



Vermont
Invasive
Patrollers

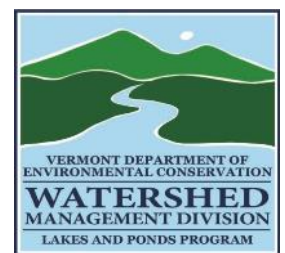


Table of Contents

Introduction to Vermont Invasive Patrollers (VIP)	3
Overview	3
Program Goals.....	3
Responsibilities of VIPs and VIP staff.....	3
Aquatic Invasive Species (AIS) Biology and Identification	4-19
Defining Invasive Species.....	4
Priority Species of Concern.....	4
Established in Vermont	5-11
Brittle naiad (<i>Najas minor</i>)	5
Curly-leaf pondweed (<i>Potamogeton crispus</i>).....	6
Eurasian watermilfoil (<i>Myriophyllum spicatum</i>).....	7
European frogbit (<i>Hydrocharis morsus-ranae</i>).....	8
Starry stonewort (<i>Nitellopsis obtuse</i>).....	9
Variable -leaf watermilfoil (<i>Myriophyllum heterophyllum</i>).....	10
Water chestnut (<i>Trapa natans</i>).....	11
Watch List.....	12-15
Brazilian waterweed (<i>Egeria densa</i>).....	12
Carolina fanwort (<i>Cabomba caroliniana</i>).....	13
Hydrilla (<i>Hydrilla verticillata</i>).....	14
Parrot feather (<i>Myriophyllum aquaticum</i>).....	15
Helpful Resources and Contact	16
Survey Methods	17-18
Spread Prevention.....	17
Conducting an AIS survey.....	18
Forms and Data Sheets	19-23
Vermont Invasive Patroller Survey Sheet.....	19
VIP Survey Data Sheet instructions.....	20
Photographing an Aquatic Specimen.....	21
Aquatic Specimen Submission Procedures and Form.....	22-24
Additional Resources	
Vermont Invasive Patrollers for Animals.....	25
List of Vermont AIS Infested Waterbodies.....	26-28
Quick reference to Vermont laws pertaining to Aquatic Invasive and Nuisance Species.....	29
References.....	30-31

Vermont Invasive Patrollers Program

Overview

The Vermont Invasive Patrollers (VIP) program was established by the Vermont Department of Environmental Conservation (VTDEC) in 2007 to focus on early detection of all known and potential aquatic invasive species (AIS). Prior to 2007, volunteer surveying efforts were focused primarily on Eurasian watermilfoil through the Eurasian Watermilfoil Watchers.

Although VIPs now emphasize aquatic invasive plants more broadly in their surveying efforts, they are trained to identify both aquatic invasive plants and animals that are either established in Vermont or in nearby states and pose the greatest threat to Vermont's water bodies. If you're interested in getting even more involved, check out the **Vermont Invasive Patrollers for Animals (VIPA)** program. See page 24 for more information on the sister Community Science project and how to become a VIPA.



Program Goals

Through hands-on workshops, lakeshore residents and lake users learn what aquatic invasive species are, how to prevent the spread of AIS, and how to identify the species that pose the greatest threats to Vermont lakes and ponds. Workshop participants are encouraged to survey a body of water regularly, and check in with VTDEC. As such, the VIP program has three primary goals:

1. To increase AIS knowledge of lakeshore residents and lake users.
2. To create an early detection volunteer network with a primary focus on aquatic invasive species, including plants and animals.
3. To increase VTDEC's knowledge of new infestations and the spread of AIS in lakes and ponds.

By enlisting the help of a trained network of volunteers, VTDEC staff are much more likely to learn of new AIS infestations early and as a result, may have more management options at their disposal.

Responsibilities of VIPs and VTDEC staff

VIPs are encouraged to:

- Survey their lake (or a section of it) at least once between July and mid-September.
- Submit surveys, even if nothing suspicious was found, and submit photos of unknown native species for positive identification to VTDEC staff. VTDEC staff will follow up if a sample is necessary.
- Attend a workshop or participate in a practice survey with VTDEC staff at least once every 3 years.

VTDEC staff support the efforts of VIPs by:

- Offering regular workshops on AIS biology and identification.
- Accompanying volunteers on AIS surveys of their lake or pond.
- Providing AIS identification resources, survey instructions and forms.
- Identify submitted photographs of unknown species and inform VIP of species.

Aquatic Invasive Species Biology and Identification

Defining Aquatic Invasive Species

In this manual, we will use the terms non-native, nuisance, and invasive. Often these terms are used interchangeably; however they are not synonymous. A **non-native** species is one that has been purposefully or accidentally introduced to an area outside its natural geographic range, but may or may not pose any threat to the natural communities in which they are introduced. A **nuisance species** is one that may be native or non-native, and may have adverse recreational or economic impacts. An **invasive species** is an organism that is non-native, whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Aquatic invasive species have several common characteristics. They reproduce abundantly and lack natural predators and other control mechanisms. They also tend to be skilled hitchhikers, hitching rides on boats, fishing gear, and other recreational equipment. Once established, they can reduce species diversity, food sources, and suitable habitat. This allows them to outcompete native populations, thereby disrupting the ecosystem balance. They can also have economic consequences. For example, water chestnut can grow so dense it makes boating all but impossible, which can hurt recreation-based tourism.

Aquatic Invasive Plant Species (<i>As of 2023</i>)		# Vermont Waterbodies Species is Located
Brittle naiad	<i>Najas minor</i>	14
Curly-leaf pondweed	<i>Potamogeton crispus</i>	40
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	103
European frogbit	<i>Hydrocharis morsus-ranae</i>	14
Starry stonewort	<i>Nitellopsis obtusa</i>	2
Variable-leaf watermilfoil	<i>Myriophyllum heterophyllum</i>	2
Water chestnut	<i>Trapa natans</i>	35
Aquatic Invasive Animal Species		
Alewife	<i>Alosa pseudoharengus</i>	5
Asian Clam	<i>Corbicula fluminea</i>	1
Banded Mystery Snail	<i>Viviparus georgianus</i>	16
Chinese Mystery Snail	<i>Cipangopaludina chinensis</i>	22
Rusty Crayfish	<i>Faxonius rusticus</i>	15
Spiny Waterflea	<i>Bythotrephes longimanus</i>	1
Zebra Mussel	<i>Dreissena polymorpha</i>	2
Aquatic Invasive Plant Species		Neighboring States Species is Located
Brazilian waterweed	<i>Egeria densa</i>	CT, NH, NY, MA
Fanwort	<i>Cabomba caroliniana</i>	CT, NH, NY, MA, ME
Hydrilla	<i>Hydrilla verticillata</i>	CT, NY, MA, ME
Parrot feather	<i>Myriophyllum aquaticum</i>	CT, NY, MA



Brittle naiad *Najas minor*

There are several naiad species in Vermont, but only one that is invasive. Brittle naiad prefers primarily alkaline (higher pH, more basic) waters of streams, ponds, and lakes and is tolerant of eutrophic (high in nutrients) conditions and high turbidity (more particles, less clear water). The plant stems and parts are very brittle and fragments easily, contributing to its spread. This plant can be differentiated from its native relatives by its easily visible serrations along the leaf margin.



Identification

- Submersed annual plant
- Leaf margins have minor serrations visible to the naked eye
- Leaves appear opposite, but are not quite aligned
- Leaves are often recurved (bend backward), stiff and bristly
- Leaves are 0.3-0.5 mm wide, finely pointed
- Flowers grow along the leaf axils
- Fragments easily when handled

Quick ID Guide

- ✓ Visibly serrated edges
- ✓ Stiff brillo pad-like feel



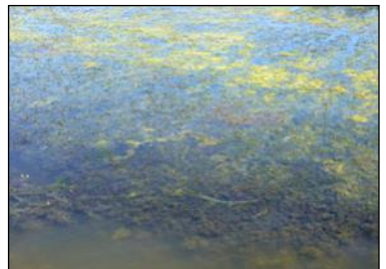
Distribution

- Native to South America
- Has spread rapidly throughout the eastern half of North America
- Currently found in the southern half of Lake Champlain and in several other lakes within the basin, including Waterbury Reservoir



Spread

- Fragmentation is the primary means of spread due to the brittle nature of this plant
- Mass seed production contributes to seed dispersal and overwinter success



Similar Native Species



Slender naiad *Najas flexilis*

Leaves are paired with hard-to-see serrations



Northern naiad *Najas gracillima*

Leaves are opposite with hard-to-see serrations

Curly-leaf pondweed *Potamogeton crispus*

Curly-leaf pondweed is a distinct plant that is easily identified by its noticeably wavy leaf edge that has finely toothed serrations. It is a submersed perennial plant, found in freshwater lakes, ponds, rivers, streams, and slightly brackish waters. It is tolerant to low light and low temperatures. This species gets a jumpstart on the growing season, growing in the spring and early summer before conditions are favorable for most other species. By mid-July, it begins to die back.



Identification

- Submersed plant, no floating leaves
- **Alternate leaf arrangement along the stem**
- **Serrated leaf margin**
- **Leaf has a wavy curling edge and a blunt tip**
- Each leaf is approximately 0.5" wide and 2-3" long



Quick ID Guide

- ✓ Visibly serrated edges
- ✓ Lasagna-like leaf edges

Distribution

- Native to Eurasia, Africa, and Australia
- Introduced to North America in the mid-1800s
- Spread across 48 states
- Present in Lake Champlain and numerous other Vermont water bodies



Spread

- Spreads primarily by hard burr-like winter buds called turions
- A single plant can produce hundreds of turions
- Turions are capable of germinating the following spring and several years after being produced
- Seeds are also a means of spread, but far less common
- Seeds mature around June



Similar Native Species

Clasping-leaf pondweed *Potamogeton richardsonii*

- ✓ Wavy edged leaves come to a sharp point
- ✓ Smooth edges (no serrations) along leaves



Fern pondweed *Potamogeton robbinsii*

- ✓ Finely serrated edges along leaves
- ✓ Frondlike two ranked leaves



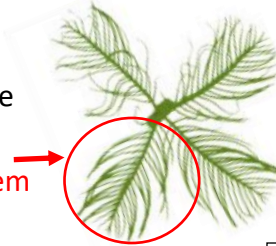


Eurasian watermilfoil *Myriophyllum spicatum*

Eurasian watermilfoil is one of eight watermilfoil species in Vermont and six of these are native and very similar in appearance. Therefore, the best manner to identify the species is to observe a segment of a whorled leaf, and count the leaf divisions. Its ability to survive throughout cold temperatures provides a quick growth start in spring.

Identification

- Submersed though often branches near surface
- **Whorls of 4-6 finely divided, featherlike leaves**
- **Each leaf contains 12 - 21 leaflets along the stem**
- Bottlebrush appearance underwater
- Grows in up to 20 feet of water



Distribution

- Native to Europe and Asia
- Introduced to North America in the mid-1900s and has spread throughout the United States
- Rapid spread aided by its use as an aquarium plant and by the ease with which it is transported through recreational activity
- First identified in St. Albans Bay of Lake Champlain in 1962 and its distribution in Vermont steadily increased since then

Spread

- Reproduces almost exclusively by fragments which can drift, sink, develop roots, and grow into new plants
- Fragments can occur both naturally and as a result of human activity - within a lake, wind and waves may break plants loose; and boating activity through dense watermilfoil beds also contributes to fragmentation and spread

Quick ID Guide

- ✓ 12-21 leaflets
- ✓ Limp when out of water
- ✓ Red-tipped in spring and fall



Similar Native Species

Northern watermilfoil *Myriophyllum sibiricum*

- ✓ Normally is smaller in growth overall
- ✓ Has between 5 and 15 leaflets
- ✓ Plant remains stiff out of water



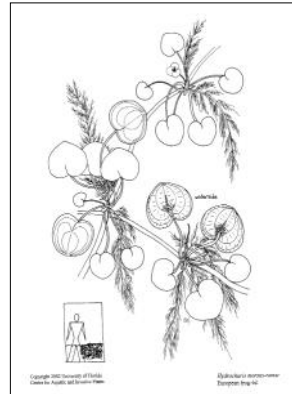


European frogbit *Hydrocharis morsus-ranae*

This free-floating aquatic plant has a well-developed root system, yet it does not anchor itself in the sediment. It moves around a water body by wind and wave action. As a result, the plant is often found in quiet still waters, such as wetlands and coves. Plants are typically connected together by a runner, creating a dense surface mat.

Identification

- Free-floating perennial; roots are not anchored in the sediment
- Small white flowers have **three petals** just above the water surface
- **Round heart-shaped leaf** 0.5-2.5" long, **purplish underside**
- Plants are often connected to each other by irregular underwater runners



Quick ID Guide

- ✓ Free floating kidney shaped leaves with purple-red underside
- ✓ Small white flower with three petals

Distribution

- Native to Eurasia and Africa
- First discovered in Lake Champlain in 1993, it has also been found in several other lakes in Vermont
- Also present in Michigan, New York, and Washington

Spread

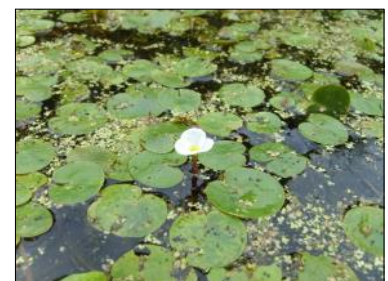
- Reproduction during a growing season can occur rapidly by runners
- Individual plants can produce flowers and winter buds that will develop into new plants the following spring
- Due to the free-floating nature of this plant, it can easily become tangled in other plant material and spread to other water bodies



Similar Native Species

Little floating heart *Nymphoides cordata*

- ✓ Small heart-shaped leaves
- ✓ Delicate white flower, five petals
- ✓ Each stem produces a single leaf
- ✓ A whorl of tuberous roots resemble a banana-like bunch



Starry stonewort *Nitellopsis obtusa*

Starry stonewort is a non-native invasive species of large algae in the Characeae or muskgrass family. It is more robust than most members of the family and can grow to over 2 meters tall. This species is found in alkaline waters of shallow to deep lakes and slow-moving streams. Only male starry stonewort exists in the U.S.

Identification

- Submersed perennial, often encrusted with lime deposits
- **Branchlets 5-8 per whorl, each with 1-2 long bracts**, giving the branchlet the appearance of being forked
- **White, star-shaped bulbils**, 1-2 mm long, produced on colorless rhizoids



Quick ID Guide

- ✓ Visibly serrated edges
- ✓ Stiff brillo pad-like feel
- ✓ White star-shaped bulbil

Distribution

- Native to Europe and western Asia
- First reported in the St. Lawrence River in 1978, now found in lakes throughout Michigan, northern Indiana, western New York, and more recently in Massachusetts, Pennsylvania, Wisconsin and Minnesota
- As of 2023, the only locations in Vermont are Lake Memphremagog and Lake Derby



Spread

- Fragmentation
- Star-shaped bulbils are seed-like in that they are the reproductive vegetative material



Similar Native Species

Muskgrass *Chara globularis*

- ✓ Skunky odor
- ✓ Dark green, ridged stems that are rough to the touch

Nitella sp.

- ✓ Smooth, green translucent branches

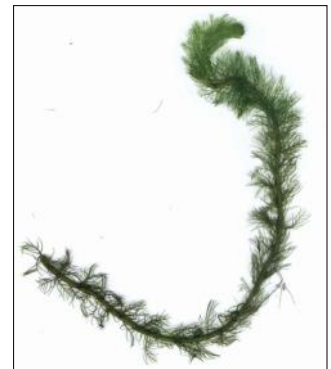


Nitella Photo: By Christian Fischer, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=375749>



Variable-leaf watermilfoil *Myriophyllum heterophyllum*

Variable-leaf watermilfoil is a freshwater rooted perennial plant not native to Vermont. Like Eurasian watermilfoil, variable-leaf watermilfoil grows aggressively and rapidly in a wide variety of environmental conditions. It is a rooted plant that can grow in water up to five meters deep. When left on land it develops “terrestrial morphs”, which look like small trees, to allow the plant to survive out of water.



Identification

- Rooted, submersed, perennial aquatic plant
- Underwater leaves are finely divided into segments giving them a feather-like appearance
- **Densely packed whorls of 4-6 leaves with 7 to 11 paired leaflets**
- On more mature plants, blade-like leaves with serrated edges appear above the water’s surface; flowers develop at the base of these emergent leaves forming a stiff spike

Quick ID Guide

- ✓ **Bottle brush** appearance
- ✓ Feather –like leaves in a whorl around the stem

Distribution

- Native to Southeast US, non-native in New England
- In October 2008, VTDEC confirmed presence in Halls Lake, Newbury
- The following year, a well established population was found in Missisquoi and South bays in Lake Champlain.
- As of 2023, it is found in Lake Champlain.



Spread

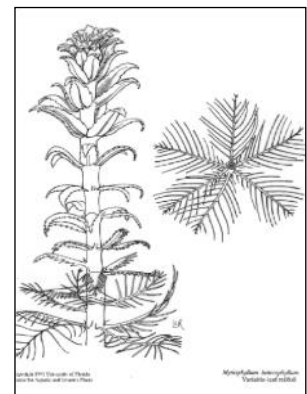
- Spread of variable-leaved watermilfoil occurs via stem fragments, winter buds, roots, and, to a lesser extent, seeds
- Plant parts can easily hitchhike on recreational equipment if not removed
- It is also a popular aquarium trade species



Similar Native Species

Northern watermilfoil *Myriophyllum sibiricum*

- ✓ Normally is smaller in growth overall
- ✓ Leaflets number 5-15
- ✓ Plant remains stiff out of water





Water chestnut *Trapa natans*

Water chestnut is one of the few invasive plant species that only reproduces by seed (as opposed to fragmentation). If the plant is harvested before it drops mature seeds, it can be eradicated. However, if it becomes established in a water body, it rapidly reproduces. Water chestnut grows on and below the water's surface, but is not a rooted aquatic plant. It thrives at the water's edge, making it a nuisance at boat launches.

Identification

There are two types of leaves:

- Submerged leaves are feather-like and oppositely paired along the stem
- The floating leaves on the water's surface collectively form a **circular rosette**; each surface leaf is triangular in shape and has a serrated margin; the petiole of a floating leaf has a bladder-like swelling filled with air and spongy tissue that provides buoyancy
- Plant stems are long and cord-like, and can attain lengths of up to 16 feet
- Water chestnut typically begins to flower in mid-July; the small, inconspicuous white flowers form in the axils of the surfacing leaves. Seeds mature approximately one month later.

Distribution

- Water chestnut is native to Europe and Asia
- It was initially brought to the United States as an ornamental plant in the late nineteenth century and by the 1940s had spread to Lake Champlain. It currently infests numerous water bodies throughout New England, including Vermont

Spread

- After maturing if left unharvested, seeds drop to the sediment bottom or are carried to new locations by currents where they remain viable for five or more years, although viability of up to 12 years has been reported. The velcro-like seeds can also be dispersed as they cling to ropes, to feathers and webbed feet of wildfowl, and to the fur of animals



Quick ID Guide

- ✓ Floating circular rosette of **triangular leaves**
- ✓ Leaves have serrated margin
- ✓ Submerged leaves are feather-like



Similar Native Species

There are no native species that resemble Water chestnut



Watch List

Brazilian waterweed *Egeria densa*

Brazilian waterweed is impressively much larger than native look-alikes. Attributing to its species name, the leaves on the top grow densely around the stem. This submersed aquatic perennial is typically found in slow moving shallow waters that are somewhat acidic and enriched. It can also be found in lakes, ponds, and rivers, where it can grow in waters up to 6.5 meters deep.



Identification

- Submersed plant
- Leaves arranged in whorls around the stem
- Short internodes give the plant a full appearance
- Typically **4 leaves per whorl**, but can range from 3-6
- **Leaves entire, linear shape**, typically under 1" long
- Small white male flowers rise above the water's surface
- Female flowers have not been reported in North America

Distribution

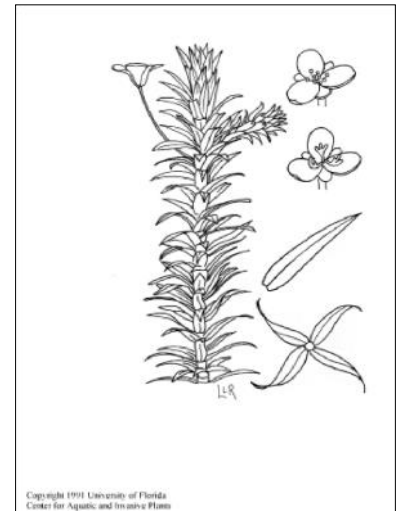
- Not yet found in Vermont
- Native to South America
- First recorded in Long Island, New York in 1893
- Widespread distribution throughout the U.S.

Spread

- As a popular aquarium species, it is thought that careless dumping of aquariums contributes to its movement
- Only male flowers have been found in North America, therefore it is incapable of spreading from seeds; spreads only through fragmentation
- Overwinters primarily from root crowns

Quick ID Guide

- ✓ Leaves arranged in whorls of 4-6
- ✓ Blade shaped leaves are 1-3cm long and **finely serrated**
- ✓ Short internodes



Similar Native Species

Common waterweed *Elodea canadensis*

- ✓ Leaves are more firm and stouter than slender waterweed, blunt tip, strictly whorls of 3 leaves, very fine serrations



Slender waterweed *Elodea nuttallii*

- ✓ Leaves are less firm and longer than common waterweed, strictly whorls of 3 leaves, very fine serrations



Watch List

Carolina fanwort *Cabomba caroliniana*

Carolina fanwort is a perennial aquatic plant that looks fairly similar to several native species though the double fan-like submersed leaves are an instant identifier. More closely related to Water shield (*Brasenia schreberi*), it shares the characteristic mucous covering of the Cabombaceae Family. This species that is typically found in freshwater lakes, ponds, and slow moving streams.

Identification

- Mostly a submersed species, also produces floating leaves
- Underwater leaves are branched divided and opposite along the stem which creates a **fan shaped appearance**
- Each underwater leaf has a **distinct leaf stem (petiole)**
- White flower with 6 petals

Distribution

- Not yet found in Vermont
- Native to sub-tropic regions of South America and eastern North America
- Native locations ranging from Virginia to Florida
- Invasive locations are in Massachusetts, Michigan, New Hampshire, New York, Oregon, Pennsylvania, and Washington

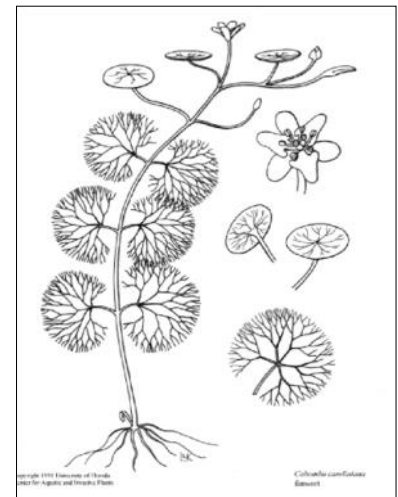
Spread

- Spread primarily through fragmentation
- Seeds also contribute to its spread
- As a popular aquarium species, it is thought that careless dumping of aquariums contribute to its movement



Quick ID Guide

- ✓ Finely divided **fan shaped** submersed leaves
- ✓ Leaf **stem** present
- ✓ White flower



Similar Native Species

Water marigold *Bidens beckii*

- ✓ Underwater leaves are whorled around the stem
- ✓ Yellow flower with 6 petals





Watch List

Hydrilla *Hydrilla verticillata*

Hydrilla is characteristically similar to another Watch List species, Brazilian waterweed (*Egeria densa*) as both contain whorled, finely-serrated leaves growing around the stem. One of the most invasive species internationally, it tolerates a wide range of environmental conditions, including low light, high or low nutrient levels, and temperate or tropical temperatures.



Identification

- Submersed perennial
- Typically **5-8 leaves per whorl**
- Each strap-like leaf is **visibly serrated**
- Pointed tip on leaf
- Distinct tubers and turions are produced



Distribution

- Not yet found in Vermont
- Native to Australia, Asia, and central Africa
- Initially released from the aquarium trade in Florida in the 1950s
- Very problematic in the southeastern United States
- Several populations are now in Connecticut, Maine, Massachusetts, and New York

Quick ID Guide

- ✓ 5-8 leaves per whorl
- ✓ Serrated edges

Spread

- Primarily spread by stem fragments
- Tubers and turions also contribute to potential spread and overwintering potential



Similar Native Species

Common waterweed *Elodea canadensis*

- ✓ 3 (rarely 4) leaves per whorl
- ✓ Leaves entire, no serrations, blunt tip on leaf

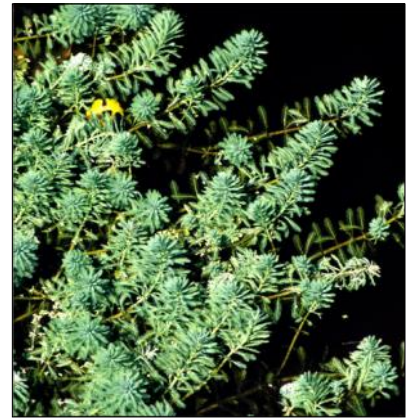




Watch List

Parrot feather *Myriophyllum aquaticum*

Parrot feather is a perennial aquatic plant with both submersed and emergent leaves. When emergent, the plant's growth may appear like small fir trees or club mosses. Stems rarely branch and plants can grow along the banks and shores of water bodies. It tends to grow in slow moving to still waters along muddy banks up to 7 feet of water.



Identification

- 4-6 leaves per whorl around the stem
- Each leaf is finely divided
- Submersed leaves are limp and appear decaying
- Emergent leaves are rather stiff with a waxy gray-green color
- Growth along shorelines and in the shallows have stems growing up to a foot above the water level

Quick ID Guide

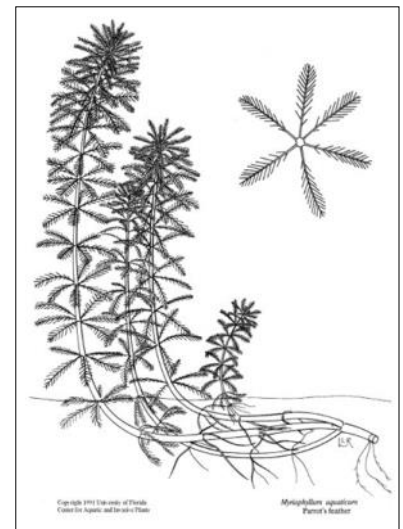
- ✓ 4-6 feather-like leaves whorled around stem
- ✓ Grows above water level

Distribution

- Not yet found in Vermont
- Native to South America
- Found on every continent (excluding Antarctica) as a result of introductions made through the aquarium/horticultural trade
- Present in Connecticut, New York, and Pennsylvania, and most of the Southeastern U.S.

Spread

- In North America, this plant reproduces exclusively by plant fragments; no seeds are produced here
- Although it has not been a widespread nuisance in North America, Japan and South Africa have reported significant problems with this plant where it has clogged rivers, water supplies, and irrigation channels



Similar Native Species

Water-mermaid

Proserpinaca palustris

- ✓ 2 distinct leaf types, both alternate
- ✓ Submersed leaves divided, feather-like; emergent leaves lance shaped with serrations



Helpful Resources

Aquatic Invasive Species Guides

Borman, Susan, and Robert Korth, and Jo Temte. 2014. *Through the Looking Glass: A Field Guide to Aquatic Plants*. 2nd ed. Wisconsin Lakes Partnership. University of Wisconsin-Extension Lakes, College of Natural Resources, Stevens Point, Wisconsin. Reindl Printing Inc., Merrill, WI.

Maine Volunteer Lake Monitoring Program. 2007. *Maine Field Guide to Invasive Aquatic Plants and Their Common Native Look Alikes*. Maine Center for Invasive Aquatic Plants, Auburn, Maine. J.S. McCarthy Printers, Augusta Maine.

Skawinski, M. Paul. 2018. *Aquatic Plants of the Upper Midwest*. 3rd ed. Wisconsin, USA.

Websites

USGS Nonindigenous Aquatic Species <https://nas.er.usgs.gov/>
Lists known threats of nonindigenous species, their characteristics, known locations, maps, and species profile.

Vermont Department of Environmental Conservation Aquatic Invasives Species
<http://dec.vermont.gov/watershed/lakes-ponds/aquatic-invasives>
Provides information on the aquatic invasive species found in and threatening Vermont. The page also provides information on the monitoring and surveying, a map of locations where AIS are found, VIPs, and information on the Vermont Public Access Greeter Program.

Vermont Invasives <https://www.vtinvasives.org/gallery-of-aquatic-invasives>
Provides information on all invasive species found in and threatening Vermont. Gallery of Invasives contains information on the regulations, species, impacts, resource hub, and how to slow the spread.

Contacts

Vermont Aquatic Invasive Species Management Program

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(802) 490-6120	(802) 490-6121	(802) 490-6129

Vermont Aquatic Nuisance Control Permit Program

<http://dec.vermont.gov/watershed/lakes-ponds/permit/control/aquatic-nuisance-control>
802-828-1535



Stop the spread of aquatic invasive species! **Clean. Drain. Dry.**

- ☑ **Clean** off mud, all plant material, and any animals from your kayak, including the rudder, hull, cockpit, and hatches, and associated gear. Dispose of it on dry land. If possible, wash kayak and gear with pressurized water.
- ☑ **Drain** your hatches and cockpit away from water.
- ☑ **Dry** anything that comes into contact with water.

For more information visit:
[https://dec.vermont.gov/watershed/
lakes-ponds/aquatic-invasives/spread-
prevention](https://dec.vermont.gov/watershed/lakes-ponds/aquatic-invasives/spread-prevention)



Completing a VIP Plant Survey

VIPs who take the time to complete a plant survey provide a helpful service to the community, lake association, and Vermont as a whole. The information that is collected is used to inform if and where AIS are found, and how the AIS might be or is spreading. Most importantly the surveyors information provides a baseline of information for VTDEC scientists to use to discuss with lake managers on what methods might be best to pursue to manage future threats.

Conducting a Survey

General Guidelines

- Surveys are best conducted from July through mid-September when aquatic plant populations are abundant and diverse.
- If possible, conduct surveys on a calm day with minimal boating activity.
- Survey from the shoreline out as deep as plants are growing (or as deep as you can see). You can use a rake to collect plants beyond your arm’s reach.
- It is helpful to know the length of your boat, so you can use it to estimate the size of a plant bed.
- Pay particular attention to boat access areas, inlets and outlets, shallow bays, and areas around flow-restriction structures (e.g. dams).

Survey Equipment Checklist

<input type="checkbox"/> Boat, paddle, and life-vest	<input type="checkbox"/> Map of water body
<input type="checkbox"/> Survey data sheet	<input type="checkbox"/> Pencil and/or marker
<input type="checkbox"/> Magnifying lens	<input type="checkbox"/> White tray for samples
<input type="checkbox"/> Pocket knife or scissors	<input type="checkbox"/> Aquatic Plant Guide
<input type="checkbox"/> Clipboard (optional)	<input type="checkbox"/> View Scope (optional)
<input type="checkbox"/> Rake (optional)	<input type="checkbox"/> Zip-lock plastic bags (for plant samples)
<input type="checkbox"/> Polarized sunglasses (optional)	<input type="checkbox"/> Cooler (optional, for keeping plant samples)

Vermont Invasive Patroller Survey Data Sheet



Waterbody: _____ Town: _____
 Area Surveyed: _____
 Latitude/Longitude (If possible): _____ Map with Location? _____
 Survey Date: _____ Total Survey Hours: _____ # Surveyors: _____
 Name: _____
 Street Address: _____ Town: _____ State: _____ Zip: _____
 Phone: _____ Email: _____
 Additional Surveyor Names: _____

Water Conditions:

Relative Water Level (Check one)	Water Clarity (Check one)	Light Conditions (Check all that apply)	Surface Conditions (Check all that apply)
<input type="checkbox"/> High	<input type="checkbox"/> Good	<input type="checkbox"/> Clear	<input type="checkbox"/> Calm
<input type="checkbox"/> Normal	<input type="checkbox"/> Fair	<input type="checkbox"/> Partly Cloudy	<input type="checkbox"/> Rippled
<input type="checkbox"/> Low	<input type="checkbox"/> Poor	<input type="checkbox"/> Overcast	<input type="checkbox"/> Choppy

Survey of Aquatic Invasive Species:

Please check the box for species that were already known to exist in the waterbody and observed during the survey.

Aquatic Plants	<input type="checkbox"/> Brittle naiad (BN)	<input type="checkbox"/> Curly-leaf pondweed (CLP)	<input type="checkbox"/> Eurasian watermilfoil (EW)
<input type="checkbox"/> European frogbit (EF)	<input type="checkbox"/> Starry stonewort (SS)	<input type="checkbox"/> Water chestnut (WC)	<input type="checkbox"/> Variable-leaf watermilfoil (VLM)
Aquatic Animals	<input type="checkbox"/> Alewife (AL)	<input type="checkbox"/> Asian Clam (AC)	<input type="checkbox"/> Banded Mystery Snail (BMS)
<input type="checkbox"/> Chinese Mystery Snail (CMS)	<input type="checkbox"/> Rusty Crayfish (RC)	<input type="checkbox"/> Spiny Waterflea (SWF)	<input type="checkbox"/> Zebra Mussel (ZM)
Watch List			
<input type="checkbox"/> Hydrilla (H)	<input type="checkbox"/> Brazilian waterweed (BW)	<input type="checkbox"/> Fanwort (F)	<input type="checkbox"/> Parrot feather (PF)

Please note if the species has reduced or expanded its location: _____

Native or Invasive Species Submission - Request for Confirmation	Sample Submitted to VT DEC (Y or N)	Location (indicate on Map of lake)
1a. Name:		
1b. Identifiable Features:		
2a. Name:		
2b. Identifiable Features:		
3a. Name:		
3b. Identifiable Features:		

VIP Survey Data Sheet Instructions

- Complete the top portion of the data sheet, including your name and contact information, the total number of hours spent surveying, the number of surveyors, and their names.
- *Latitude/Longitude or Map*: If a map was used as a reference to indicate plant locations, please copy and send with this form. If plants were identified in particular locations (Lat/Long) note these on the map or on the form.
- *Relative Water Level*: Indicate the current water level relative to normal. Vegetation and scour marks on the bank can be good indicators.
- *Water Clarity*: Use the following estimates for the depth of water through which plants are visible – Good (>5 meters), Fair (3 – 5 meters), Poor (<3 meters)
- *Light Conditions*: Given that light conditions (cloud cover) can change in a short period of time, check all conditions that would apply during the time the survey is conducted.
- *Surface Conditions*: Given that surface conditions can change readily, check all conditions that would apply during the time the survey is conducted.
- *Aquatic Invasive Species Survey (Mandatory)*: Please survey for the invasive species listed. Note the letter code (e.g. brittle naiad = BN) of any suspicious species observed, along with the location, approximate size of the plant bed or colony, and any additional comments on a map of the water body.
- If a plant is submitted for review, check the appropriate box regarding plant sample submission, and list the letter code in the name if applicable.
- Follow the directions when submitting a specimen submission form if requested by VTDEC. (see pages 22-23). Make sure the sample is in a moist paper towel in the plastic zip-lock bag.
- If a new native species is observed (a species not on the lake's current plant inventory), list the name, and submit a sample to VTDEC. VTDEC staff will confirm the specimen identity, if possible, and if it is new to the lake, update the plant inventory to reflect this finding.

Photographing an Aquatic Specimen

Macro photography is closeup photography of small, living organisms. The technique usually involves the creation of an image that is life-sized or larger than the specimen. Knowing how to take high quality photographs of your specimen is imperative to the validity of your report and the success of our program. Refer to the “Quick ID guide” located on each plants’ fact page, for which key features are important to highlight in your photograph.

- ✓ First take a photo of the specimen in its natural environment to provide a sense of its habitat.
- ✓ Pick a plant fragment and place it on a neutral background; a clean takeout container may serve as a good backdrop. Be sure to pick a fragment which shows the leaf shape and arrangement, as well as a close up of important features such as branching pattern, flowers, seeds, veins, etc.
- ✓ If possible, include a ruler in your photo next to the plant for a sense of scale.
- ✓ If using a smart phone, tapping on the screen will cause the camera to refocus on where you tapped.
- ✓ On an iPhone, you can press and hold on the camera screen to turn on auto exposure and auto focus. The AE/AF lock will automatically adjust the brightness and sharpness of the image.
- ✓ Take several close up photographs. Try getting about three inches from the subject.
- ✓ Experiment with and without flash depending on the natural lighting.

Good Photography:



- ✓ Non-distracting background
- ✓ Clear and bright photo
- ✓ Includes ruler/scale object
- ✓ Identifiable features

Poor Photography:



- ✓ Busy background
- ✓ Multiple species
- ✓ No identifiable features

Aquatic Invasive Species Management

1 National Life Drive, Davis 3 Montpelier VT 05620-3522

<https://dec.vermont.gov/watershed/lakes-ponds>



Aquatic Specimen Submission Procedures

Aquatic Plant Material

1. Prior to sending, use the guidance materials provided by the State of Vermont to identify the plant. These include [The Key to Common Vermont Aquatic Plant Species](#), the [Vermont Invasive Patroller Manual](#), and the [Gallery of Invaders](#) webpage.
2. If you determine or suspect that the plant is invasive (e.g., Eurasian watermilfoil), carefully check the material that the plant was found on, whether on watercraft, trailer or equipment, and remove all the material that was found.
3. If you determine or suspect that the plant is an aquatic invasive species, cross reference it with the list of Vermont waterbodies known to have aquatic invasive species. If the plant came from a location where its establishment is known, record the incident, but no further action is required. If the plant is not on the list, continue to Step 4.
4. If you identified a plant species that is not on the list of waterbodies known to have aquatic invasive species or are unsure of the identification, either:

- a. Take several clear photographs of the plant. Include a view of one entire plant (not a mass of plants) as well as a close-up of the leaves or other relevant information. Please include a ruler, or a common object within the photo to demonstrate the scale of the specimen (see photos on right).
- b. Email these photographs to kimberly.jensen@vermont.gov or text to (802) 490-6120. In your message, include the suspected identification and the name of the waterbody it came from. Press or freeze the plant in the event its identity needs to be confirmed at a later date if the plant cannot be identified from the photographs. Or,
- c. Mail the plant. Wrap the plant specimen in a wet paper towel and place it into a sealable plastic bag. If there is more than one species, wrap each individual plant. Collect 8 -12 inches of a plant specimen, including any flowers or fruit (if possible).

If mailing specimen, please contact/text Kim Jensen at (802) 490-6120 or kimberly.jensen@vermont.gov prior to mailing to get the proper address for mailing, Monday through Wednesday only. Keep the specimen in a cool place until mailing can occur. Fill out the Aquatic Specimen Submission Form and follow the mailing directions on the form.



View of the entire plant with a common object or ruler



Close-up of a cross section of a plant stem with leaves

Aquatic Animal Material

1. Prior to sending, use the guidance materials provided by the State of Vermont to identify the animal. These include the [Vermont Invasive Patroller for Animals Manual](#) and the [Gallery of Invaders webpage](#).
2. If you determine or suspect that the animal is invasive (e.g., zebra mussel), carefully check the material that the animal was found on, whether watercraft, trailer or equipment, and remove all the material that was found. If the organism was found on a natural substrate or in the water, if possible, photograph the location of the specimen where it was found.
3. If you determine or suspect that the animal is an aquatic invasive species, cross reference it with the list of Vermont waterbodies known to have aquatic invasive species. If the specimen came from a location where its establishment is known, record the incident, but no further action is required. If the animal is not on the list, continue to Step 4.
4. If you identified an animal species that is not on the list of waterbodies known to have aquatic invasive species or are unsure of the identification, either:
 - a. Take several clear photographs of the animal. Include a view of one entire animal (not a mass of animals) as well as a close-up of the animal or other relevant information. Please include a ruler, or a common object within the photo to demonstrate the scale of the specimen (see photos at bottom of the page).
 - b. Email these photographs to kimberly.jensen@vermont.gov or text to (802) 490-6120. In your message, include the suspected identification and the name of the waterbody it came from. Freeze the animal in the event its identity needs to be confirmed at a later date if the animal cannot be identified from the photographs. Or,
 - c. Mail the specimen. Wrap the specimen in a wet paper towel or container and place it into a sealable plastic bag. If there is more than one species, wrap them individually. Fill out the Aquatic Specimen Submission Form and follow the mailing directions on the form.

If mailing specimen, please contact/text Kim Jensen at (802) 490-6120 or kimberly.jensen@vermont.gov prior to mailing to get the proper address for mailing, Monday through Wednesday only. Keep the specimen in a cool place until mailing can occur.



Organism photographed in found location (above & below)



Variety of specimen photographed with common object or ruler.



Identifiable features of one specimen. (*Not the same species identified above, used for demonstration purposes only.*)

Aquatic Specimen Submission Form

Keep the specimen in a cool place until it is mailed, then follow the directions below to mail this completed form with the specimen (Monday - Wednesday only). Please contact please contact/text Kim Jensen at (802) 490-6120 or kimberly.jensen@vermont.gov prior to mailing, to get the proper address. Questions? Call (802) 828-1115.

**ATTN: Aquatic Specimen VTDEC- Watershed Management Division
1 National Life Drive, Davis 3, Montpelier, VT 05620-3522**

Name: _____ Phone: _____ Email: _____

Waterbody: _____ Town: _____

Are you a: Vermont Invasive Patroller Public Access Greeter Other

If a Greeter, was this specimen collected during a boat inspection? Yes No

If **yes**, name of previously visited water body: _____

If no, description of the location of collection: _____

#1 Suspected/Potential Species Identification: _____ Date Collected: _____

#2 Suspected/Potential Species Identification: _____ Date Collected: _____

Additional Suspected/Potential Species Identification: _____ Date Collected: _____

Did you contact VTDEC? Yes No If **yes**, with whom did you speak: _____

Specimen Packaging Directions:

- Please wrap a representative piece in a wet paper towel and place it into a sealable plastic bag.
- If there is more than one species obtained per waterbody, individually wrap them.
- If there are specimens from more than one waterbody, divide these into separate plastic bags and clearly mark the different locations on the bags.
- Place the plastic bags in a manila envelope and mail the specimen to the address above or use the mailing label below.

.....

**ATTN: Aquatic Specimen/ Kim Jensen
VTDEC - Watershed Management Division
1 National Life Drive, Davis 3
Montpelier, VT 05620-3522**

Are you a: VIP Greeter Other

Vermont Invasive Patrollers for Animals (VIPA)

Overview

The Vermont Invasive Patrollers for Animals (VIPA) program was established by the Vermont Department of Environmental Conservation (VTDEC) in 2022 to focus on early detection of a group of priority aquatic animals. VIPA stems from the Vermont Invasive Patrollers (VIP) program, which focuses on aquatic invasive plants and has existed for 40 years. Visit our [website](#) to learn more about both programs. Some of the animals included in the VIPA program are defined as aquatic nuisance species in the Aquatic Nuisance Control State of Vermont Statutes ([10 V.S.A. § 1452](#)), and some are not yet listed. Notwithstanding variation in legal classification, all animals in the program are likely to cause harm to the native species and ecosystem and become invasive. By establishing a robust program of VIPAs, we hope to gain a sense of the location of these animals and how they are distributed across the State. Based on the monitoring efforts of VIPAs and mapping of these locations, VTDEC can better understand the breadth, scope, and impacts of these species. Refer to page 27 for further information about the definition and legislation surrounding aquatic nuisance species.

Program Goals

Through hands-on workshops, lakeshore residents and lake users will learn what aquatic nuisance animals are, how to prevent the spread of AIS, and how to identify the species that pose the greatest threats to Vermont lakes and ponds. Workshop participants are encouraged to survey a body of water regularly and check in with VTDEC. As such, the VIPA program has three primary goals:

1. To increase AIS knowledge of lakeshore residents and lake users.
2. To create an early detection volunteer network with a primary focus on this group of priority aquatic animals.
3. To increase VTDEC's knowledge of new infestations, the distribution, and spread of aquatic animals in Vermont lakes and ponds.

By enlisting the help of a trained network of volunteers, VTDEC staff are much more likely to learn of new aquatic invasive animal infestations early and as a result, may have more management options at their disposal.

Being both a VIP and a VIPA makes you an Aquatic Specimen Superstar Surveyor!

List of Vermont waterbodies with a confirmed presence of an aquatic invasive species 2023	Aquatic Invasive Species Key:															
	AL - Alewife								EWM - Eurasian watermilfoil							
	AC - Asian Clam								RC - Rusty Crayfish							
	BMS - Banded Mystery Snail								SS - Starry stonewort							
	BN - Brittle naiad								SWF - Spiny Waterflea (FWF - fishhook waterflea)							
	CLP - Curly-leaf pondweed								VLM - Variable-leaf watermilfoil							
	CMS - Chinese Mystery Snail								WC - Water chestnut							
	EF - European frogbit								ZM - Zebra Mussel							
	<i>These species are considered the most problematic in Vermont.</i>															
	Waterbody	Town	AL	AC	BMS	BN	CLP	CMS	EF	EWM	RC	SS	SWF	VLM	WC	ZM
Arrowhead Mountain Lake	Milton			X		X			X					X		
Austin Pond	Hubbardton								X							
Baker Pond	Brookfield								X							
Beaver Pond	Proctor								X							
Beaver Wetland	Mendon								X							
Beebe Pond	Hubbardton			X		X			X							
Berlin Pond	Berlin								X							
Big Marsh Slough	Highgate							X	X				X	X		
Black Creek Marsh	St.Albans					X								X		
Black Pond	Hubbardton					X			X							
Black River	Springfield								X	X						
Blissville Wetland Pond	Blissville													X		
Bomoseen, Lake	Castleton		X	X	X	X		X	X					X	X	
Broad Brook	Vernon								X							
Brookside Pond	Orwell							X						X		
Brownington Pond	Brownington								X							
Bullis Pond	Franklin					X								X		
Burr Pond	Sudbury			X		X			X							
Cabot Clark Marsh	Highgate													X		
Carmi, Lake	Franklin	X				X			X	X						
Castleton River	Castleton								X							
Cedar Lake	Monkton			X			X		X							
Champlain, Lake - Burlington Bay		X				X			X			X			X	
Champlain, Lake - Isle LaMotte		X		X		X		X	X			X		X	X	
Champlain, Lake - Main Lake		X		X	X	X	X	X	X			X/FWF	X	X	X	
Champlain, Lake - Mallets Bay		X				X			X			X		X	X	
Champlain, Lake - Missisquoi Bay		X				X		X	X				X	X	X	
Champlain, Lake - Northeast Arm		X				X			X			X			X	
Champlain, Lake - Otter Creek		X				X		X	X			X		X	X	
Champlain, Lake - Port Henry		X				X		X	X			X		X	X	
Champlain, Lake - Sandbar WMA														X		
Champlain, Lake - Shelburne Bay		X				X		X	X			X			X	
Champlain, Lake - South Lake		X			X	X		X	X			X	X	X	X	
Champlain, Lake - St. Albans Bay		X				X		X	X			X		X	X	
Chipman Pond	Tinmouth								X							
Clay Brook	Warren								X							
Clyde Pond	Derby								X							
Coggman Creek														X		
Coggman Pond	West Haven					X			X					X		
Connecticut River	Brattleboro				X	X	X		X	X				X		
Connecticut River, Herricks Cove	Rockingham						X		X					X		
Connecticut River, Hoyts Landing	Springfield					X			X	X						
Connecticut River, Weathersfield	Weathersfield									X						
Connecticut River, Wilder Dam	Hartford								X							
Cranberry Pool	Highgate					X	X	X						X		
Crystal Lake	Barton								X							
Daniels Pond	Glover					X										
Dead Creek	Ferrisburgh					X								X		
Dead Creek	Highgate								X					X		
Derby Lake	Derby								X		X					
Deweys Mill Pond	Hartford								X							
Dog River	Berlin									X						

Waterbody	Town	AL	AC	BMS	BN	CLP	CMS	EF	EWM	RC	SS	SWF	VLM	WC	ZM
Dunmore, Lake	Salisbury			X					X						
East Creek	Orwell													X	
Echo Lake	Hubbardton								X						
Eden, Lake	Eden								X						
Eligo, Lake	Greensboro								X						
Elmore, Lake	Elmore			X					X						
Fairfield Pond	Fairfield					X			X						
Fairfield Swamp Pond	Fairfield								X						
Fairlee, Lake	Thetford				X		X		X						
Fern Lake	Leicester				X	X			X						
Forest Lake	Calais					X									
Frog Pond	Orwell								X						
Gale Meadows Pond	Londonderry								X						
Glen Lake	Castleton					X			X						
Great Hosmer Pond	Craftsbury								X						
Half Moon Pond	Hubbardton					X			X						
Halls Lake	Newbury						X		X						
Hinkum Pond	Sudbury								X						
Horton Pond	Benson				X	X								X	
Hortonia, Lake	Hubbardton			X	X	X	X	X	X						
Hough Pond	Sudbury					X			X						
Indian Brook Reservoir	Essex								X						
Iroquois, Lake	Hinesburg					X			X						
Kent Pond	Killington								X						
Laird Pond	Marshfield						X								
Lamoille River	Milton	X							X	X					
LaPlatte River	Shelburne					X		X	X						
Leicester River	Salisbury								X						
Lemon Fair River	Orwell													X	
Lewis Creek	Ferrisburgh						X		X	X					
Lily Pond	Poultney			X		X			X					X	
Line Pond	Barnard								X						
Little Pond	Wells					X			X					X	
Long Pond	Eden								X						
Lower Pond	Hinesburg							X	X						
Lyford Pond	Walden			X											
Lyndon College Pond	Lyndon						X								
McCabes Brook	Shelburne								X						
Metcalf Pond	Fletcher								X						
Memphremagog, Lake	Newport Town			X		X			X		X				CANADA
Mill Pond	Windsor								X						
Mill Pond (Parson's Mill)	Benson					X			X					X	
Mill River	St. Albans							X							
Mirror Lake	Washington						X								
Missisquoi River	Highgate	X							X	X					
Molly's Falls Reservoir	Cabot			X											
Morey outlet brook	Fairlee								X						
Morey, Lake	Fairlee						X		X	X					
Ninevah, Lake	Mount Holly						X		X						
North Hartland Reservoir	Hartland						X		X						
North Montpelier Pond	East Montpelier								X						
North Springfield Reservoir	Springfield								X					X	
Old Marsh Pond	Fair Haven					X								X	
Ompompanoosuc River	Norwich						X		X	X					
Ottawaquechee River							X								
Otter Creek	Ferrisburgh								X					X	
Paran, Lake	Bennington					X			X					X	
Pauline, Lake	Ludlow								?						
Pelkeys Swamp	Benson							X	X					X	
Phillips	Benson				X	X								X	
Pike River	Berkshire									X					

Waterbody	Town	AL	AC	BMS	BN	CLP	CMS	EF	EWM	RC	SS	SWF	VLM	WC	ZM
Pinneo, Lake	Hartford								X						
Porter Lake	Ferrisburgh					X			X					X	
Poultney River	Poultney								X						
private pond	Arlington								X						
private pond	Hinesburg								X						
private pond	St. Albans								X						
Rescue, Lake	Ludlow								X						
Richville Pond	Shoreham					X		X	X					X	
Rock River	Highgate							X	X					X	
Root Pond	Benson					X								X	
Round Pond	Newbury								X						
Rutland City Reservoir	Rutland Town								X						
Sabin Pond	Woodbury						X								
Sadawga Pond	Whitingham					X			X						
Salem Lake	Derby						X		X						
Seymour Lake	Morgan						X								
Shadow Lake	Glover			X											
Shaftsbury	Shaftsbury													X	
Shelburne Pond	Shelburne					X		X	X						
Silver Lake	Leicester						X		X						
Singing Wetland	Bennington					X			X					X	
Spectacle Pond	Brighton				X										
St. Catherine, Lake	Wells	X		X	X	X			X					X	
Star Lake	Mount Holly								X						
Stevens Brook	Maidstone						X		X						
Stoughton Pond	Weathersfield								X						
Sunrise Lake	Benson			X	X	X			X						
Sunset Lake	Benson				X	X			X						
Ticklenaked Pond	Ryegate								X						
Thorpe Brook	Charlotte									X					
Vergennes Watershed (Norton Brook)	Bristol								X						
Warm Brook	Arlington									X					
Waterbury Reservoir	Waterbury				X										
West River	Brattleboro								X						
White River, various locations										X					
Whitney Creek	Addison								X					X	
Williams River	Rockingham								X	X					
Willoughby, Lake	Westmore						X		X						
Winona, Lake	Bristol				X			X	X						
Winooski River	Colchester								X	X					

Species	Total Number of Waterbodies
AL - Alewife	5
AC - Asian Clam	1
BMS - Banded Mystery Snail	16
BN - Brittle naiad	14
CLP - Curly-leaf pondweed	40
CMS - Chinese Mystery Snail	22
EF - European frogbit	14
EWM - Eurasian watermilfoil	103
RC - Rusty Crayfish	15
SS - Starry stonewort	2
SWF - Spiny Waterflea	1
VLM - Variable-leaf watermilfoil	2
WC - Water chestnut	35
ZM - Zebra Mussel	2

Quick Reference to Vermont Laws for Aquatic Invasive Species

10 V.S.A. § 1454. TRANSPORT OF AQUATIC PLANTS AND AQUATIC NUISANCE SPECIES

No person shall transport an aquatic plant or aquatic plant part, zebra mussels (*Dreissena polymorpha*), quagga mussels (*Dreissena bugensis*), or other aquatic nuisance species identified by the secretary by rule to or from any Vermont waters on the outside of a vehicle, boat, personal watercraft, trailer, or other equipment. This section shall not restrict proper harvesting or other control activities undertaken for the purpose of eliminating or controlling the growth or propagation of aquatic plants, zebra mussels, quagga mussels, or other aquatic nuisance species.

VERMONT AGENCY OF AGRICULTURE, FOOD & MARKETS QUARANTINE #3 - NOXIOUS WEEDS

Whereas, the Vermont Agency of Agriculture, Food & Markets having found that certain noxious weeds out-compete and displace plants in natural ecosystems and managed lands; and Whereas, competition and displacement of plants by certain noxious weeds has significant environmental, agricultural and economic impacts; and Whereas, it has been determined to be in the best interest of the State of Vermont to regulate the importation, movement, sale, possession, cultivation and / or distribution of certain noxious weeds: Therefore, the State of Vermont is hereby establishing this noxious weed quarantine regulation in order to protect Vermont's environmental and economic resources.

TRANSPORT OF LIVE FISH AND USE OF BAITFISH – SUMMARY OF KEY RULES

Personal Baitfish Harvest:

- Personally harvested baitfish may be used only on the same water body from which they were collected.
- Personally harvested baitfish shall not be transported by motorized vehicle away from the water body from which they were collected.

Commercially Purchased Baitfish:

- A person purchasing baitfish shall retain a transportation receipt issued by a state approved commercial bait dealer, authorizing transportation of baitfish overland by motorized vehicle. Greeters do not have the power to demand proof of the transportation receipt - only a law enforcement official may do so.
- A transportation receipt shall be valid for 96 hours from time and date of sale.
- Anglers shall not transport baitfish away from state waters by motorized vehicle. Unwanted baitfish shall be discarded dead in the water, on the ice, or safely disposed of in the trash.
- Anglers may purchase baitfish from a New York bait shop for use on Lake Champlain only, provided the bait shop is Vermont-licensed, and the baitfish is accompanied by a Vermont-issued baitfish transportation receipt. Likewise, anglers may purchase baitfish from a New Hampshire bait shop for use on the Connecticut River and its setbacks only, provided the bait shop is Vermont-licensed, and the baitfish are accompanied by a Vermont-issued baitfish transportation receipt.

References

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