERED BUFFER PLANTING - PLAN VIEW



Perspective & plan view of a multi-layered planting.

Stabilize the shore.

If there is significant erosion and instability on the shoreland, erosion control techniques may need to be employed prior to establishing a lakeshore buffer, such as regrading the bank to create a more gentle slope, installing erosion control blankets and fiber coir rolls, or installing a rock toe. Soils should be non-compacted and stable. Protect the natural, uneven ground. You may need to scarify soil or till subsoil for newly graded banks and add topsoil. See [The Vermont Bioengineering Manual](#).



Preserve natural, uneven ground



Scarify/till subsoil for newly graded banks



Lake Access.

Plan pathways that are stable and infiltrate or shed water runoff to stable vegetated areas or treatment areas (e.g., rain garden, vegetated swale, rock apron). A meandering or switchback path naturally does not channel runoff to the lake and is more interesting to walk. Limit the width of the path to 6 feet to comply with the [Shoreland Protection Act](#).





This multi-layered planting protects the shoreland from eroding and provides a beautiful view.

How to: Plant a buffer.

Planting a buffer can speed up the successional revegetation of a lakeshore, allow you to choose the species and locations, and select for characteristics like color, texture, edible berries and herbs, bird habitat, and pollinator support.

1. Select plant species that are native to Vermont lakeshores. Native plants require less maintenance, are more adapted to the environment and hardier, and provide significantly more benefits to wildlife, including food and shelter.

Avoid planting non-native species, especially aggressive or invasive species that can escape cultivation and threaten native species and ecosystems. See the Lake Wise **Native Plant List** and **Restore Natural Plant Communities**.

2. Select a diversity of native plant types and species to increase biodiversity and ecological benefits. Plan for a multi-layered planting: include trees, shrubs, and herbaceous species.

Based on your site conditions, select plants for their soil moisture and light requirements. Put water-loving plants on the shore and upland species that like well-drained soils farther up the bank. Plant shade-tolerant species in the understory and sun-lovers in open areas.

How to: No-mow.

1. Stop mowing a zone adjacent to the shoreline as wide as possible for your property. Mark the area and let it grow wild.

Observe for invasive species that may introduce themselves, making sure to remove them as soon as you notice them to prevent colonization and competition with native species.

2. You can selectively prune out undesirable species and encourage desirable plants. However, a diversity of plant types is encouraged to create a multi-layered native plant community that maximizes water quality and wildlife benefits.

3. You can maintain your views by cutting the lower third of tree branches rather than cutting down trees. As your vegetation grows up, under the **VT Shoreland Protection Act**, it must be managed according to the **Vegetation Protection Standards**, which sets minimal requirements for maintaining shoreland vegetation.

Native flowers, grasses, and ferns provide colorful blooms and lush groundcover in the summer and seed and shelter for birds and other wildlife in the winter.

Deciduous trees like oaks, maples, and birches can frame views and provide fall foliage and shade.

Evergreens like hemlock and white cedar can provide visual screening and wind protection.

Materials.

- ☀ Native plants
- ☀ Mulch, wood chips, straw/hay, or leaves
- ☀ Shovel, trowel, clippers
- ☀ Watering source

Optional:

- ☀ Low-phosphorus compost (leaf litter/yard waste-based)
- ☀ Screened topsoil





Plant cost comparison.

| Cost | Buffer Plant Material |
|----------|-------------------------------|
| -\$ | No-mow zone - save money*! |
| \$ | Seeding |
| \$\$ | Plugs, live stakes, bare root |
| \$\$\$ | Container plants |
| \$\$\$\$ | Lawn - erosion & land loss |

*less time and cost for lawn maintenance and need for costly retaining walls and erosion repairs.

Source plants.

Check out your NRCD plant sale, conservation nursery, or local nursery for native seed, plugs, live stakes, bare root, or container plants. See the [Lake Wise list of Native Plant Suppliers](#).

Maintenance.

Water at planting time. Continue to water often so that the soil remains moist for at least six to eight weeks.

Mowing, raking, and removal of dead plant material is not recommended. Selective weeding around newly planted trees and shrubs may be beneficial for aeration and sunlight. Maintain the duff layer of leaves and detritus. Leave dead trees on land and in the water for wildlife benefits unless they threaten structures. If a tree needs to be removed, leave the roots and stump in place. Monitor and remove invasive species.

Wait to prune for air flow and desired growth until the second or third growing season beyond removing broken and dead branches.

How to plant.

Timing. Spring (April – June) or fall (September – October) are the optimum times to plant. Native woody trees and shrubs can be planted earlier and later in the season if the ground is not frozen. Herbaceous species are optimally planted after tree leaf out and before the leaves fall.

Soil prep & amendments. Minimize disturbance to soil - plant among existing vegetation. Let lawn grow or replace with dense planting using suppression, solarization, sheet mulching, or tilling to prep for seeding or planting. Make sure to cover bare soil with mulch, straw, leaves, or erosion control blankets. Compost is a sufficient fertilizer to add nutrients to soil; native plants are well adapted and do not need a lot of extra nutrients. Compost can help to boost initial plant growth, add organic matter, and increase water retention.

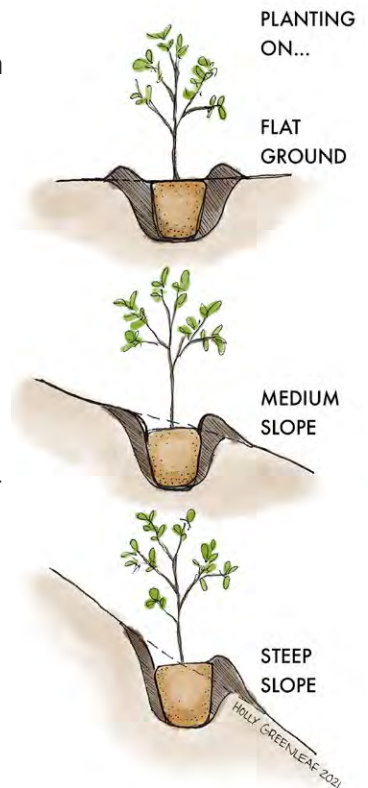
Seeds. Spread seed evenly according to the specified seeding rate. Lay hay or straw mulch to protect from wind, add organic matter, and retain moisture to increase survival rate.

Plugs. Gently break apart root if bound up. Dig a small hole with trowel or dibble and plant plug so that the top of the root is level with the ground surface. Water plugs often.

Bare root and containers. Dig a hole twice as wide and to the depth of the root ball so that the crown (where roots meet stem) is level or slightly lower than the surrounding ground level (sometimes slightly higher for saturated clay soils).

Rough up the roots if they are rootbound. For bare root plants, you may want to make a cone of soil in the base of the hole to spread the roots around.

Fill soil in and tamp down with your fingers (poke soil around the roots) to remove air pockets. Create a soil or mulch ring to help hold water. Adding a 3 inch layer of mulch or wood chips can suppress weeds, increase water retention, and add organic matter. Do not pile up mulch near stem to prevent rot.



Lake Wise Info Sheet



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- Wildlife
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- Low Cost
- Low Maintenance
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Acceptable BMP under the Vermont Shoreland Protection Act

Related Info Sheets:

- Lakeshore Buffers
- Bioengineering
- Managing Invasive Plants

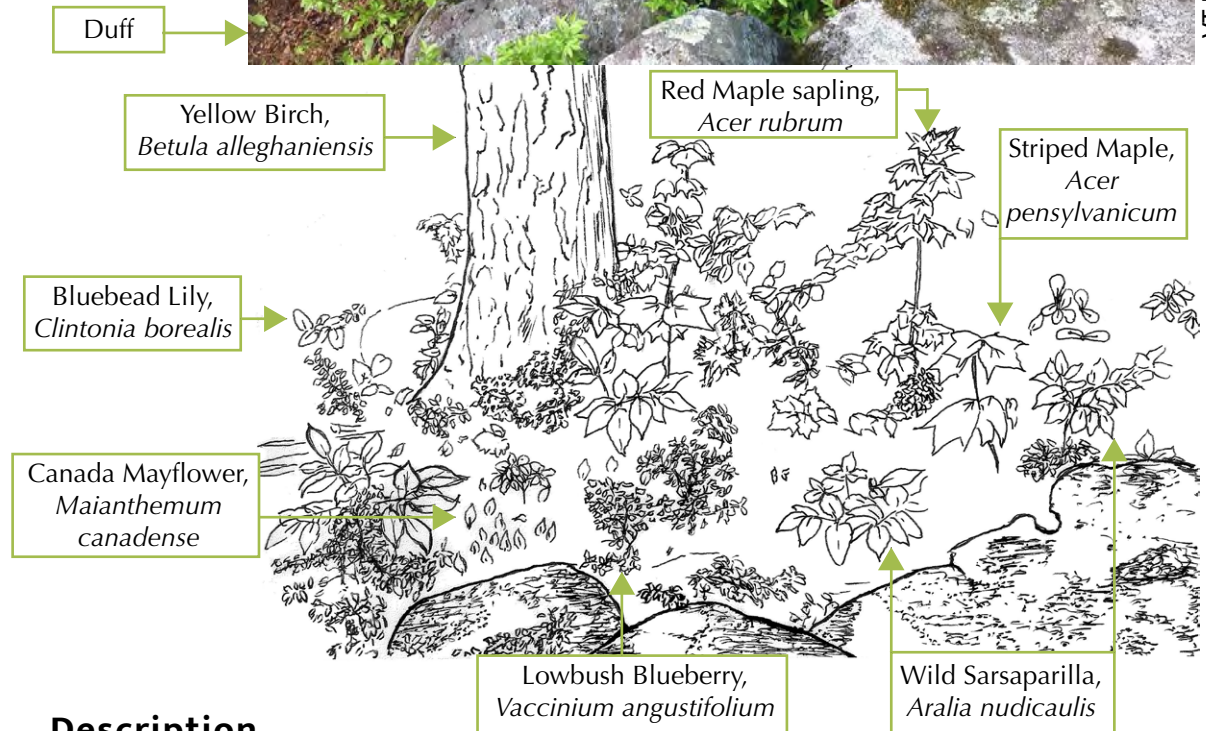
RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

A natural woodland community growing along a Vermont lakeshore.



VT Lake Wise Program



Description.

Natural communities are made of plants and animals growing and living together in landscapes characterized by specific soil, water, and climate conditions. Native shoreland vegetation is essential for protecting lake water quality and wildlife habitat. Vermont has over 800 lakes with several natural lakeshore communities, ranging from cobble and sandy beaches to wetlands to northern hardwood forests. Planting native species and protecting and encouraging natural plant communities along Vermont shorelands is one of the most important things we can do to protect lake health, clean drinking water, biodiversity, and recreational opportunities.

VERMONT

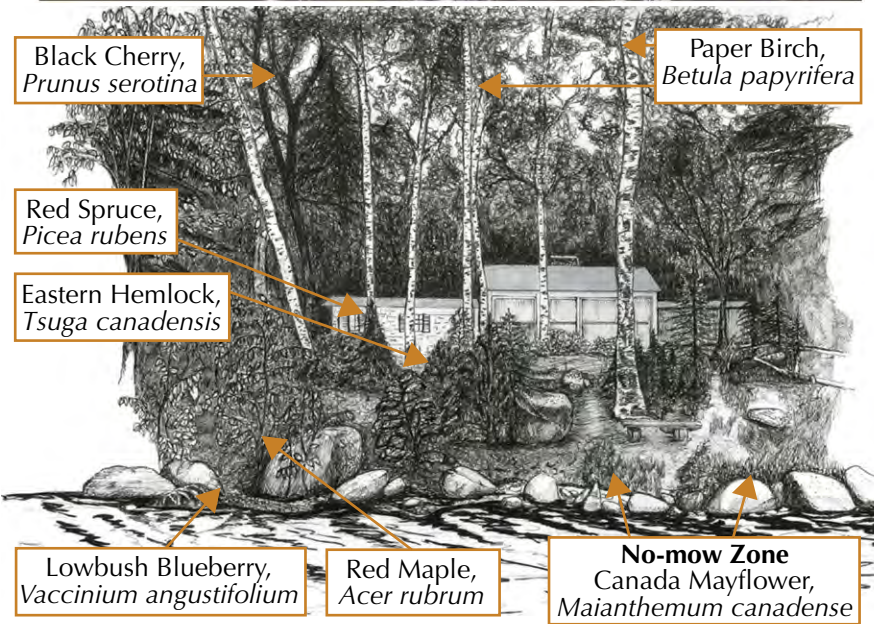
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION



Graphics by Greenleaf Design, LLC



VT Lake Wise Program



An example of a naturalized shoreland. This camp shares the shore with a woodland community and has all five tiers of vegetation, including a duff layer, herbaceous ground cover, woody shrubs, saplings and understory trees, and mature canopy trees. The **Vermont Shoreland Protection Act** protects this shoreland vegetation, but does allow for some thinning and pruning up.

For example, 60% of protein for freshwater fish comes from insects that have fallen into the water from their near-shore native plant host.

Lakeshore natural communities.

Many of the natural communities that grow along Vermont lakeshores, like the forests and woodlands, have five tiers or layers of vegetation: **canopy, understory, shrub, ground cover, and duff layers.**

On some lakeshores, the natural vegetation may only include some of these layers, such as a Hemlock forest with little shrub or ground cover, yet the needles have made an absorbent, spongy layer of duff that protects the shoreland soils from eroding and degrading water quality and habitat. Marshes, grasslands, and shrub swamps may not have a canopy or understory, but they provide ample soil stabilization, water filtration, and habitat with their dense, multi-layered vegetation.

The problem.

About 45% of Vermont lakeshores have been developed in ways that have cleared the shores of their natural communities.

The solution.

You. It's up to you to protect the the future of Vermont lakes. Revegetating and restoring lakeshore natural communities depends almost entirely on the voluntary actions of property owners.

Gardeners. Gardeners and landscapers can help safeguard lake ecosystems by encouraging the reduction of lawns and promoting native plants. Ask about renaturalizing your shore, no-mow zones, and supporting biodiversity.

Go native. Native plants fuel the food web and are essential to healthy lake ecosystems and habitat for all wildlife.





Intervale



Local Resources.

Check out local conservation nurseries for native plant stock (not a complete list):

- 🌸 Your Natural Resource Conservation District (NRCD)
- 🌸 Intervale Conservation Nursery, Burlington, VT
- 🌸 Champlain Valley Native Plant Nursery, Poultney, VT
- 🌸 Vermont Wetland Plant Supply, Orwell, VT
- 🌸 Miller Hill Farm, Sudbury, VT
- 🌸 Northeast Pollinator Plants, Fairfax, VT
- 🌸 Full Circle Gardens, Essex Junction, VT

See a more complete listing of native plant suppliers on the [Lake Wise Lake Resources web page](#).

How to: Re-establish native species on a lakeshore.

Native plants growing along undeveloped shorelands represent the naturally occurring species for that area and the species that grow best together, making up a natural plant community. Look to those species when making your plant selections for renaturalizing your shoreland.

If you need help identifying plants, visit the [Native Plant Trust](#) to find native species and identify plants with their [Go Botany](#) and [Garden Plant Finder](#). [Seek by iNaturalist](#) is an excellent plant identification app for your smartphone. You can also contact the [Lake Wise Program](#) or a [County Forester](#) for help.

Buying native plants.

Make a plant list based on your observations of natural plant communities growing around your lake to ensure that you buy the right plants for your site conditions.

Native plants are available at most Vermont nurseries. If possible, prioritize true native plants. There are many cultivars of native plants, or 'nativars', available at nurseries, but these can vary widely from the native. If you do go with a nativar, select one that most closely resembles the true native to provide greater benefits to pollinators and other native insects and wildlife.

Most nurseries sell container (potted) plants. Potted plants can be planted anytime during the season. Conservation nurseries also sell plugs, bare root plants, and live stakes. Plant bare root or live stakes in early spring or late fall when they are dormant. Water often.

Harvesting native plants.

Transplanting or allowing natural succession of native plants to occur are also great ways to establish natural plant communities.

Early spring and late fall are optimum times to dig up and transplant species because plants are dormant. When harvesting native plants from natural areas, be sure it is on your property or you have permission from the landowner. Only harvest plants from areas where there are robust populations so that you do not deplete the local naturally occurring population.

For more information on planting and no-mow zones, see [Lakeshore Buffers](#), [Lake-friendly Yard Maintenance](#), and [Live Stakes & Fascines](#).





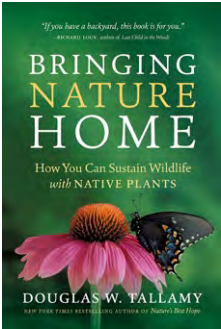
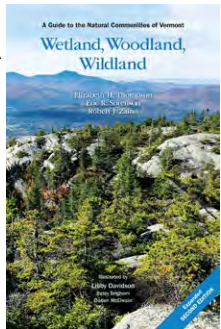
RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

Native plant reading resources.

Wetland, Woodland, Wildland: A Guide to Natural Communities of Vermont by Elizabeth Thompson, Eric Sorenson, and Robert Zaino is the leading resource on natural plant communities in VT.

Bringing Nature Home by Doug Tallamy and his research are excellent resources on how wildlife and our world depend on native plants where we live.



VT Fish & Wildlife; Tallamy

WHY NATIVE?

Many plants used in landscaping are non-native and provide less food and habitat for wildlife. Some aggressive and invasive non-native plants have escaped cultivation and threaten native species and biodiversity. Avoid Rugosa Rose, Periwinkle, Japanese Honeysuckle, Purple Loosestrife, Norway Maple, Burning Bush, and Bishop's Weed. No Vermont Shoreland Protection Permit is required to remove plants listed on the VT DEC Noxious & Nuisance Plants.

Selecting species based on soil moisture - right plant, right place.

| Well-drained soils | Wet or moist soils | Shallow, rocky soils | Tolerant of many soils |
|--|---|--|---|
| <p>Trees. Sugar Maple Black Cherry American Beech Red & White Oak Paper Birch</p> <p>Shrubs. Witchhazel Highbush Blueberry Nannyberry Viburnum Hobblebush Alternateleaf Dogwood Beaked Hazelnut</p> <p>Perennials. Columbine Beardtongue Black-eyed Susan Bunchberry Wild Ginger Christmas Fern Big Bluestem Woodland Sedges</p> | <p>Trees. Black Willow Green Ash Northern White Cedar Swamp White Oak Cottonwood</p> <p>Shrubs. Winterberry Red & Silky Dogwood Black & Red Elderberry Shrub Willows Buttonbush Sweetgale</p> <p>Perennials. Cardinal Flower Blue Flag Iris Joe Pye Weed Swamp Milkweed Turtlehead Ostrich Fern Bluejoint Grass Marsh/Meadow Sedges</p> | <p>Trees. Eastern Red Cedar Red Spruce White Pine Balsam Fir Gray Birch</p> <p>Shrubs. Bush Honeysuckle Lowbush Blueberry Common Snowberry Sweetfern Mapleleaf Viburnum Fragrant Sumac</p> <p>Perennials. Wild Bergamot Butterfly Weed Mountain Mint Common Yarrow Heath Asters Blue & White Wood Aster Wood Ferns Indiangrass</p> | <p>Trees. Red & Silver Maple Yellow & River Birch Hemlock Basswood Quaking Aspen</p> <p>Shrubs. Serviceberry/Shadbush Highbush Cranberry Gray Dogwood Black Chokeberry Arrowwood Viburnum Striped & Mountain Maple</p> <p>Perennials. New England Aster Goldenrod Canada Anemone Canada Mayflower Sarsaparilla Partridgeberry Cinnamon Fern Switchgrass</p> |



growth key:
slow < 1 foot/year
fast ~ 1-2 feet/year
rapid > 2 feet/year

TREES

soils

growth

| | | |
|---|---|------------------------------------|
| Red Maple, <i>Acer Rubrum</i> | wet to dry adaptable | fast, 35'-50' early-mid succ. |
| Sugar Maple, <i>Acer saccharum</i> | well-drained moist, rich | fast, 60'-80' mid-late succ. |
| American Beech, <i>Fagus grandifolia</i> | well-drained, moist | slow, 50'-70' mid-late succ. |
| Eastern Hemlock, <i>Tsuga canadensis</i> | wet, moist, rocky, shallow | slow, 60'-80' late-succ. |
| Black Cherry, <i>Prunus serotina</i> | well-drained rich, adaptable | fast, 30'-60' early-late succ. |
| Green Ash, <i>Fraxinus pennsylvanica</i> | moist, tolerant of flooding | rapid, 50'-70' early-late succ. |
| White Pine, <i>Pinus strobus</i> | dry, moist well-drained | fast, 60'-90' early-late succ. |
| Basswood/Linden, <i>Tilia americana</i> | well-drained, moist, deep | fast, 50'-70' mid-succ. |
| Red Oak, <i>Quercus rubra</i> | wet to dry adaptable | rapid, 60'-80' mid-succ. |
| Paper Birch, <i>Betula papyrifera</i> | well-drained adaptable | fast, 25'-45' early-mid succ. |
| Yellow Birch, <i>Betula alleghaniensis</i> | moist, wet well-drained adaptable | slow, 40'-60' early-late succ. |
| Red Spruce, <i>Picea rubens</i> | dry, moist rocky, shallow | slow, 30'-60' mid-late succ. |
| N. White Cedar, <i>Thuja occidentalis</i> | moist, well- drained, alkaline | slow, 20'-60' early-late succ. |
| E. Red Cedar, <i>Juniperus virginiana</i> | dry, moist, rocky, adaptable | fast, 40'-50' early-late succ. |
| Balsam Fir, <i>Abies balsamea</i> | moist, well-drained rocky, acidic | slow, 35'-60' early-late succ. |

Native plant lists.

For a more complete list, visit the [Native Plant Trust Plant Finder](#).

Natural succession.

key: succ. = successional

Succession is a natural process of inevitable change within a plant community. Early, mid, and late successional species refers to where they fit into the evolution of a forest from widespread disturbance - such as clearing for farm fields or fire - to mature forest. As a landscape fills in with more plants, the sun loving ones may get shaded out by taller shrubs and trees, giving way to more shade tolerant species. However, seeds on the ground are easily brought to life with a small disturbance that causes a change in sunlight, such as a broken branch or fallen tree.

Design your planting plan to work with the natural succession of a community. For example, start with full-sun perennials, shade-tolerant shrubs, and trees. Once the trees grow up and create shade, the shrubs will adapt, and you can swap out full-sun perennials for shade-tolerant perennials, moving your full-sun perennials elsewhere.



Paper Birch canopy in a naturalized shoreland at Boulder Beach State Park, Lake Groton.

VT Lake Wise Program





RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland



Highbush Cranberry

SHRUBS

| plant | soils | growth |
|--|--|--|
| Serviceberry, <i>Amelanchier spp.</i> | wet to dry, adaptable | slow, 10'-25' sun-p.shade |
| Black Chokeberry, <i>Aronia melanocarpa</i> | wet to dry, adaptable | fast, 3'-6' sun-p.shade |
| Buttonbush, <i>Cephalanthus occidentalis</i> | wet, moist, tolerant of flooding | fast, 3'-8' full sun |
| Silky Dogwood, <i>Cornus/Swida amomum</i> | wet, moist, adaptable | fast, 3'-8' sun-p.shade |
| Red Osier Dogwood, <i>Cornus/Swida sericea</i> | wet, moist, adaptable | fast, 3'-8' sun-p.shade |
| Beaked Hazelnut, <i>Corylus cornuta</i> | well-drained, dry, moist | slow, 4'-12' sun-p.shade |
| Bush Honeysuckle, <i>Diervilla lonicera</i> | wet to dry, adaptable | fast, 2'-4' sun-p.shade |
| Witchhazel, <i>Hamamelis virginiana</i> | wet to dry, adaptable, flood, drought | slow, 6'-15' sun-shade |
| Winterberry, <i>Ilex verticillata</i> | wet, moist, adaptable | slow, 4'-10' sun-p.shade |
| Sweetgale, <i>Myrica gale</i> | wet, moist, adaptable | slow, 2'-4' sun-p.shade |
| Elderberry, <i>Sambucus nigra, racemosa</i> | moist, wet, adaptable | fast, 4'-8' sun-p.shade |
| High & lowbush Blueberry, <i>Vaccinium corymbosum, angustifolium</i> | wet to dry well-drained, rocky, acidic | slow, 3'-8' or 1'-2' sun-p.shade |
| Arrowwood, <i>Viburnum dentatum</i> | wet to dry adaptable | fast, 6'-10' sun-p.shade |
| Highbush Cranberry, <i>Viburnum opulus var. americanum</i> | wet, moist | fast, 5'-12' sun-p.shade |



Partridgeberry

HERBACEOUS/ GROUNDCOVERS

| plant | soils | growth |
|--|------------------------------|---------------------------------|
| Common Yarrow <i>Achillea millefolium</i> | moist, dry, adaptable | 1'-3', summer sun-p.shade |
| Columbine, <i>Aquilegia canadensis</i> | moist, dry adaptable | 8"-24", spring sun-p.shade |
| Windflower, <i>Anemone canadensis</i> | wet to dry, groundcover | 1'-2', summer sun-p.shade |
| Swamp Milkweed, <i>Asclepias incarnata</i> | moist, wet, adaptable | 24"-42", sprng sun-p.shade |
| Bunchberry, <i>Cornus canadensis</i> | moist, cool, rich, acidic | 4"-6", spring p.shade-shade |
| Joe Pye Weed, <i>Eutrochium spp.</i> | moist, wet, adaptable | 3'-8', summer sun-p.shade |
| Blue Flag Iris, <i>Iris versicolor</i> | moist, wet, adaptable | 1'-3', summer sun-p.shade |
| Cardinal Flower, <i>Lobelia cardinalis</i> | moist, wet, sandy | 2'-3', summer sun-p.shade |
| Wild Bergamot, <i>Monarda fistulosa</i> | moist, dry, well-drained | 24"-42", smmr sun-p.shade |
| Cinnamon Fern, <i>Osmunda cinnamomea</i> | moist, wet | 2'-4' sun-shade |
| Switchgrass, <i>Panicum virgatum</i> | wet to dry, adaptable | 3'-6', fall full sun |
| Beardtongue, <i>Penstemon digitalis</i> | moist, dry, adaptable | 1'-3', spring sun-p.shade |
| Christmas Fern, <i>Polystichum acrostichoides</i> | wet to dry | 8"-16", evrgrn p.shade-shade |
| Little Bluestem, <i>Schizachyrium scoparium</i> | wet to dry | 1'-4', fall sun-p.shade |
| Goldenrod, <i>Solidago spp.</i> | wet to dry, adaptable | 1'-3', fall sun-shade |
| Asters, <i>Symphotrichum spp.</i> | wet to dry, adaptable | 1'-4', fall sun-shade |





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The elusive Pink Lady Slipper cohabitates in the Hemlock understory on this lakeshore.



Pathway among Bunchberry flowers and Bluebead lilies.

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Wildflowers.

Most wildflowers of mixed hardwood forests are herbaceous perennials. They store food in their roots, tubers, or bulbs when the sunlight reaches the forest before the trees leaf out in early spring and after the leaves fall. Some wildflowers like Wild Leeks, Dutchman's Breeches, and Trout Lily photosynthesize only in the early spring, going mostly dormant the rest of the summer. Partridgeberry and wintergreen can grow with evergreens, such as in Hemlock forests where there is almost continual shade on the forest floor, because they photosynthesize at low rates throughout the growing season.

Native plant facts.

- A mature maple tree can uptake and transpire 17 to 37 gallons of water a day, while a large oak tree can uptake and transpire 79 gallons a day.
- The forest floor (duff) acts as an enormous sponge, typically absorbing up to 18 inches of rain before gradually releasing it to groundwater and streams.
- Trees lower energy bills by providing shade in the summer and wind protection and insulation the winter, reducing A/C and heating needs.
- There are measurable medical benefits for those who spend more than 15 minutes a day in naturally vegetated areas (not including lawns).
- 90% of insects that eat plants are specialized to feed on one or only a few types of native plants.
- Black Cherry trees host more than 450 species of butterfly and moth insects and provides fruit for more than 40 species of birds and many mammal.
- There are 45.6 million acres of lawn in the US, the largest 'crop'. If half of all lawns were renaturalized with native plants, then all the existing isolated natural areas would be connected through ecological corridors and would safeguard our country's water, plants, animals, and people.

VERMONT

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION





RESTORE NATURAL PLANT COMMUNITIES

Renaturalize your shoreland

W I L D L I F E N E E D
N A T I V E P L A N T S
- A N D Y O U C A N H E L P !



The Monarch Butterfly, *Danaus plexippus*, is endangered and depends solely on milkweed, *Asclepias syriaca*, to lay its eggs on and feed as larvae. Milkweed is essential to the survival of the monarch - seed it into your gardens!



The Luna Moth, *Actias luna*, evolved with the Shagbark Hickory, *Carya ovata*, and the larvae depend on the leaves. Caterpillars, like the Luna Moth larva, provide the greatest protein source for broods of all birds. Each pair of Chickadees needs to find 6,000 caterpillar larva over a 3 week period to feed their nest of young!



Wild Seed Project



Doug Tallamy



Eastern Red Cedar, *Juniperus virginiana*, provides the only food source for the larval stage of the Olive Hairstrike Butterfly, *Callophrys gryneus*. Cedar Waxwings are named after this tree because of their feeding habits on the berries. 96% of birds depend on protein from insects, such as the Olive Hairstrike caterpillar, to rear their young!

"To become naturalized is to live as if your children's future matters, to take care of the land as if our lives and the lives of all our relatives depend on it. Because they do."

- **Robin Wall Kimmerer**, Scientist, Decorated Professor, Member of the Citizen Potawatomi Nation

