

Lake Host Inspector

2018 Training Manual



Aquatic Invasive Species Education and Prevention Program

Brought to New Hampshire lakes and ponds by local groups and:

NH LAKES
17 Chenell Drive, Suite One
Concord, NH 03301
p: (603) 226-0299 f: (603) 224-9442
www.nhlakes.org lakehost@nhlakes.org

TABLE OF CONTENTS

Letter from the Conservation Program Coordinator.....	Page 1
Lake Host Inspector Position Description.....	Page 2-3
Lake Host Manager Position Description.....	Page 4
Lake Host Program Infographic.....	Page 5
Lake Host Program Summary 2002-2017.....	Page 6
Lake Host Program Aquatic Invasive Species “SAVES”	Page 7
Aquatic Plants and Their Role in Ecology.....	Page 8-9
Aquatic Invasive Plant Main Points.....	Page 9
Invasive Species Fact Sheets.....	Page 10-16
Variable Milfoil.....	Page 10
Eurasian Milfoil	Page 11
Fanwort	Page 11
Water Chestnut	Page 11-12
Curly Leaf Pondweed	Page 12
European Naiad.....	Page 13
Zebra Mussels.....	Page 13-14
Asian Clam.....	Page 15-16
Spiny Water Flea.....	Page 16
New Hampshire Aquatic Invasive Species Laws.....	Page 17-18
Map of Aquatic Invasive Species Infestations in New Hampshire.....	Page 19
List of Waterbodies with Aquatic Invasive Species Infestations in New Hampshire.....	Page 20
Inspection Diagram and “Clean, Drain & Dry!” Procedure.....	Page 21
How to Fill out a Specimen Bag.....	Page 22-23
Boater Survey Sheet Instructions.....	Page 24-26
Good Example of Boater Survey Sheet.....	Page 25
Poor Example of a Boater Survey Sheet.....	Page 26
How to Fill out an Employee Timesheet.....	Page 27
How to Fill out a Volunteer Match Sheet.....	Page 28



April 5, 2018

Hello, Everyone!

I often think back to the time a former friend asked me “So, when are you going to get a real job?” and I look at how far my Lake Hosting experience has taken me. I started out as a Lake Host when the program was still unfamiliar to many. Over the course of countless summers, armed with a smile and a clip board, I watched as the public learned to expect to see my iconic royal blue Lake Host shirt. Lake Hosting taught me many things beyond how to work independently and how to collect high quality data in the field. It taught me patience, resilience, and confidence. It allowed me to recognize the one thing that I have in common with every person I meet to this day...we all enjoy the beauty of our lakes.

Whether you are a volunteer, or this is your summer job, you are an invaluable asset to this program. There is a ripple effect of knowledge, awareness, and of personal responsibility in protecting our lakes that happens every time a dedicated Lake Host like you makes contact with a human being. Each season that the Lake Host Program runs, there are 600+ people, just like you, connecting with their community and keeping the lake clean for another year. That’s a big team effort!

The staff here at NH LAKES wants you to have everything you need to feel inspired and to be prepared at the ramp. If you ever have questions, or problems, or just want to send us a picture of how beautiful your lake looks, free to reach out! I can be reached at kcosta@nhlakes.org and 603.226.0299.

With sincere appreciation,

A handwritten signature in blue ink that reads "Krystal".

Krystal Costa
Conservation Program Coordinator
NH LAKES

2018 LAKE HOST INSPECTOR POSITION DESCRIPTION (EMPLOYEE & VOLUNTEER)

NEW HAMPSHIRE LAKES ASSOCIATION

POSITION OVERVIEW:

A Lake Host Inspector represents NH LAKES and the local organization that is participating in the Lake Host Program. A Lake Host Inspector may be a volunteer or NH LAKES employee (temporary/seasonal) who staffs a local boat access site for a local pond, lake, or watershed association or municipal committee.

Lake Host Inspectors educate the public on aquatic invasive species and how to prevent their spread. Visitors to the access site recognize Lake Host Inspectors as someone 'official' that is cooperative and friendly. For this reason, all volunteers and employees are required to be in uniform (wearing the blue shirt or sweatshirt and a smile) while on duty at the access site.



Lake Host Inspectors are not enforcers of local or state ordinances, rules, or laws. Lake Hosts are encouraged to provide boaters with courtesy information about state and local laws, rules, and ordinances in a non-threatening manner, but should not attempt to: enforce boater adherence with any applicable laws, rules, ordinances; deny boater access to the waterbody; or threaten to report boaters for any potential violations.

QUALIFICATIONS AND SKILLS: The ideal Lake Host Inspector: is able to maneuver oneself around for the visual and tactile examination of all exterior surfaces and undersides of boats and trailers; is willing to learn about aquatic invasive species; is comfortable interacting with strangers; is friendly and polite and has a sense of humor; is cooperative, task-oriented, and self-motivated; is equipped to work outside safely in a variety of weather conditions; is able to work independently as well as collaboratively; is able to accomplish tasks professionally and efficiently and able to deal productively with 'down time'; and, is committed to providing fact-based information regarding aquatic invasive species prevention. **Minimum age: 18.** Exceptionally mature and independent 16- and 17-year-olds may be considered for work in pairs or with experienced inspectors.

PRINCIPAL RESPONSIBILITIES AND DUTIES:

1. Appearing in uniform and greeting all launching and departing boaters and visitors to the access site.
2. Asking survey questions, recording responses, and distributing program-related educational materials.
3. Conducting courtesy boat and trailer inspections (with boaters' permission) and inviting the boater to assist.
4. Following protocols for removing aquatic plants/animals from boats/trailers and collecting suspicious specimens.
5. Encouraging boaters to clean and drain out all water from vessels and recreational gear between waterbodies.
6. Thanking the boater when finished and asking him/her to conduct their own inspection between waterbodies.
7. Attempting to identify species during down time, and notifying the Point Person of potential invasive species.
8. Calling the local supervisor's attention to 'suspicious' specimen bags that need to be submitted for identification.
9. Neatly completing all necessary paperwork (boater survey information, timesheets or volunteer match sheets).
10. Other related duties as assigned by the local supervisor and approved by NH LAKES.

WORKING RELATIONSHIPS/ACCOUNTABILITY:

- A paid Lake Host Inspector is an employee of the New Hampshire Lakes Association (NH LAKES).
- Locally, all Lake Host Inspectors (volunteer and employed) are directed by the local Point Person for the local organization participating in the Lake Host Program, but are ultimately accountable to NH LAKES.
- The local Point Person or Lake Host Manager will set the weekly ramp schedule.
- Inspectors will collect data, neatly complete all paperwork, and collect suspicious plant or animal specimens in bags provided by NH LAKES and will properly label bags.
- The local Point Person/Manager will collect specimen bags and paperwork and will submit these items as required. Point People/Managers will regularly check in with employees and volunteers at the access site to provide performance feedback.
- If the Lake Host Inspector is injured while staffing the ramp, they should seek medical attention and notify the Point Person/Manager as soon as possible.
- Employees and volunteers are welcome to contact NH LAKES with questions comments or concerns not addressed by or appropriate for the local Point Person.

COMPENSATION AND BENEFITS/ WORK HOURS AND LOCATION:

- Paid positions are temporary/seasonal positions that include statutory benefits, but do not include health insurance benefits.
- Employees that are projected to earn more than \$5,000 in 2018 can elect to participate in the NH LAKES retirement plan through which NH LAKES will match the employee's salary reduction contributions on a dollar-for-dollar basis up to 3% of the employee's compensation.
- The hourly rate of pay will be determined by the local participating group and must be approved by NH LAKES.
- Hours worked per week will be determined by the local Point Person, but may not exceed 40 hours during the 7-day work week. This position is not eligible for overtime pay.
- Employees 16 or 17 years in age may not work after 8pm or before 6am, or for more than 6 consecutive days.
- The cash-equivalent of Lake Host volunteer time (\$24.12) will be counted towards the local match requirement.
- No individual can serve as a paid Lake Host Inspector and volunteer Lake Host Inspector within a calendar year.

ORGANIZATIONAL INFORMATION:

The New Hampshire Lakes Association (NH LAKES) is an independent, non-profit, member supported organization dedicated to inspiring the responsible care and use of New Hampshire's Lakes to keep them healthy for the benefit of current and future generations. We work in partnership with local associations (lake, pond, and watershed groups) who share our vision. The Lake Host Program is a collaborative effort between NH LAKES, the New Hampshire Department of Environmental Services, access site owners and local associations to educate the public and prevent the spread of aquatic invasive plants and animals in New Hampshire's waterbodies.

2018 LAKE HOST MANAGER (EMPLOYEE) POSITION DESCRIPTION

New Hampshire Lakes Association

SUMMARY:

A Lake Host Manager represents NH LAKES and the local organization that is participating in the Lake Host Program. A Lake Host Manager is an employee of NH LAKES who assists a local pond, lake, or watershed association or municipal committee Point Person with administrative duties, including database management.



The Lake Host Manager performs online data entry using the Google spreadsheet provided by NH LAKES and may be asked to assist the local volunteer Point Person(s) in administering the Lake Host Program. The Manager will ensure that boater data and volunteer match data is collected properly and will accurately enter data into the appropriate Google spreadsheet on a weekly basis for each pay period. **The Manager must attend a formal Point Person/Lake Host Manager training session hosted by NH LAKES each season.**

QUALIFICATIONS AND SKILLS:

The ideal Lake Host Manager: has prior Lake Hosting experience or will be a Lake Host Inspector this season; has strong data entry skills or is willing to learn; will positively contribute to a well-functioning, professional, and effective local Lake Host Program; is able to work independently **2-5 hours of work per pay period** to accomplish tasks efficiently and on-time; is equipped with a computer and strong internet connection (or alternatively willing to travel to use a computer at the local library); has an email address and is committed to checking email regularly; and is committed to providing data entry reporting to the local coordinator and NH LAKES on a biweekly basis each pay period for the duration of the Lake Hosting season. **Minimum age: 18.** Exceptionally mature and independent 16- and 17-year-olds may be considered.

PRINCIPAL RESPONSIBILITIES AND DUTIES:

1. Ensuring that all boater survey sheets and volunteer match sheets are completed neatly and properly.
2. Notifying the Point Person or individual Lake Hosts when improvements to data collection are needed.
3. Following protocols for collecting boater surveys and volunteer match and entering data.

COMPENSATION & BENEFITS:

- Rate of pay will be determined by the local participating group and must be approved by NH LAKES.
- Hours per week will be determined by the local Point Person and may not exceed 40 hours during the 7-day work week. This position is not eligible for overtime pay.
- This is a temporary, seasonal, position that includes statutory benefits but does not include health insurance benefits.
- If the Lake Host Manager is projected to earn more than \$5,000, they may elect to participate in the NH LAKES retirement plan through which NH LAKES will match the employee's salary reduction contributions on a dollar-for-dollar basis up to 3% of the employee's compensation.

ORGANIZATIONAL INFORMATION:

The New Hampshire Lakes Association (NH LAKES) is an independent, non-profit, member supported organization dedicated to inspiring the responsible care and use of New Hampshire's Lakes to keep them healthy for the benefit of current and future generations. We work in partnership with local associations (lake, pond, and watershed groups) who share our vision. The Lake Host Program is a collaborative effort between NH LAKES, the New Hampshire Department of Environmental Services, access site owners and local associations to educate the public and prevent the spread of aquatic invasive plants and animals in New Hampshire's waterbodies.

LAKE HOST

2002 - 2017

NEW HAMPSHIRE LAKES ASSOCIATION

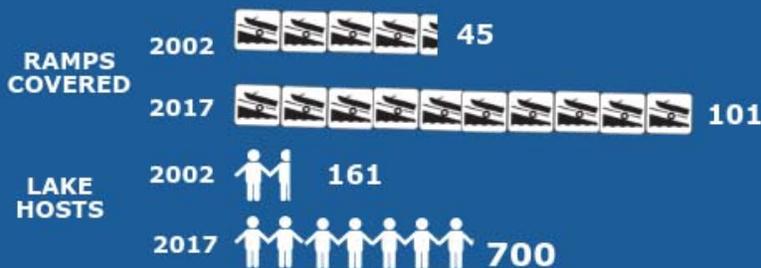


Preventing the spread of aquatic invasive species in New Hampshire for 16 years - one boat and boater at a time!

COURTESY BOAT INSPECTIONS



PARTICIPATION



FUNDING OVERALL (2002 - 2017)



INVASIVE SPECIES REMOVED

1,572 'SAVES' at 53 lakes!

FANWORT



VARIABLE MILFOIL



EURASIAN MILFOIL



EUROPEAN NAIAD



CURLY LEAF PONDWEED



WATER CHESTNUT



CHINESE MYSTERY SNAIL



ZEBRA MUSSEL



COMMON REED



NEW HAMPSHIRE LAKES ASSOCIATION (NH LAKES) LAKE HOST™ PROGRAM

Goal: To prevent the introduction and spread of aquatic invasive species—plants and animals—in New Hampshire lakes and ponds.

Target Audience: Resident and out-of-state recreational boaters who launch onto freshwater resources.

Objectives: To place trained Lake Hosts at boat launch sites to: educate visiting boaters about aquatic invasive species by distributing brochures, answering questions, and completing a brief boater survey; conduct courtesy boat and trailer inspections of vessels entering and leaving waters; show boaters where to look for hitchhiking aquatic invasive plants and animals encourage them to conduct self-inspections according to the “Clean, Drain & Dry” method; remove and properly dispose of all plant and animal material and other debris found, and; send samples of suspicious species removed from vessels to the New Hampshire Department of Environmental Services (NHDES) for identification.



Program Need: Aquatic invasive species infestations make recreation in and on lakes, ponds, and rivers dangerous and unpleasant, they disrupt the ecological balance of waterbodies, reduce shoreline property values through the reduction of aesthetic and recreational uses of the water body, and are difficult and expensive to control once they infest a waterbody. The main way invasive aquatic plants and animals are spread in New Hampshire is through the transportation of plant fragments or animal larvae on boats and trailers from infested waterbodies to uninfested waterbodies.

Background: In 2002, NH LAKES received a two-year grant from the National Oceanic and Atmospheric Administration (NOAA) as a result of an appropriation secured by U.S. Senator Judd Gregg. The grant supported a comprehensive aquatic invasive plant education and prevention program involving the creation of two videos, the development of plant identification cards, and the staffing of public motorized boat ramps with trained Lake Hosts. Also in 2002, state legislation was passed to raise boat registration fees by three dollars, effective January 1, 2003. The money collected by this increase, approximately \$300,000 per year, would fund milfoil and other exotic plant prevention and research activities through a grants program administered by NHDES. Up to two-thirds of this amount would be available annually as grants to support exotic aquatic species education and prevention activities (such as the Lake Host™ program). In 2010, this amount was legislatively amended to up to three-quarters.

Lake Host Program Statistics Summary (as of 12/7/2017)

Year	Groups	Paid Hosts	Volunteer Hosts	Lakes with Lake Hosts	Ramps Staffed	Inspections Conducted	'Saves' of Invasive Species	Federal Funds	State Funds	Foundation Funds	Local Funds (hard cash & cash-equivalents)	TOTAL
2002	38	102	59	37	45	15,878	9	\$260,100	-	-	\$37,155	\$297,255
2003	46	149	167	45	59	26,583	7	\$10,000	\$165,000	-	\$112,382	\$287,382
2004	51	190	216	50	61	31,629	17	\$85,300	\$150,000	-	\$151,238	\$386,538
2005	56	175	318	56	61	34,878	54	\$35,000	\$185,000	-	\$200,756	\$420,756
2006	57	204	353	56	66	34,860	54	\$117,000	\$185,000	-	\$183,179	\$485,179
2007	68	221	429	64	83	44,183	157	\$117,000	\$185,000	-	\$292,017	\$594,017
2008	70	240	470	70	88	55,924	224	\$89,206	\$161,000	-	\$334,061	\$584,267
2009	71	236	420	71	86	53,796	297	\$89,206	\$123,333	\$4,000	\$341,535	\$558,074
2010	74	230	517	74	90	64,661	268	\$0	\$133,367	\$22,000	\$393,273	\$548,640
2011	73	219	475	74	92	68,429	39	\$0	\$169,000	\$23,000	\$404,751	\$596,751
2012	77	238	500	78	100	77,261	137	\$0	\$200,000	\$14,500	\$486,455	\$700,955
2013	81	247	500	82	103	77,806	153	\$0	\$210,000	\$18,259	\$494,248	\$722,507
2014	80	258	500	82	102	83,663	58	\$0	\$230,000	\$22,500	\$503,170	\$755,670
2015	80	285	507	82	103	92,184	48	\$0	\$226,500	\$24,000	\$517,227	\$767,727
2016	82	264	545	83	104	89,960	28	\$0	\$252,000	\$24,000	\$526,251	\$802,251
2017	80	271	400	81	101	94,222	22	\$20,117	\$261,000	\$27,000	\$546,193	\$854,370
Total						945,917	1,572	\$822,989	\$2,836,200	\$179,259	\$5,523,147	\$9,362,339

Additional Funding Sources: Alden N. Young Trust (2011-2017); Badger Monadnock Fund (2011); EPA Healthy Communities Grants (2005); EPA New England Office (2003); EPA Supplemental Environmental Project (2017); NH DES Watershed Assistance Grant (319 Clean Water Program); NOAA (2004, 2006, 2008, 2009); Saul O'Sidore Foundation (2010); TransCanada (2009-2017); and an anonymous private foundation (2010).

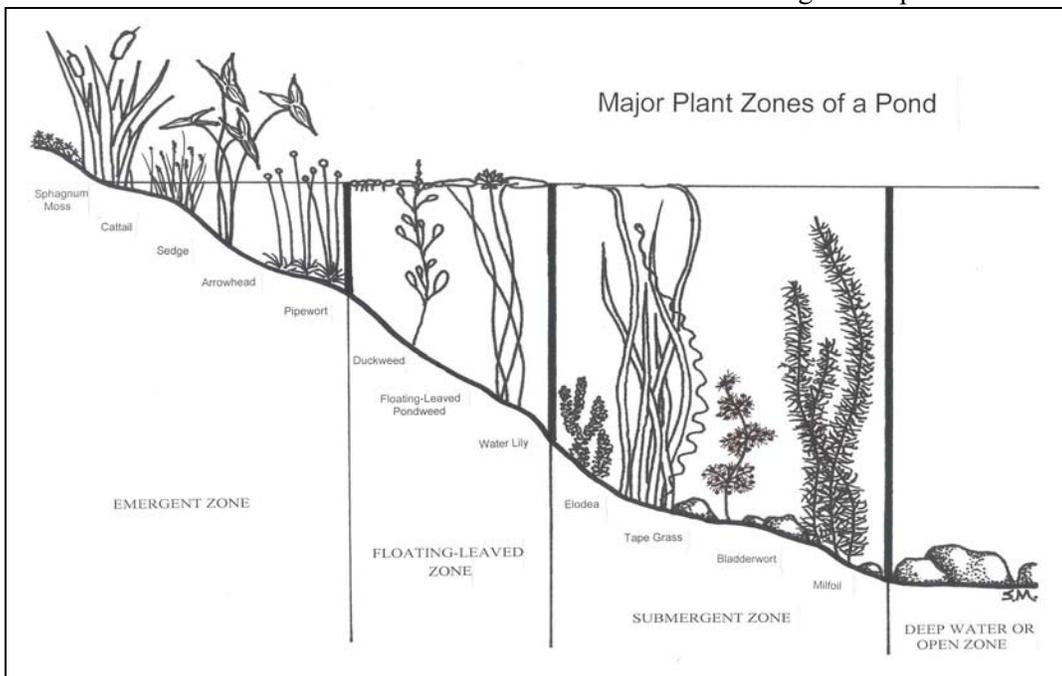
As a result of the program, the following ‘saves’ have been made of aquatic invasives entering or leaving a waterbody:

- **Beaver Lake** (Derry): Fanwort (2008, 2009), Variable milfoil (2008, 2011), Eurasian milfoil (2012)
- **Bow Lake** (Northwood): Variable milfoil (2003, 2005), Eurasian milfoil (2005, 2009), Fanwort (2015), Milfoil species (2014)
- **Clough Pond** (Loudon): Variable milfoil (2005)
- **Connecticut River** (Hinsdale): Eurasian milfoil (2010), European naiad (2010)
- **Conway Lake** (Conway): Variable milfoil (2011), Eurasian milfoil (2014)
- **Crescent Lake** (Acworth): Eurasian milfoil (2003, 2012), Fanwort (2003)
- **Crystal Lake** (Enfield): Water chestnut (2005), Eurasian milfoil (2010)
- **Deering Reservoir** (Deering): Eurasian Milfoil (2013), Variable milfoil (2014)
- **Dublin Lake** (Dublin): Eurasian milfoil (2016)
- **Eastman Lake** (Grantham): Eurasian milfoil (2010)
- **First Connecticut Lake** (Pittsburg): Variable milfoil (2014)
- **Gilmore Pond** (Jaffrey): Water chestnut (2005), Fanwort (2016)
- **Goose Pond** (Canaan): Eurasian milfoil (2007), Variable milfoil (2009)
- **Granite Lake** (Nelson/Stoddard): Curly leaf pondweed (2009, 2011); Eurasian milfoil (2011, 2013); Variable milfoil (2011)
- **Great East Lake** (Wakefield): Eurasian milfoil (2006, 2008), Fanwort (2010), Variable milfoil (2007-2010, 2013)
- **Highland Lake** (Stoddard): Eurasian milfoil (2005), Variable milfoil (2015)
- **Island Pond** (Stoddard): Variable milfoil (2013)
- **Jeness Pond** (Northwood): Variable milfoil (2005)
- **Lake Francis** (Pittsburg): Variable milfoil (2014)
- **Lake Massabesic** (Auburn): Fanwort (2013), Variable milfoil (2012, 2014)
- **Lake Monomonac** (Rindge): Eurasian milfoil(2004, 2017); Curly leaf pondweed (2004), Variable milfoil (2004-2008, 2014)
- **Lake Opechee** (Laconia): Water chestnut (2016-2017)
- **Lake Ossipee** (Ossipee): Eurasian milfoil (2010), Variable milfoil (2009, 2011, 2012, 2016)
- **Lake Potanipo** (Brookline): Fanwort (2010), Variable milfoil (2010-2012; 2017)
- **Lake Sunapee** (Sunapee): milfoil (2005), Eurasian milfoil (2006-2009, 2015), Variable milfoil (2007), Fanwort (2016) Zebra mussel (2017)
- **Lake Waukewan** (Meredith): Eurasian milfoil (2003), Variable milfoil (2007, 2008)
- **Lake Wentworth** (Wolfeboro): Variable milfoil (2008)
- **Lake Wicwas** (Meredith): Variable milfoil (2010)
- **Lake Winnepesaukee**: Fanwort (2003, 2007); Variable milfoil (2004, 2007-2012, 2014-17), Eurasian milfoil (2012)
- **Lake Winnisquam** (Laconia): Variable milfoil (2008, 2015-2017)
- **Little Lake Sunapee** (New London): Variable milfoil (2011), Curly-leaf pondweed (2015)
- **Lovell Lake** (Wakefield): Variable milfoil (2006, 2007, 2013)
- **Merrymeeting Lake** (New Durham): Variable milfoil (2007, 2010, 2012, 2013, 2014, 2015), Water Chestnut (2012)
- **Mirror Lake** (Tuftonboro): Chinese mystery snail (2014)
- **Newfound Lake** (Bristol): Curly-leaf pondweed (2015), Eurasian milfoil (2006, 2009, 2010, 2011, 2014, 2015), Fanwort (2003, 2006, 2013), Variable milfoil (2002, 2006, 2007, 2008, 2009, 2014, 2015), Water Chestnut (2009, 2010), Water naiad (2014)
- **Northwood Lake** (Northwood):Curly leaf pondweed (2007),Eurasian milfoil (2007),Variable milfoil (2008, 2010-2011, 2013-2014, 2016-2017)
- **Nubanusit Lake** (Nelson/Hancock): Curly leaf pondweed (2009), Eurasian milfoil (2002, 2004), Variable milfoil (2007, 2008)
- **Ottarnic Pond** (Hudson): Chinese mystery snail (2015), Curly leaf pondweed (2013), Fanwort (2005-08, 2012-2016), Variable milfoil (2006, 2007, 2010-2016)
- **Pawtuckaway Lake** (Nottingham): Common reed (2007), Curly leaf pondweed (2010, 2013, 2014), Eurasian milfoil (2009-2012, 2014-2015), Fanwort (2009, 2011), Variable milfoil (2007-2010, 2012-2017), Water chestnut (2008, 2014)
- **Pleasant Lake** (Deerfield): Eurasian milfoil (2011), Variable milfoil (2004, 2007, 2013, 2016)
- **Pleasant Pond** (Francestown): Curly leaf pondweed (2009), Eurasian milfoil (2006); Variable milfoil (2011, 2013, 2014)
- **Pow Wow Pond** (Kingston): Chinese mystery snail (2013), Variable milfoil (2013, 2015)
- **Robinson Pond** (Hudson): Chinese mystery snail (2013, 2017), Fanwort (2004, 2006-2014, 2016), Variable milfoil (2004-2014, 2016-2017), Eurasian milfoil (2012)
- **Silver Lake** (Madison): Variable milfoil (2002, 2004, 2006)
- **Lake Skatutakee** (Harrisville): Eurasian milfoil (2005)
- **Spofford Lake** (Chesterfield): Eurasian milfoil (2002, 2005, 2008, 2011, 2013); Variable milfoil (2011)
- **Squam Lake** (Holderness): Chinese mystery snail (2015), Curly leaf pondweed (2009), Eurasian milfoil (2007), Fanwort (2013)
- **Suncook Lake** (Barnstead): Variable milfoil (2009, 2013)
- **Swanzey Lake** (Swanzey): Variable milfoil (2011), Eurasian milfoil (2012), Water chestnut (2014)
- **Thorndike Pond** (Jaffrey): Variable milfoil (2015)
- **Webster Lake** (Franklin): Eurasian milfoil (2011, 2012, 2014), Fanwort (2010), Variable milfoil (2009), Curly leaf pondweed(2012)

For More Information or to start a program in your community: Contact NH LAKES at (603) 226-0299, or info@nhlakes.org.

Aquatic Plants and Their Role in Lake Ecology

Aquatic plants are a common sight in New Hampshire's waterbodies, and lake residents, as well as visitors to New Hampshire's numerous waterbodies, may question the importance and role of aquatic vegetation. One may ask whether these plants are beneficial or detrimental to the health of a lake ecosystem. This fact sheet will seek to address the most commonly asked questions and concerns regarding aquatic vegetation and their role in lake ecology.



What types of aquatic plants live in my lake? There are three common categories of aquatic vegetation: emergent, submergent, and floating. The first category is often the first one encountered as you approach a lake or pond, and is called the 'emergent' vegetation. Emergent vegetation is one of the most common types of aquatic vegetation and it grows with its roots down in the sediment and the majority of the shoots stick up out of the water. Submergent plants are those that are wholly underwater and may be rooted or unrooted. Floating-leaved plants are those that have leaves that float on the surface of the water and can be rooted or unrooted. Smaller plants called 'phytoplankton,' commonly known as algae, are also present in our waterbodies and, though present in the shallows near shore, are the primary plants found in deeper water of lakes where it is too deep for other vegetation to grow or root.

In most cases all of these vegetated forms are present in a waterbody, creating a diverse aquatic habitat for a wide range of organisms. All types of aquatic vegetation are beneficial to a lake ecosystem provided that they are native to New Hampshire waters.

What are the benefits of aquatic plants? Aquatic plants provide many of the same functions as terrestrial plants. Aquatic plants provide a food source, habitat, removal of carbon dioxide, and production of oxygen through photosynthesis. Plants act as the producers in an ecosystem since they produce their own food as well as food for the consumers or animals of that ecosystem. Aquatic vegetation provides food for tiny microscopic animals called zooplankton, fish, waterfowl, moose, and other mammals, and, in some cases, humans.

Aquatic vegetation also acts as a habitat. Submerged vegetation provides a habitat for small fish which may seek refuge from predators. They may also use this vegetation as spawning beds to lay their eggs. Emergent vegetation provides a habitat for certain songbirds, or wading birds that may nest at these sites or use them as feeding areas.

Not all aquatic plants are nuisances which require removal. Native plants provide many benefits to the lake including spawning and habitat areas for organisms in the lake, as well as fishing and wildlife viewing areas for the residents around the lake.

The wildlife that resides on a lake, as a result of healthy habitats, adds to its serenity. Melodies sung by songbirds, the cry of the common loon, the chirping of frogs, dazzling dragonflies, the painted turtle sunning itself on a rock, and even the majestic herons would be threatened if it weren't for the food and habitat which aquatic vegetation provide.

Aquatic plants also provide several items which humans use. Some of these include rice, cranberries, blueberries, fiber for rope, reeds for caning, herbs, medicinal compounds, and aesthetic items such as flowers and colorful fruits and berries for decoration.

What can be done to limit nuisance amounts of plant growth? As a lake resident or concerned citizen, be aware of the activities that take place within the watershed. Nonpoint source pollution is the most

common means of nutrient transport into a waterbody. Runoff from roads, septic systems, lawns, and agriculture may bring with it much nitrogen and phosphorus and even silt and sediment. In freshwater, phosphorus is a nutrient that limits plant growth. The lower the phosphorus levels, the fewer the plants. The best way to protect a waterbody is by protecting its shoreland by maintaining a healthy, well-distributed stand of trees, saplings, shrubs, and groundcover, which act as a filter for nutrients and sediments.

Aquatic plants are a natural and beneficial part of your lake. Aquatic plants are found in most lakes and ponds in New Hampshire. They are a natural component and vital link to a healthy and diverse aquatic ecosystem. When aquatic plants interfere with human activities, the plants may be quickly viewed as ‘weeds,’ or nuisances that must be removed. However, complete removal of native plants is not recommended. Not only is it costly and impractical, and may need a permit, it is detrimental to a healthy lake ecosystem. In addition, if the lake is cleared of its native aquatic vegetation, invasive exotic aquatic vegetation may colonize the lake, or the lake may shift to an algal dominated system in which clarity is low and the water is murky. This occurrence has been proven in a number of New Hampshire waterbodies where disturbances to native plant communities have taken place. Maintaining a healthy and diverse population of native plant life in a waterbody is the ultimate goal.

If you suspect you find a plant that may be an aquatic invasive species, please contact the DES Exotic Species Program immediately at (603) 271-2248.

Aquatic Invasive Plant Main Points

What are aquatic invasive plants? Aquatic invasive plants are exotic aquatic plants that are not native to New Hampshire and that have certain invasive characteristics that allow them to grow more rapidly than native vegetation, thereby taking over a waterbody. Native aquatic plants, on the other hand, are vital to a healthy lake or pond; they are kept in check through natural controls (predators and other environmental factors).

Why are invasive aquatic plants a problem? Invasive aquatic plants are problematic as they can clog waterbodies, impede recreational activities like swimming, fishing and boating, and they can be economically and ecologically harmful. In some states, milfoil and other invasive aquatic plants have been implicated in people drowning.

What is the extent of the problem? Invasive aquatic plants are now found in approximately 90 waterbodies in New Hampshire. Some waterbodies have multiple infestations of plants (as many as six).

What is the law that pertains to exotic aquatic plants in New Hampshire?

- RSA 487:16-a prohibits the sale, introduction, propagation, purchase, importation, and transportation of 27 listed prohibited species in New Hampshire. Chapter Env-Wq 1300 is where Administrative Rules on the program are found.
- RSA 487:16-c prohibits the transport of all aquatic plants—native and exotic—on the outside boats, vehicles, and equipment.
- RSA 487:16-d requires that boaters drain boats and water-related equipment, and open/remove all drain plugs before leaving the ramp. Commercial enterprises transporting boats for off-site storage, maintenance, or repairs, and emergency response vehicles do not have to drain before trailering from the launch but must drain prior to transporting to another water body.

How are aquatic invasive species spread? New exotic species are brought into the country and state via the pet and nursery industry. Occasionally these species escape into the wild and become invasive. Once in our lakes and ponds, the transient boater is the prime mechanism of spread from waterbody to waterbody. While birds are often thought to be a vector, it is unlikely that they are the cause of very many infestations.

What control measures are being used in NH?

Various management practices are being used (in an approach termed Integrated Plant Management), including hand-pulling, benthic barriers, and herbicide applications. Once entrenched, invasive plants are very difficult to manage, and likely cannot be eradicated. Management practices cost approximately 1 million dollars annually in New Hampshire.

What education activities are being used? Numerous education strategies are used to spread the word about invasive species. The use of volunteer Weed Watchers, Lake Hosts, and other interested parties helps to spread the word. The Department of Environmental Services, along with the New Hampshire Lakes Association (NH LAKES) and other organizations, include the topic of aquatic invasive species in various public presentations throughout the state. Additionally, fact sheets, pamphlets, and other educational materials are distributed on a wide basis throughout the state. Signs are also posted at access sites to inform the lake user whether or not a particular waterbody is infested with an aquatic invasive plant, and what they should do to protect the lake. NH LAKES is currently researching the feasibility of boat wash and decontamination stations.

What about research to solve the problem controlling and/or eventually eradicating aquatic invasive species? DES continues to coordinate and fund projects associated with aquatic invasive plant research.

Variable milfoil

Myriophyllum heterophyllum (Michx)

Species Description: Milfoil is a submerged aquatic plant with fine densely packed, featherlike leaves whorled around a main stem. It can grow up to 15 feet and may exhibit a three-to-six inch green spike like flower above the waterline in late June or in July. A cross-section of the stem will reveal pie-shaped air chambers.

This invasive exotic species of milfoil has been in the state since the late 1960s, and can currently be found in 77 waterbodies in New Hampshire. There are six native milfoil species present in the state that do not cause problems, as they are low growing and do not form monocultures, unlike variable milfoil. Eurasian milfoil is another non-native

milfoil found in New Hampshire, but it is less of a threat than variable milfoil due to our water chemistry (Eurasian milfoil tends to be found in waters with higher pH ranges than those found in New Hampshire).

Why is variable milfoil considered an invasive species? This species is not native to our state and is very difficult to control once it becomes fully established. Variable milfoil reproduces through fragmentation whereby plant fragments break off from the parent plant through wind or boat action, grow roots, and settle in a new location. Seeds are also a means of spread within an infested waterbody. Variable milfoil spreads rapidly and displaces beneficial native plant life, often forming monoculture of growth around the shallows of a waterbody. It makes swimming difficult and can devalue waterfront property. Where this species grows in its native environment, insects and fish may feed on this plant at such a rate as to control its growth. In New Hampshire, variable milfoil has no abundance of natural predators to keep its population in check. Under optimum temperature, light and nutrient conditions, milfoil may grow up to an inch per day.

How did exotic milfoil become established in this state? It was most likely a stowaway fragment attached to a boat or trailer that came to this region. Milfoil can live out of water for many hours if it remains moist, like when it's wound around a wet carpeted bunk on a boat



trailer or in a live well. Milfoil is usually first found near boat launch sites when it infests a new waterbody, a sure sign that transient boaters are the leading means of spread. Another theory is that milfoil was introduced to a New Hampshire waterbody through the dumping of a home aquarium. This plant is sometimes used as an ornamental plant in fish aquariums.

Once established, how does milfoil infest other areas of a waterbody? Boat propellers chop milfoil plants into small fragments. These fragments float on the surface and are at the mercy of the wind and lake currents. In a short time, roots form on these fragments. If washed into shallow areas, these plants eventually take hold creating a new colony of milfoil. The cycle goes on until every suitable area is filled in with these weeds. An alternative form of the plants develops during low water. This vegetation type is more succulent than the submersed form and can persist for moderate periods of low water.

DES has recently collaborated in a study to evaluate the viability of milfoil seeds and the research showed that milfoil seeds are very viable and have a high regeneration rate, though survival of the seedlings is thought to be relatively low. Regardless, seed production in a dense milfoil bed is high, and seeds are thought to be a probable source of new plants, even following extensive control measures (seeds are resistant to herbicides). Data suggest that long term monitoring and appropriate follow up activities are needed to truly reduce or potentially eradicate infestations. Regular surveys by DES biologists or volunteer Weed Watchers are needed to find new growth early, so that small scale control measures can address the problem before it spreads. It is unlikely that seeds are responsible for lake to lake spread, though, and fragments are still the big cause of that problem.

What methods are currently being used to control milfoil? DES implements an integrated plant management (IPM) approach for control. Each infestation is assessed and a long term management plan is prepared to guide control activities for a number of years. Waterbody specific goals range from reduction of the infestation, to control, to possible eradication depending on the status of the infestation and characteristics of the waterbody. All available control options are considered, and actions are chosen that best suit the size, density, and character of the infestation. Hand pulling, diver-assisted suction harvesting, benthic barrier placement, herbicide treatment, and other strategies are evaluated for each infestation, including a review of a 'no control' option, and often a combination of approaches are recommended.

Have chemicals been used to effectively control invasive exotic milfoil? Yes. DES has collaborated on a number of research projects focusing on chemical control of milfoil. Through that research we evaluated

aquatic herbicides on the market and have learned that 2,4D is the best herbicide available for control of this plant. Used at lower concentrations to target milfoil, native aquatic plants and other aquatic life are not impacted by the herbicide.

Herbicide treatment is a science, and therefore should be conducted by trained professionals. It is illegal to apply chemical herbicides to any New Hampshire waters unless you contract with a licensed applicator. The use of chemicals by an untrained person could jeopardize the health and welfare of the lake and its ecology. Inappropriate or inaccurate use of chemicals is life threatening to people, mainly due to overdosing as a result of the unwise 'more is better' approach. It should be noted that the state has been conducting herbicide applications under permit and through licensed applicators for several years, and no negative impacts to non-target plants, animals, or humans have been observed.

EURASIAN MILFOIL (*Myriophyllum spicatum*)

Species Description: Eurasian milfoil is a submerged aquatic plant with whorled feather like leaves that appear to have been clipped on the end. Eurasian milfoil can grow 12 to 15 feet tall, and exhibits a reddish shoot near the surface. It forms dense mats of tangled plants in lakes and ponds. Leaves have 12 or more pairs of leaflets which is an identifying factor to aid in species level identification.



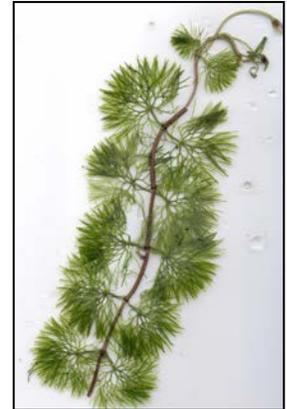
General Information: Eurasian milfoil, which originally came to this country from Europe and Asia, is a serious nuisance to many lake residents. Once introduced to a lake (usually by transient boats) it grows and spreads very quickly, ultimately impairing the ecology of the system, and value of shorefront property.

There are five waterbodies with Eurasian milfoil in New Hampshire today: Mountain Pond in Brookfield; the Connecticut River south of Hanover; Mascoma Lake in Enfield; Post Pond in Lyme; and the Nashua River. This species can also be found in nearby Vermont and Massachusetts, and is considered a problem in lakes and other freshwater systems nationwide.

FANWORT (*Cabomba caroliniana*)

Species Description:

Fanwort is a submerged bright green aquatic plant with narrow leaves arranged in a fan shape manner oppositely located on a long narrow stem. Floating, lily-like leaves are found on the water's surface during flower production in August or September. Flowers are small, white, and emergent. This plant stands approximately two to 12 feet tall. Leaf segments are approximately 1 mm wide.



General Information: Fanwort is a native plant of the southern United States, and Latin and South America. It is currently found in Arlington Mill Reservoir in North Salem, Big Island Pond in Derry, Lake Massabesic in Auburn, Mine Falls Pond in Nashua, Nashua River in Nashua, Otternic Pond and Robinson Pond in Hudson, Phillips Pond in Sandown, and Wilson Lake in Salem. This exotic plant was discovered in New Hampshire in the late 1960s and entered the state via the back of a transient boat trailer or was dumped from a tropical fish aquarium. This plant has been prohibited in New Hampshire since 1999.

Characteristic of many invasive exotic plants introduced to a new environment, fanwort quickly invades shoreline areas of waterbodies, ultimately impairing recreational activities and other designated uses of the waterbodies.

WATER CHESTNUT (*Trapa natans*)

In July 1998, the NH Department of Environmental Services confirmed reports that the invasive exotic aquatic plant water chestnut has infested the Nashua River in Nashua. Since then, it has also been found in the Connecticut River. The Precreational gear where they get stuck in the carpeting



on trailer bunks, so it is expected that more water chestnut infestations will be found in the near future.



Water chestnut can completely cover the surface of a waterbody and cause ecological hardship to native plants and animals. Fishing and boating can become extremely difficult as well.

This plant is not the same species as the edible water chestnut used in Asian cooking. Water chestnut is a member of the Trapaceae family and derives its name from the single seeded horned fruits, the chestnut. Each of the four horns on the nut is sharp and has a spine with several barbs. Each plant has two types of leaves: submerged leaves that are featherlike and oppositely paired along the stem, and waxy floating leaves that are triangular and form a rosette on the water's surface. The petiole (leaf stalk) of the floating leaves has a bladder-like swelling filled with air and spongy tissue which provides buoyancy. Cordlike plant stems can attain lengths of up to 16 feet.

The water chestnut is an annual plant which exhibits great reproductive capacity. The seeds germinate in early spring. An individual seed can give rise to 10 to 15 rosettes, each of which can produce 15 to 20 seeds. Thus, one seed can produce 300 new seeds in a single year.

Water chestnuts begin to flower in mid to late July, with their nuts ripening approximately one month later. Flowering and seed production continue into the fall when frost kills the floating rosettes. The mature nuts sink to the bottom when dropped and may be able to produce new plants for up to 12 years. The plant spreads either by the rosettes detaching from their stems and floating to another area, or more often by the nuts being swept by currents or waves to other parts of the lake or river. The plant overwinters entirely by seed.

Water chestnut is an aquatic invasive plant that limits boating and fishing in infested areas. It has the potential to infest wetlands and critical environmental habitats in other areas of the state.

CURLY LEAF PONDWEED (*Potamogeton crispus*)



Species Description: Curly-leaf pondweed is a submerged plant with strap-shaped leaves, similar to many of New Hampshire native pondweeds. However, unlike our native pondweeds, Curly-leaf pondweed leaves are distinctly ruffled with finely serrated edges. It grows in large dense beds.

General Information: Curly-leaf pondweed, a native plant of Europe and Asia, is a threat to lakes and ponds throughout the United States. This species is found in New Hampshire in the Connecticut River, Mine Falls Pond, Nashua River, Rockybound Pond, and Scobie Pond. It is also present in nearby Massachusetts, Southwestern Maine, Vermont, Connecticut, New York, and Rhode Island.

Curly-leaf pondweed is adapted to growing in cool conditions. Plants sprout from rhizomes and turions (a hard vegetative bud) in the fall and grow through the winter, reaching maturity early in the season (late spring through early summer). Plants generally die back by mid-July after releasing seeds and more importantly the turions. Once released, the turions scatter, floating through the water and sinking to the bottom where they lie dormant until the water begins to cool again in the fall.

Why is it a problem? In spring, curly-leaf pondweed can interfere with recreational and other uses of lakes and rivers by producing dense mats at the water's surface. Matted curly-leaf pondweed can displace native aquatic plants. In mid-summer, curly-leaf plants usually die, and dying plants accumulate on shorelines.

For more information on aquatic invasive species visit:

<http://des.nh.gov/organization/divisions/water/wmb/exoticspecies/index.htm>

European Naiad (*Najas minor*)



General Information:

During summer 2015, European naiad (*Najas minor*) was found in Glen Lake in Goffstown, Island Pond in Pelham, Millville Lake in Salem, Northeast Pond in Milton and the Salmon River. It was also recently found in Norwood Lake. European naiad is a submersed aquatic plant that is found in slow-moving streams, ponds and lakes. It is tolerant of turbidity and eutrophic conditions. European naiad also may be referred to as slender, brittle, European or bushy naiad. The heavily-branched stems of the plant may reach up to 4 feet in length. Leaves are opposite, alternate or whorled around the stem and form tufts at the growing tip, giving the plant a bushy appearance. European naiad leaves are thin, strap-shaped, 1 - 1.5-inch long, serrated and arch backwards. Leaves are stiff and maintain their shape out of the water. European naiad may be confused with native slender naiad. However, the serrations (spines) on European naiad are visible to the naked eye, whereas spines on slender naiad are only visible under significant magnification. Flowers, which emerge from leaf axils leaves during spring and summer, along with one-seeded fruits that appear in the fall, are very inconspicuous. European naiad is an annual but can spread by fragmentation during the growing season.

Why is European Naiad Considered a Nuisance Species? Once introduced, European naiad spreads rapidly and may completely cover the lake bottom, out-competing native plant species for space. It may grow along with other invasive plants, or form dense monotypic (single species) stands. If this plant becomes dominant, it may create conditions that are detrimental to native fish and waterfowl. European naiad may also interfere with recreational activities such as boating, swimming and fishing.

How Did European Naiad Become Established in New Hampshire? European naiad is native to Europe, and was first introduced to the United States in the 1930s. It has since spread rapidly throughout the Midwest and east coast. Movement to new water bodies has been attributed to natural flow throughout watersheds, migrating waterfowl, boating and fishing activities. The brittleness of this plant allows it to break easily into fragments that may become attached to boats, trailers or equipment. The small seeds can easily become attached to waterfowl or taken up in the bilge water of boats. As a result, European naiad infestations can spread very quickly.

Zebra Mussels (*Dreissena polymorpha*)

What are Zebra Mussels and where do they come from? Zebra mussels are small shellfish marked by alternating light and dark bands. They are typically two inches or less

(roughly the size of a pistachio nut) in size and have a life span of four to eight years. Zebra mussels have an extremely high reproductive rate of 30,000-1,000,000 new mussels per year and are able to reproduce at one year of age.



Zebra mussels are native to the drainage basins of the Black, Caspian and Aral Seas of Eastern Europe. It is believed that ships originating from European ports carried the mussel in freshwater ballast that was discharged into Great Lake ports.

The first North American zebra mussel discovery was in Lake St. Clair, Mich., in June 1988. By September 1991, the mussel was found in all five of the Great Lakes, the St. Lawrence River, the Finger Lakes region of New York, and throughout the Mississippi River basin. The mussel is expected to infest most areas of North America within the next few years. During the summer of 1993 the zebra mussel was discovered in Lake Champlain, Vermont. In 1998, the mussel was found in East Twin Lake, Connecticut. During the summer of 2009 the zebra mussel was identified in a pond in the Berkshire region of Massachusetts. With infestations to the south and west, it is anticipated that their arrival in New Hampshire is just a matter of time.

Adult and juvenile mussels (referred to as veligers) are transported by waterfowl and by attachment to boat hulls, crayfish and turtles. Larval stage mussels (veligers) can be transported in anglers bait bucket water and boat engine cooling water. Similar to other introduced non-native species such as milfoil, these exotic mussels can reproduce rapidly because natural predators are not present to keep the population in check.

Why are Zebra Mussels a concern in North America? Zebra mussels are not native to the U.S. They disrupt aquatic ecology via the food web and cause problems to humans wherever they have appeared. Zebra mussels are the only freshwater mussel that can secrete durable elastic strands, called byssal fibers, by which they can

use to securely attach to nearly any surface, forming barnacle-like crusts several feet thick. Through this mechanism zebra mussels can attach to stone, wood, concrete, iron, steel, aluminum, plastic, fiberglass, PVC, crayfish and other mussels. They have also recently been found growing on softer substrates like plants and mud.

What problems do Zebra Mussels cause? The zebra mussel's ability to rapidly propagate and physically attach to objects creates several problems:

- Zebra mussels filter small particles such as phytoplankton (microscopic plants), small zooplankton (microscopic animals), and detritus (pieces of organic debris) from water. Mussels are capable of filtering up to 1 liter of water within a 24 hour period. Large populations can severely alter the lake or riverine food web by competing with existing species such as salmon and walleye.
- Raw water intakes such as those at drinking water, electric generation, and industrial facilities can become infested with zebra mussels. A water supply system serving 50,000 people in a Michigan city had to shut down due to pump failure by zebra mussels in its intake system.
- Beaches in infested areas may be impacted by the washing up of sharp shells in shallow areas, which can cut bathers and litter beaches. Decomposition of mussels can also create obnoxious odors.
- Impacts on boating and navigation include:
 - Organisms attached to hulls increase drag, reduce speed, thus increasing fuel consumption.
 - Growth of larval mussels drawn into a boat engine cooling water intakes may occlude the cooling system, leading to overheating and possible damage to the engine.
 - If shells are drawn into the engine, abrasion of cooling system parts could result.
 - Marker buoys can sink under the weight of mussel encrustation.
 - Docks can be destabilized or sunk by mussel colonization.

What kind of habitat do Zebra Mussels prefer?

Zebra mussels can tolerate fairly wide ranges of environmental conditions. They prefer water temperatures between 68°F and 77°F and water currents 0.15 to 0.5 meters per second for proper growth. The mussels prefer spawning in water temperatures in the mid 50°F range. While normally a freshwater species, the zebra mussel can adapt to and inhabit brackish waters ranging from 0.2 to 2.5 parts per-thousand total salinity in estuarine locations. Zebra mussels are found in lakes that are not overly enriched but which have a higher calcium content. Only a few of New Hampshire's

waterbodies are at a risk for infestation, especially waterbodies with calcium levels greater than 12 ppm, like the Connecticut and Merrimack rivers, and lakes and ponds along the western border of NH.

How can Zebra Mussels be controlled? An effective way to permanently eliminate infestations has not been found, therefore, emphasis must be placed on controlling impacts on ecosystems and water users. For drinking water, electrical generation and industrial facilities, screen mesh can exclude adult and juvenile mussels from water intake systems. This method is only effective in excluding those mussels which originate upstream of the screens or filters. Veligers can pass through the screens and infest downstream areas. Other controls for water intakes include increasing intake and distribution flows to rates exceeding those at which zebra mussels can attach, and physically scraping the mussels where access for personnel and equipment is available. Oxygen deprivation, thermal controls (exposing mussels to water temperatures greater than 140°F), and chemical controls can be used to kill the mussels. However, these methods will likely affect other aquatic organisms.

What can boaters do to help? When boating in infested waters, be sure to clean and de-mussel your boat before you leave the area. De-musseling includes performing the following activities

AWAY FROM ANY SURFACE WATER:

- Draining the bilge, live wells and engine cooling system.
- Dumping any bait buckets.
- Inspecting the boat by checking the hull, trim plates, anchors, and the trailer.
- Washing down the boat with hot water (140°F), if mussels are found, and allowing the boat and trailer to sit for 2-5 days dry and/or spraying down gear with a 5% Quat solution and letting the solution stand for a few minutes before rinsing clean.

For more information on aquatic invasive species visit:

<http://des.nh.gov/organization/divisions/water/wmb/exoticspecies/index.htm>

ASIAN CLAM (*Corbicula fluminea*)

What are Asian clams and where do they come from? Asian clams, also called “golden clams,” are round, yellow-green to dark brown colored shellfish with thick, concentric rings on their shells. The clams are typically small, averaging less than 1.5 inches in size, and have a life span of one to seven years. A single clam can release 2,000-8,000 offspring in a year, depending on conditions, and some can self-fertilize.



Photos courtesy of Lake George Association, N.Y.

Asian clams are native to the freshwater of southern and eastern Asia. It is believed that immigrants to North America brought the clams as a food source and subsequently released them into the wild. The first documented discovery of Asian clams in the United States was sometime between 1924 (Indiana report) and 1938 (Washington State report). Today, the Asian clam is found in over 40 states and is expected to continue spreading. An infestation was recorded in the Northeast in Marlborough, Mass. at Fort Meadow Reservoir in 2005, and in Lake George, N.Y. in 2010. Populations of the Asian clam have been documented in six New Hampshire waterbodies: Merrimack River, from Bow, south; Cobscook Pond in Windham; Long Pond in Pelham; Wash Pond (Sunset Lake) in Hampstead; Great Pond in Kingston and Beaver Lake in Derry. There are likely more populations that have yet to be documented.

Why are Asian clams a concern in North America?

Asian clams are not native to the United States. Larval and juvenile clams are easily transported by water currents, or when humans move water from one waterbody to another. They can form dense clusters of over 5,000 clams per square meter, dominating the benthic community and altering the benthic substrate. Native birds, mammals, fish and other animals feed on Asian clams. However, these invasive clams reproduce

rapidly, making it difficult for native predators to keep Asian clam populations in check.

What problems do Asian clams cause? The Asian clam’s ability to rapidly propagate and physically attach to objects as juveniles creates several problems, including:

- Large populations of Asian clams may severely alter lake or riverine food webs by directly competing with existing native fish and shellfish species for food and space.
- Raw water intakes such as those at drinking water, electric generation, and industrial facilities become impaired or clogged by clam shells or by juveniles that are sucked into the intake and that grow in the system.

The clams release phosphorus into the water through burrowing, feeding from the sediment and their excreta. Phosphorus feeds plant and algal growth, and makes potentially hazardous cyanobacteria blooms more likely to occur. Impacts on boating and navigation include:

- Larval clams drawn into boat engine cooling water intakes may occlude the cooling system, leading to overheating and damaging the engine.
- If shells are drawn into the engine, abrasion of cooling system parts, especially impellers, could result.

What kind of habitat do Asian clams prefer? Asian clams can tolerate a fairly wide range of environmental conditions. Asian clams live in lakes, ponds, rivers and streams with sand or gravel bottoms, in sun-lit, warm, shallow water. They live just below the surface of the sediment or with a third of their shell just above the sediment’s surface. Generally, it was thought that these clams only tolerated water temperatures of 2°C to 36°C; however, in Lake George these clams successfully overwinter, surviving temperatures below 1°C for months. These clams are found in clear water with good water quality and are intolerant of high nutrient levels.

How can Asian clams be controlled? An effective way to permanently eliminate infestations has not been found, therefore, emphasis must be placed on controlling impacts on ecosystems and water users. Methods that have been tested for removing adult Asian clams include: removal of infested sediment, water level drawdown, and asphyxiating with plastic mats. Controls for water intakes include: increasing flows, removing clams by hand and using chemicals or high temperatures to kill the clams. However, many of these methods will likely affect other aquatic organisms and may require state and/or federal permits/approvals.

Asian clams are regulated in New Hampshire, and it is illegal to import, possess or release Asian clams in

this state. (Administrative Rules NHFG FIS 803.04, NHFG FIS 804.03 and NHFG FIS 805.01 respectively.)

What can citizens do to help? Tell your local watershed association, marina, municipal officials, or anyone interested in protecting New Hampshire's waters about the Asian clam. If you are in the power generation industry, plan now for the clam's invasion of your facility. Do not purchase Asian clams for use in aquariums, in ponds or as bait. When boating in infested waters, perform the following activities AWAY FROM ANY SURFACE WATER:

- **Clean:** Inspect for and remove mud, plants and organisms from your boat hull, trim plates, anchors and trailer.
- **Drain:** Remove all water from your boat and equipment: drain your boat's bilge, live wells and engine cooling system; dump bait buckets.
- **Dry:** Dry anything that comes into contact with the water for five to seven days in the sun before traveling to another waterbody
- If you find clams, wash down the boat with hot water (140° F) and allow the boat and trailer to sit for two to seven days to dry and/or spray down gear with a 10 percent bleach solution and let the solution stand for a few minutes before rinsing clean
- The best defense against Asian clams is to prevent them from entering New Hampshire's waters. However, when they arrive, we all need to take part in ensuring that this invasive species does not continue to spread. DES and the Fish and Game Department are collaborating to identify occurrences of this species in New Hampshire.

Spiny Water Flea (*Bythotrephes longimanus*)



What is Spiny Water Flea? Spiny water flea (*Bythotrephes longimanus*) is a tiny crustacean related to native forms of zooplankton, such as Daphnia, but ranges up to about one half-inch in size, over ten times larger than native water fleas! The elongated, barbed tail

of this non-native organism protects against predation by small juvenile fish that have difficulty ingesting the tail spine.

Where did it come from? Spiny water flea is native to Eurasia and was introduced into the Great Lakes via freighter ballast in the mid-1980s. It was discovered in Great Sacandaga Lake, N.Y. in September 2008, in Lake George, N.Y. in 2012, and in Lake Champlain N.Y./V.T. in 2014.

Why is Spiny Water Flea a threat? This non-native organism threatens fishing in two ways:

1. Spiny water fleas compete with juvenile sport fish for food. Both the spiny water flea and young fish prey almost entirely on native water fleas and other zooplankton. Research has shown that spiny water flea predation is capable of reducing the diversity and density of native zooplankton, thus impoverishing the food chain that sustains adult fish.
2. The barbed tail of this organism catches on fishing gear, especially fishing lines and downrigger cables. Masses of the organism can accumulate as gelatinous, cotton-like clumps, fouling gear, and interfering with fishing.

How does Spiny Water Flea spread from one water body to another? Research has shown that human recreation involving boats is the principle mechanism of transfer of non-native species between water bodies. Boating is an activity that is extremely vulnerable to "hitch-hiking" by non-native organisms because so many surfaces, nooks, and crannies of nautical gear are immersed in water. This is especially true of the spiny water flea because it produces thick-walled "resting" eggs that can remain dormant for long periods of time and are resistant to environmental extremes. These eggs even survive passage through the digestive tracts of fish. Adult spiny water fleas snagged during boating or fishing may contain resting eggs. These eggs can survive for extended periods after being tangled with downriggers, anchor line, trailer parts, and fishing gear. Consequently, resting eggs are insidious "stowaways" and contribute greatly to the rapid dispersal of this non-native organism from infested lakes to clean ones. There is no way to eradicate spiny water flea once it is introduced into a waterbody.

For more information on aquatic invasive species visit:

<http://des.nh.gov/organization/divisions/water/wmb/exoticspecies/index.htm>

WHAT ARE NEW HAMPSHIRE'S AQUATIC INVASIVE SPECIES LAWS?

All recreational boaters (effective January 1, 2017) are required to:

- Clean off all hitchhiking fragments of plants, animals, and debris on the outside of vessels before leaving a launch (this applies to invasive and native species).
- Drain boats and equipment before leaving the ramp (including paddle craft and non-motorized boats).
- Open/remove drain plugs and keep them open while trailering (if the vessel is equipped with drain plugs).

NH RSA 487:16-b Exotic Aquatic Weed Penalties - It shall be unlawful to offer for sale, distribute, sell, import, purchase, propagate, negligently transport, or introduce exotic aquatic weeds into New Hampshire waterbodies. Any person engaging in such an activity shall be guilty of a violation.

What are exotic aquatic weeds? Exotic aquatic weeds include only those species of vascular aquatic plants which were not part of New Hampshire's native aquatic flora before 1950. This list contains 28 exotic plants:

LATIN NAME	COMMON NAME(S)
All <i>Myriophyllum</i> species	Milfoils or feather-foils
All <i>Cabomba</i> species	Fanworts
<i>Hydrilla verticillata</i>	Hydrilla or Anacharis
All <i>Trapa</i> species	Water chestnut
<i>Potamogeton crispus</i>	Curly-leaf pondweed
<i>Lythrum salicaria</i>	Purple loosestrife
<i>Phragmites australis</i> or <i>P. communis</i>	Common reed
<i>Egeria densa</i>	Brazilian elodea
<i>Hydrocharis morsus-ranae</i>	European frogbit
<i>Butomus umbellatus</i>	Flowering rush
<i>Najas minor</i>	European naiad
<i>Nymphoides peltata</i>	Yellow floating heart
<i>Crassula helmsii</i>	Swamp stonecrop
<i>Epilobium hirsutum</i>	Great willow herb or hairy willow herb
<i>Glyceria maxima</i>	Reed sweet grass or manna grass
<i>Hygrophila polysperma</i>	East Indian Hygrophila
<i>Ipomoea aquatica</i>	Water spinach
<i>Iris pseudocarus</i>	Yellow iris or yellow flag iris
<i>Lagarosiphon major</i>	African oxygen weed
<i>Limnophila sessiliflora</i>	Ambulia
<i>Marsilea quadrifolia</i>	Water fern
<i>Myosotis scorpiodes</i>	Water forget-me-not
<i>Sagittaria japonica</i>	Double flowering arrowhead, Japanese arrowhead, or old world arrowhead
<i>Sagittaria sagittifolia</i>	Giant sagittaria
<i>Typha gracilis</i>	Slender cattail
<i>Typha laxmanii</i>	Dwarf cattail or Laxman's cattail
<i>Typha minima</i>	Miniature cattail or micro-mini cattail
<i>Salvinia molesta</i>	Giant salvinia

NH RSA 487:16-c Transport of Aquatic Plants or Exotic Aquatic Weeds On Outside of Boats, Vehicles, and Equipment - No person shall negligently transport any aquatic plants or plant parts or exotic aquatic weed or weed parts to or from any New Hampshire waters on the outside of a vehicle, boat, ski craft as defined in RSA 270:73, trailer, or other equipment.

NH RSA 487:16-d Draining of Water Conveyances

I. When leaving waters of the state, a person shall drain his or her boat and other water-related equipment that holds water, including live wells and bilges.

II. Drain plugs, bailers, valves, or other devices used to control the draining of water from ballast tanks, bilges, and live wells shall be removed or opened while transporting boats and other water-related equipment, if the vessel is so equipped.

III. Commercial enterprises transporting boats for off-site storage, maintenance, or repairs, and emergency response vehicles and their related equipment are exempted from paragraphs I and II, however all such exempt commercial enterprises shall drain all water-related equipment holding water and live wells and bilges prior to transporting the equipment to another water body.

NH RSA 487:16-e Penalties - Any person who violates RSA 487:16-c through 487:16-d shall be guilty of a violation punishable by a fine of \$50 for a first offense, \$100 for a second offense, and \$250 for any subsequent offense. The authority to enforce these sections shall extend to all peace officers in the state of New Hampshire.

What are New Hampshire's Aquatic Invasive Species Laws? (Continued)



The New Hampshire Fish and Game Department regulates fishing and importation and release of animals (vertebrates and invertebrates) in the state, including possession, transport, and use of aquatic invasive species by anglers, bait dealers, and aquaculture producers. Additionally, the release of any amphibian, reptile, or fish is illegal without first obtaining special permits issued by the New Hampshire Fish and Game Department.

Compliance with the importation, possession, and release laws is critically important because it represents the most effective strategy for preventing the destruction caused by aquatic invasive species. Unwanted plants and animals should never be disposed of in New Hampshire's waters because the potential harm caused by this action can devastate aquatic habitat essential to native plants and animals.

N.H. laws and Fish and Game rules related to aquatic invasive species

Prohibited Species - Importation and Possession

No person shall be issued a permit to import (*Fis 803.03 & Fis 803.04(b)*) or possess (*Fis 804.03*) the following designated prohibited wildlife:

Invertebrates:

- Zebra mussels (*Dreissena polymorpha, D. bugensis*)
- Spiny waterflea (*Bythotrephes cederstroemi*)
- Fishhook waterflea (*Cercopagis pengoi*)
- All non-indigenous crayfish
- Asiatic clam (*Corbicula fluminea*)

Fish:

- Walking catfish (*Clarias batrachus*)
- White amur/grass carp (*Ctenopharyngodon idella*)
- Black carp (*Mylopharyngodon piceus*)
- European rudd (*Scardinius erythrophthalmus*)
- Round goby (*Neogobius melanostomus*)
- Tubenose goby (*Proterhinus marmoratus*)
- Ruffe (*Gymnocephalus cernuus*)
- Snakeheads (Family: Channidae)

Prohibited Species - Release (*Fis 805.01*)

No person shall be issued a permit to release the following designated prohibited wildlife:

Amphibians	All indigenous imported into the state
	All exotics
Reptiles	All indigenous imported into the state
	All exotics
Fish	All species listed as prohibited for importation and release
	All non-indigenous species
	Any species not naturalized in New Hampshire
Invertebrates	All indigenous imported into the state
	All exotics

For More information:

www.wildlife.state.nh.us/fishing/nuisance-species.html

OFFICERS OF THE PEACE (POLICE OFFICERS, FISH AND GAME WARDENS, DEPT. OF SAFETY OFFICERS) HAVE THE AUTHORITY TO ENFORCE THESE LAWS AND ISSUE FINES. LAKE HOST INSPECTORS WILL NOT BE "REPORTING" BOATERS WHO DO NOT COMPLY.

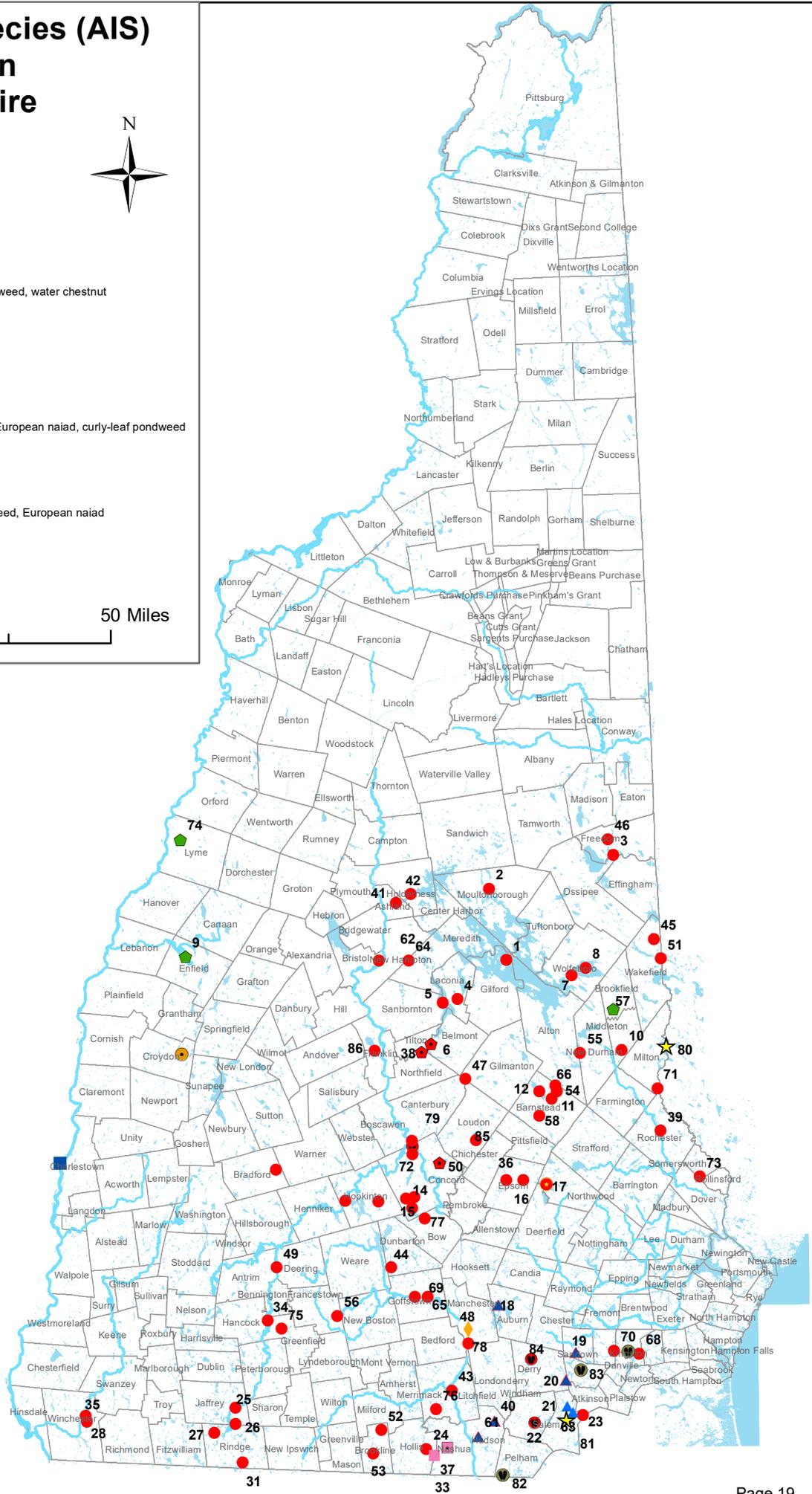
Aquatic Invasive Species (AIS) Infestation in New Hampshire

Legend

AIS Infestations

Type

-  Asian clam
-  Brazilian elodea
-  Curly-leaf pondweed
-  Eurasian milfoil
-  Eurasian milfoil, European naiad, Didymo, curly-leaf pondweed, water chestnut
-  European naiad
-  Fanwort
-  Variable milfoil
-  Variable milfoil, Asian clam
-  Variable milfoil, Curly-leaf pondweed
-  Variable milfoil, Eurasian milfoil, fanwort, water chestnut, European naiad, curly-leaf pondweed
-  Variable milfoil, European naiad
-  Variable milfoil, curly-leaf pondweed
-  Variable milfoil, fanwort
-  Variable milfoil, fanwort, Eurasian milfoil, curly-leaf pondweed, European naiad
-  Town_Boundaries_polygons
-  NH_Hydrography_polygons
-  State_Boundary



Map prepared by NH DES
Exotic Species Program
Updated October 2017

Numbers correspond to separate
key which lists waterbody
name and town.

Infested Waterbodies in New Hampshire (as of 10/17)

Number	Waterbody (TOWN)	Species
21	Arlington Mill Reservoir (SALEM)	Fanwort
35	Ashuelot River (WINCHESTER)	Variable milfoil
51	Balch Lake (WAKEFIELD)	Variable milfoil
58	Barnstead Parade Pond/Suncook (BARNSTEAD/ PITTSFIELD)	Variable milfoil
84	Beaver Lake (DERRY)	Variable milfoil, Asian clam
45	Belleau Lake (WAKEFIELD)	Variable milfoil
20	Big Island Pond (DERRY)	Variable milfoil, Fanwort
15	Big Turkey Pond (CONCORD)	Variable milfoil
16	Bixby Pond (EPSOM)	Variable milfoil
54	Brindle Pond (BARNSTEAD)	Variable milfoil
23	Captain Pond (SALEM)	Variable milfoil
86	Chance Pond Brook (FRANKLIN)	Variable milfoil
25	Cheshire Pond (JAFFREY)	Variable milfoil
22	Cobbetts Pond (WINDHAM)	Variable milfoil, Asian clam
39	Coheco River (ROCHESTER)	Variable milfoil
29	Connecticut River (CHARLESTOWN)	Eurasian milfoil, European naiad, didymo, curly-leaf pondweed, water chestnut
26	Contoocook Lake (JAFFREY)	Variable milfoil
49	Contoocook River (VARIOUS LOCATIONS)	Variable milfoil
7	Crescent Lake (WOLFEBORO)	Variable milfoil
85	Crooked Pond (LOUDON)	Variable milfoil
46	Danforth Pond (FREEDOM)	Variable milfoil
24	Flints Pond (HOLLIS)	Variable milfoil
28	Forest Lake (WINCHESTER)	Variable milfoil
69	Glen Lake (GOFFSTOWN)	Variable milfoil
44	Gorham Pond (DUNBARTON)	Variable milfoil
87	Great Pond (KINGSTON)	Asian clam
66	Halfmoon Pond (BARNSTEAD)	Variable milfoil
32	Hopkinton Lake/Dam (HOPKINTON)	Variable milfoil
43	Horseshoe Pond (MERRIMACK)	Variable milfoil
55	Jones Pond (Stumpfield Pond) (NEW DURHAM)	Variable milfoil
60	Kimball Pond (HOPKINTON)	Variable milfoil
64	Lake Pemigewasset (MEREDITH)	Variable milfoil
2	Lees Pond (MOULTONBOROUGH)	Variable milfoil
36	Little Suncook River (EPSOM/NORTHWOOD)	Variable milfoil
14	Little Turkey Pond (CONCORD)	Variable milfoil
11	Locke Lake (BARNSTEAD)	Variable milfoil
70	Long Pond (DANVILLE)	Variable milfoil
82	Long Pond (PELHAM)	Asian clam
9	Mascoma Lake (ENFIELD)	Eurasian milfoil
18	Massabesic Lake (AUBURN)	Variable milfoil,Fanwort
30	Massacum Lake (BRADFORD)	Variable milfoil
52	Melendy Pond (BROOKLINE)	Variable milfoil
59	Merrimack River (MULTIPLE TOWNS)	Variable milfoil, Asian clam
81	Milville Lake (SALEM)	European naiad
37	Mine Falls Pond (NASHUA)	Variable milfoil, fanwort, Eurasian milfoil, curly-leaf pondweed, European naiad
31	Monomonac Lake (RINDGE)	Variable milfoil
57	Mountain Pond (BROOKFIELD)	Eurasian milfoil
33	Nashua River (NASHUA)	Variable milfoil, Eurasian milfoil, fanwort, water chestnut, European naiad, curly-leaf pondweed
76	Naticook Lake (MERRIMACK)	Variable Milfoil
80	Northeast Pond (MILTON)	Brittle naiad
17	Northwood Lake (NORTHWOOD)	Variable milfoil, European naiad (2015)
48	Nutts Pond (MANCHESTER)	Brazilian elodea
4	Opechee Lake (LACONIA)	Variable milfoil
3	Ossipee Lake (Broad Bay) (FREEDOM)	Variable milfoil
61	Ottarnic Pond (HUDSON)	Variable milfoil,Fanwort
75	Otter Pond (GREENFIELD)	Variable milfoil
79	Oxbow Lake (CANTERBURY)	Variable milfoil
27	Pearly Pond (RINDGE)	Variable milfoil
62	Pemigewasset River (SANBORNTON)	Variable milfoil
19	Phillips Pond (SANDOWN)	Variable milfoil, Fanwort
78	Pine Island Pond (MANCHESTER)	Variable milfoil
65	Piscataquog River (GOFFSTOWN)	Variable milfoil
74	Post Pond (LYME)	Eurasian milfoil
53	Potanipo Lake (BROOKLINE)	Variable milfoil
34	Powder Mill Pond (HANCOCK)	Variable milfoil
68	Powwow Pond (KINGSTON)	Variable milfoil
40	Robinson Pond (HUDSON)	Variable milfoil,Fanwort
47	Rocky Pond (GILMANTON)	Variable milfoil
67	Rockybound Pond (CROYDON)	Curly-leaf Pondweed
56	Scobie Pond/Haunted Lake (FRANCESTOWN)	Variable milfoil
6	Silver Lake (TILTON)	Variable milfoil, curly-leaf pondweed
71	Spaulding Pond (MILTON)	Variable milfoil
42	Squam Lakes (HOLDERNESS/ASHLAND)	Variable milfoil
41	Squam River (ASHLAND)	Variable milfoil
13	St Paul's School Pond (CONCORD)	Variable milfoil
12	Suncook Lakes (BARNSTEAD)	Variable milfoil
10	Sunrise Lake (MIDDLETON)	Variable milfoil
77	Turee Pond (BOW)	Variable milfoil
50	Turtle Pond (CONCORD)	Variable milfoil
72	Upper Goodwin Pond (CONCORD)	Variable milfoil
83	Wash Pond (SANDOWN)	Asian clam
8	Wentworth Lake (WOLFEBORO)	Variable milfoil
73	Willand Pond (DOVER)	Variable milfoil
63	Wilson Lake (SALEM)	Fanwort
1	Winnepesaukee Lake (ALL TOWNS)	Variable milfoil
38	Winnepesaukee River (TILTON)	Variable milfoil, curly-leaf pondweed
5	Winnisquam Lake (MEREDITH/BELMONT)	Variable milfoil

INSPECTION DIAGRAM & “CLEAN, DRAIN & DRY!” PROCEDURE

CLEAN: *Cleaning off all plant fragments off of boats and trailers is the law!*

- **Visually Inspect** boat and trailers before entering *and* after leaving the water.
- **Remove** and **Dispose** all visible plants, animals, mud, and other debris—it’s the law for boaters!
- **Encourage** boaters to inspect all live wells, recreational gear, including fishing gear, and anchor (*Asian clams may be in anchor sediment*). Encourage boaters to dispose of unused bait and unwanted fish parts in a trash can.
- **If the hull of a boat feels sandpapery, there may be zebra mussel growth on the vessel.** Encourage the boater to visit the nearest boat-friendly car wash listed on brochure to decontaminate with high pressure hot water.
- **Inspecting Jet Powered Craft:** Personal watercraft have a jet drive system which requires some extra precautions. Invasive species can become stuck in the jet drive system and get transported from one waterbody to another.
 - Before entering and after leaving the water, ask the boat owner to start and run the engine for a second or two to blow out any excess water and debris. (*Make sure no one is standing directly behind the watercraft and that the expelled water won’t flow directly into the lake.*)
 - After the engine has stopped, pull out any plants or other debris that is still in the steering nozzle.
 - Check under the craft for the water intake for plant fragment

DRAIN: *Keeping drain plugs open while trailering is the law!*

- **After boating and before leaving the launch:** In a location where water won’t flow back into the lake, open all drain plugs and drain water from the motor, bilge, live wells, ballast tanks and bags, fishing gear, bait buckets, and other locations where water collects. Boaters must keep all drain plugs open/out while trailering between waterbodies. Remind boaters to put drain plugs back in before launching again.
- **After leaving the launch:** Flush/rinse boats, trailers, bait buckets and other recreational gear with high pressure hot water in a location where the water will not flow into a waterbody, catch basin, or other storm drain structure.

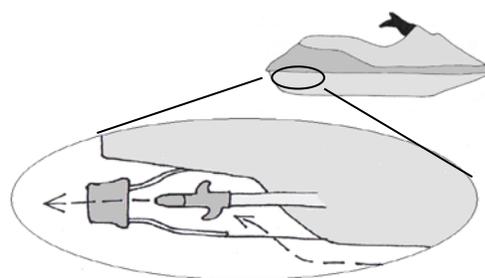
DRY: *Encourage boaters to...*

- Allow their boat, trailer, and recreational gear to dry for at least 5 days before using again.
- Encourage boater to visit a boat-friendly car wash. See the brochure for a list of boat friendly car washes!

WATERCRAFT INSPECTION CHECK POINTS

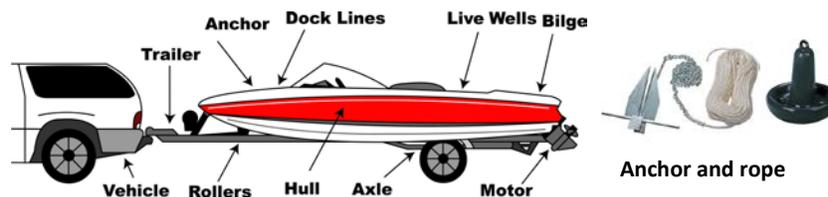


For paddle craft: check the hull, inside cockpit and storage areas, all paddles and the trailer it came in on.



For Jet ski/boat: Ask the owner to stop and start the engine to remove trapped water. *This will NOT damage motor!*

For boats on trailers: Check *all* of these “SNAG AREAS” areas. You should walk around the entire boat, and get down to check under the trailer and behind the wheel wells. Pay careful attention to the anchor and rope.





Aquatic Plant Specimen for Identification

Plant collection:

- ✓ Collect a representative piece of the aquatic plant (full stem, flowers or fruits if available)
- ✓ Wrap the plant neatly in a moist (not dripping) paper towel
- ✓ Seal the specimen in this sample bag
- ✓ Deliver or mail the specimen immediately to:

Amy P. Smagula
Exotic Species Program
NH DES
29 Hazen Drive
Concord, NH 03301

***Please do not mail specimens on Thursdays or Fridays.
Specimens will decay quickly in the mail. If you collect
this specimen late in the week, please refrigerate or keep
on ice until you are able to mail it.***

DO NOT MAIL SPECIMENS TO NH LAKES



Please be sure to complete this section before sending the plant to DES. This section will help us to identify a location for the plant, as well as how to contact you once we've identified the specimen.

Waterbody LAKE

Name: PAWTUCKAWAY

Town: NOTTINGHAM, NH

Location of Collection: FUNDY COVE BOAT LAUNCH

Date Collected: JULY 4, 2018

Program: VLAP Weed Watcher ((Lake Host))

Other

If Lake Host:

Arriving Departing Bow Number

Your Name: KRYSTAL COSTA

Phone #: 603-226-0299 E-mail: KCOSTA@NHLAKES.ORG

Comments:

SPECIMEN FOUND ON A TRAILOR COMING FROM STUMPFIELD MARSH

BOATER SURVEY SHEET INSTRUCTIONS

Collecting high quality survey data is an important aspect of the Lake Host Program. If you are unsure of how to fill out the survey form after training, ask your local Point Person or Lake Host Manager. If you still feel unsure, please reach out to NH LAKES.

All boater survey sheets are hand entered into a database and need to be filled out neatly.

THE FOLLOWING NEEDS TO BE FILLED OUT CONSISTENTLY ON EVERY SHEET:

GROUP: The local lake association you are working with. **Do not abbreviate.**

Date: Self-explanatory...just don't forget it!

Lake Name: The body of water that you are working at.

Ramp Name: The name of the boat access site. Ask your Point Person!

Lake Host Name: First and last name please. **Do not abbreviate.**

People Reached: How many people heard your message during an inspection? Sometimes 5 people (including the captain) are going out on a boat. By recording "reach" you are better representing the efficacy of your group's outreach efforts.

Time: What time was the inspection performed? Indicate AM or PM

Launching or Leaving: If you are inspecting a boat as they ARRIVE to launch write an "A", if you inspect a boat as they are DEPARTING or leaving the launch write a "D."

Type of Boat: Does it have a motor? It is motorized. What about a canoe with a trolling motor? Motorized. Sail boat? ... Ask the boater if you are not sure!

State of Registration: This section is for motorized boats only.

Last Waterbody this Boat Visited: For boats ARRIVING from the road. When a boater is arriving to launch their boat ask them the last lake they were in.

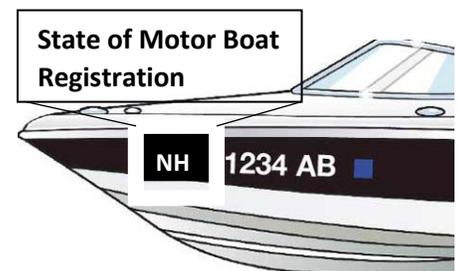
Next waterbody this boat may visit: For boats DEPARTING from the water. After a boater has pulled their boat from the water ask them what lake they might visit next.

Clean, Drain, Dry: When a boater is arriving to launch their boat ask them the following questions; Have you cleaned your boat since leaving ____?; Have you drained all of the water out of your boat and recreational gear?; Has your boat been dry for 5 days?

Boat-Friendly Car Wash: For boats DEPARTING from the water. Rinsing a boat, trailer, and all gear that touched the water using high pressure, hot water is the best way to prevent the spread of aquatic invasive animals. If a wash/decontamination station was available, free to use, and full-service, would they be interested in using it?

Specimen Sent to DES: Check this box *only* if you bag a specimen up to send in for identification.

Page Number: Help everyone stay organized. Don't overlook this important piece of information!



INSTRUCTIONS: DO NOT EMAIL/FAX THESE FORMS TO NH LAKES.

Inspectors: Complete one row for each boat inspection. A boat that was inspected when launched and retrieved should take up two rows.

Point People/Managers: Collect field sheets each week and enter data into the online spreadsheet provided by NH LAKES.

Lake Host Program Boater Survey

GROUP: Pawtuckaway Lake Improvement Assn. **Date:** 7/4/18

Lake Name: Pawtuckaway **Ramp Name:** Judy Cove

Lake Host Name(s): Krystal Costa + Andrea LaMoreaux

People Reached	Time am or pm	Launching or Leaving A =Arriving D =Departing	Type of Boat Check one	State of Registration Motor boats only	Last waterbody this boat visited Waterbody, Town, State	Next waterbody this boat may visit Waterbody, Town, State	Clean X =Yes	Drain X =Yes	Dry X =Yes	Boat Wash Station Boater Interest			Specimen Sent to DES X =Yes
										X = High	X = Low	X = More info	
2	500 AM	A	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH	Stumpfield marsh Hopkington NH		X	X	X				
1		A	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH	Cobbetts Pond Windham		X	X	X				
1		A	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH	Pawtuckaway		X	X					
1	↓	A	<input type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	MS	Swains lake		X		X				
2	530 AM	A	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH	Swains lake		X	X	X				X
2	800 AM	D	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH		Swains lake					X		
1		D	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH		Ocean					X		
1		D	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH		Connecticut River						X	
1		D	<input type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	MS		Pawtuckaway						X	
2	830 AM	D	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH		Deering Reservoir					X		

GOOD EXAMPLE

INSTRUCTIONS: DO NOT EMAIL/FAX THESE FORMS TO NH LAKES.

Inspectors: Complete one row for each boat inspection. A boat that was inspected when launched **and** retrieved should take up **two** rows.

Point People/Managers: Collect field sheets each week and enter data into the online spreadsheet provided by NH LAKES

Lake Host Program Boater Survey

GROUP: PLIA **Date:** _____

Lake Name: _____ **Ramp Name:** _____

Lake Host Name(s): KC + EG

	People Reached	Time am or pm	Launching or Leaving A=Arriving D=Departing	Type of Boat Check one	State of Registration Motor boats only	Last waterbody this boat Visited Waterbody, Town, State	Next waterbody this boat may visit Waterbody, Town, State	Clean X=Yes	Drain X=Yes	Dry X=Yes	Boat Wash Station Boater Interest			Specimen Sent to DES X=Yes
											X=High	X=Low	X=More info	
1		8:15		<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized		Stumpfield								
2		6:00	D	<input type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH		Cobbetts Pond							
3		6:05		<input type="checkbox"/> Motorized <input checked="" type="checkbox"/> Non-motorized	NH	Am...								
4				<input type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized		from								
5	KC 5/15	S 12:00	A	<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized	NH	PINAL		X	X		X			
6		1	D	<input type="checkbox"/> Motorized <input checked="" type="checkbox"/> Non-motorized				NO	NO	NO				
7		1	A	<input type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized									X	
8		1		<input type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized										
9		1		<input type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized									X	
10		1		<input checked="" type="checkbox"/> Motorized <input type="checkbox"/> Non-motorized										X

BAD EXAMPLE

NH LAKES 2018 LAKE HOST PROGRAM - EMPLOYEE TIMESHEET

NAME OF LOCAL GROUP: Pawtuckaway Lake Improvement Association

PAY PERIOD #: 1 (SEE CHART)

LAKE HOST EMPLOYEE NAME: Krystal Costa

SPECIFY POSITION Lake Host Inspector (INSPECTOR OR MANAGER)

<p>INSTRUCTION FOR EMPLOYEES:</p> <ul style="list-style-type: none"> Use a separate timesheet for each pay period. Use a separate line for each day worked, indicate starting time of shift and end time of shift. Total hours for each day (ROUND TO NEAREST 0.25 OF AN HOUR). Total hours for the pay period. Indicate your hourly rate. Multiply your hourly rate by the total hours worked in the pay period. Turn your timesheet on your last shift during the pay period, or by the last Sunday before the pay period ends. Timesheets MUST be signed by YOU and a supervisor (either the Lake Host Manager or the Point Person). 	<p>PLEASE DO NOT ABBREVIATE</p>
--	--

	DATE (M/D/Y)	SHIFT START TIME	SHIFT END TIME	TOTAL SHIFT IN HOURS
2018 PAYROLL PERIODS:	5-7-18	4 : 00 am	11 : 00 am	7 hours
#1 May 7 – May 20	5-10-18	12: 00 pm	4 : 00 pm	4 hours
#2 May 21 – June 3	5-17-18	12 : 00 pm	4 : 00 pm	4 hours
#3 June 4 – June 17		:	:	
#4 Jun. 18 – July 1		:	:	
#5 July 2 – July 15		:	:	
#6 July 16 – July 29		:	:	
#7 July 30 – Aug. 12		:	:	
#8 Aug. 13 – Aug. 26		:	:	
#9 Aug 27 – Sept 11		:	:	
#10 Sept 12 – Sept 23		:	:	
#11 Sept. 24 – Oct. 7		:	:	
#12 Oct. 8 – Oct. 21		:	:	

TOTAL NUMBER OF HOURS WORKED IN THIS PAY PERIOD: 15 hours

HOURLY RATE: \$ 11

(TOTAL HOURS WORKED) X (HOURLY RATE): \$ 165

I HEREBY CERTIFY THAT I WORKED THE TIME INDICATED

Krystal E. Costa

Employee Signature

I HEREBY CERTIFY THAT THIS EMPLOYEE WORKED THE TIME INDICATED

POINT PERSON/ MANAGER MUST SIGN HERE

Point Person/Manager Signature

2018 LAKE HOST PROGRAM VOLUNTEER MATCH SHEET

Name of Local Organization: Pawtuckaway Lake Improvement Association

Name of Volunteer Krystal Costa

Pay Period #: 1

Instructions: Record all of your time spent traveling, lake hosting, performing administrative duties, expenses you have incurred for the Lake Host Program, and miles driven for the program. Turn signed volunteer match sheets to the Point Person or Manager in their preferred manner.

	Date of volunteered time M/D/Y	Volunteer Activity <small>(specify ramp time, travel time, administrative time)</small>	Time Spent <small>(Round to nearest 0.25 of hour)</small>	Out-of-Pocket Item <small>(Ex: postage, photo copies)</small>	Out-of-Pocket Expense <small>(Enter \$ amount)</small>	Mileage	
						Destination <small>(Ramp, training, post office, etc.)</small>	Number of Miles Driven
Row A	5-7-18	Training	6 hours	n/a	\$ n/a	Training	80 miles
Row B	5-10-18	Ramp time	2 hours	n/a	\$ n/a	Ramp	2 miles
Row C	5-12-18	Ramp Time	2 hours	n/a	\$ n/a	Ramp	2 miles
Row D	5-20-18	Admin	1.5 hours	Photocopies	\$ 5.50	Staples	10 miles
Row E					\$		
Row F					\$		
Row G					\$		
Row H					\$		
Row I					\$		
Row J	Total Volunteer Hours= <small>(add rows A – I)</small>		11.5 hours	Total Out of Pocket Expenses= <small>(add rows A – I)</small>	\$	Total Miles <small>(add rows A – I)</small>	94 miles
Row L	(Total Hours) x (\$24.14)		\$ 277.61		5.50	(Total Mileage) x (\$0.545)	\$ 51.23

I certify that the above is correct (Volunteer signature): Krystal E. Costa Date: 5-20-18

Certified by (Point Person/Manager signature): POINT PERSON MUST SIGN HERE Date: 5-20-18