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*The purpose of the Society shall be to promote appropriate management of aquatic vegetation, to provide for the scientific and educational advancement of members, to encourage scientific research in all facets of aquatic plant and algae management, to promote an exchange of information among members, and to extend and develop public interest in the discipline.*

*Mission Statement, adopted April 20, 1999; revised January 2019*

On the Cover: Water Lily from Longwood Gardens International Display (C. Doyle)

# MESSAGE FROM THE PRESIDENT

## WILL STEVENSON

### Opportunity...everywhere

We have celebrated 20 years of the Society which is a huge milestone for the organization. With that in the history books, we as the members and leaders of NEAPMS have the opportunity to plan for the next 20 plus years. It is up to us as individuals and collectively to see and capture the opportunity to shape our Society's next 20 years. Will we continue doing just what we've done in the past – an industry-led conference for professionals within the region? Or will we see opportunities to serve a greater community of lake and pond users, owners and appreciators?

These are not simple questions that will be answered at the 2020 Lake Placid Conference, but they are conversations we will have the opportunity to have between Members, Directors, Vendors, NGO leaders, and Regulators. We all see the challenges and rewards of working on our water systems from different perspectives (see my last message about perspectives and the importance of seeing different perspectives to broaden one's own). Will you seize the opportunity to talk with a new person, student or vendor about their perspectives and opportunities they see to manage water systems? I challenge you to make that a possibility.

On your travels up to Lake Placid you will likely have time to reflect on opportunities you've been presented – Professional, Personal and Philanthropic.

- Who gave you the first chance to work in the industry?
- Who challenged you to push yourself to work better?
- Who suggested you could help a client or serve your community?
- Who showed you how to care for family and friends?
- Who will you create opportunities for?

I challenge you to think about these questions even if only for your own growth.

Those are the folks (both officially and unofficially) who helped form the Society today that we're benefiting from. It is incumbent on us to have the same long-term view of our resources and management techniques to preserve and enhance the resources for the next generation of Aquatic Plant Managers. What opportunities will you grab in 2020.... If you don't plan to grab them will you even know you missed them?

As John Keating said in Dead Poets "Carpe diem. Seize the day, boys. Make your lives extraordinary."



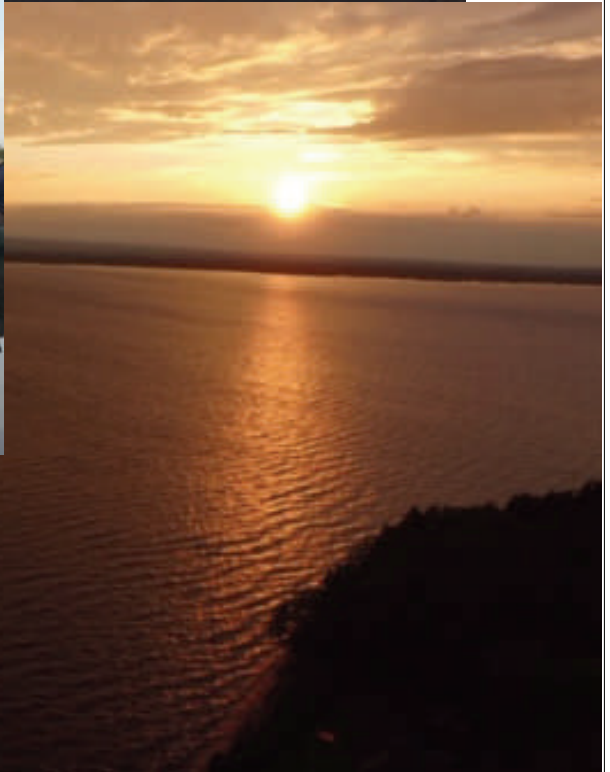
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*“We all see the challenges and rewards of working on our water systems from different perspectives...”*



# PERSPECTIVE FROM THE PRESIDENT (CON'T)



An avid photographer, Will Stevenson shares a few more pictures so we can get a perspective on the environment and our precious water resources.

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Front Row: Will Stevenson, Cathy McGlynn, Chris Doyle, Meg Modley, Greg Bugbee. Not pictured: Kiyoko Yokota, Kara Foley.



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# STATE UPDATE: NEW YORK

**Cathy McGlynn**  
New York State Department of Environmental Conservation

Three new Hydrilla infestations were confirmed as of September 2019: Myer's Point, Lansing (Cayuga Lake), Hickory Lake and Green Lake in Orchard Park (Erie County).

The first treatment of hydrilla (monoecious biotype) using ProcellaCor in New York took place at Kuhlman Pond, Owego (Tioga County)

Treatment of hydrilla and monitoring continue at the following project locations:

- Aurora, Cayuga Lake (Cayuga County)
- Cayuga Inlet/Fall Creek (Tompkins County)
- Croton River (Westchester County)
- Erie Canal/Tonawanda Creek (Erie/Niagara Counties)
- King Ferry, Cayuga Lake (Cayuga County)
- Spencer Pond and Kuhlman Pond, Owego (Tioga County)
- Tinker Nature Pond, Henrietta (Monroe County)

Remains of red swamp crayfish were found on the eastern shore of Staten Island (Richmond County) and live red swamp crayfish were found in Erie County.

Spiny waterflea (pictured, right) was confirmed in Oneida Lake.

Watercraft Inspection Steward Programs in New York for 2019 currently include 244,816 total inspection records with close to 97% of watercraft users agreeing to voluntary inspections. Eurasian watermilfoil and curly leaf pondweed were the aquatic invasive plants most commonly found on watercraft.

The Long Island Metro Aquatic Invasive Species Task Force conducted its first meeting in Manhattan on October 24<sup>th</sup>.

Gangetic eel (native in Asia) were found in April in Canadice and Hemlock Lakes. All individuals were dead and had no stomach contents. A religious release ceremony was surmised to be the source of these eels.



Photo: NYSDEC

*“Watercraft Inspection Steward Programs in New York for 2019 currently include 244,816 total inspection records...”*

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## STATE UPDATE: PENNSYLVANIA

**Nick Decker**  
**Department of Conservation and Natural Resources**  
**Bureau of State Parks**

Pennsylvania added Water Primrose (*Ludwigia grandiflora* ssp. *hexapetala*), European Water Chestnut (*Trapa natans*), and European Frogbit (*Hydrocharis morsusranae*) to its Controlled Plant and Noxious Weed List. These aquatic plants are now considered Class A Noxious Weeds in Pennsylvania. As a Class A Noxious Weed, preventing new infestations and eradicating existing infestations is a high priority for the department.

Pennsylvania expanded its launch stewardship program to operate in nine state parks across the state during the 2019 summer boating season. Over 2,000 voluntary boat inspections were completed to prevent the spread of invasive species and raise awareness of aquatic invasive species and their impacts. Pennsylvania also participated in Great Lakes Commission Aquatic Invasive Species Landing Blitz.

The only newly reported location of hydrilla in Pennsylvania during 2019 was in Lebanon County. This brings the number of counties in Pennsylvania with known populations of hydrilla up to 27 out of 67 counties. The largest suppression effort for hydrilla in Pennsylvania continued this year in Pymatuning Reservoir, spanning an approximately 675-acre target area including areas within Ohio.

*“Over 2,000 voluntary boat inspections were completed to prevent the spread of invasive species and raise awareness of aquatic invasive species and their impacts.”*

Unless otherwise noted, all pictures are credited to E. Mayer and C. Doyle



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## STATE UPDATE: MASSACHUSETTS

### Emily Molden Nantucket Land Council

The Massachusetts Department of Conservation and Recreation's Lakes and Ponds Program has had a busy year in 2019. They continue to receive appropriate budgetary allocations to support their work within the State Park System. Their Boat Ramp Monitor Program has continued and they have been staffing several pristine sites for regular water craft inspections and public education. The Weed Watchers initiative trained with 20 different groups across the state this past spring and summer, assisting watershed associations and neighborhood groups in learning how to identify and handle invasive aquatic species.

DCR continues to play an active role with the Northeast Aquatic Nuisance Species Panel and have been working in close collaboration with agen-

cies from Connecticut, Vermont and New Hampshire to monitor the Connecticut River and its adjacent water bodies. DCR Lakes and Ponds used one of their certified consultants to perform an extensive survey throughout the northern extent of the Connecticut River for hydrilla. Unfortunately the state's 6<sup>th</sup> hydrilla population was discovered this year along the river in the town of Agawam. DCR is putting together a management plan which will address the infestation using Diver Suction Harvesting. Dramatic reduction in the water level has forced them to postpone initiating this work until next season. The interstate collaboration along the Connecticut River has been extremely important and productive.

DCR has been paying close attention to the zebra mussels in the western part of the state, still only found in Laurel Lake where one of two Massachusetts boat wash stations remains operative.

After completion of the water chemistry evaluation at sites across the state the Berkshires region remains at highest risk for infestation as a result of its proximity to New York and other infestations, but also because of the significant limestone deposits that lead to high calcium and high pH in the waters, which is more conducive for zebra mussel proliferation.

The other hydrilla infestations in Massachusetts are being managed effectively with herbicides, resulting in significant reductions of tuber density. Water chestnut treatment is ongoing on the Nashua River using Clearcast. A pilot project to control variable milfoil has also been implemented on Walker Pond in Wells State Park. Several new products are currently under review by the MA Department of Agricultural Resources and Department of Environmental Protection including Zequanox.

The DCR Partnerships Matching Funds Program continues to provide resources to groups targeting lake improvement projects that overlap with their State Park System.

*"The Weed Watchers initiative trained with 20 different groups across the state this past spring and summer."*

**Check Out Our Website:**  
[www.neapms.org](http://www.neapms.org)



*"More information [about the DCR Partnerships Matching Funds Programs] can be found at <https://www.mass.gov/lakes-and-ponds-program>."*



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## STATE UPDATE: RHODE ISLAND

**Katie DeGoosh-DiMarzio**  
 Rhode Island Department of Environmental Management  
 c/o New England Interstate Water Pollution Control Commission

### New Lakes on the Invasives List

Rhode Island Department of Environmental Management staff were able to visit 28 unique locations (lakes/ponds/rivers), from May through the end of September 2019, to monitor for invasive plants, with extensive QAQC of the invasive monitoring database within the last year. Results of this effort adds six new locations to the list of lakes, ponds and rivers in Rhode Island with an aquatic invasive plant, bringing the new state total to 102 lakes documented with one (or more) invasive plants, and an additional 28 river segments. The six new locations are:

1. North Branch of the Pawtuxet River (Segment B) in Scituate, Rhode Island hosts a documented population of fanwort (*Cabomba caroliniana*) as of June 17. This is the outflow to the Scituate Reservoir, the state’s major drinking water source, which is also known to have fanwort in the northern basin. This section of the Pawtuxet River near Hope Dam is popular for fishing and paddling. Findings of fanwort this summer bring the official statewide species distribution for fanwort at 75 ponds or river segments.

2. Beach Pond shares a border between Exeter, Rhode Island and Voluntown, CT. Both states maintain separate boat ramps on either side of this 84-acre pond. After several

*“Results of this effort add six new locations to the list of lakes, ponds and rivers in Rhode Island with an aquatic invasive plant, bringing the new state total to 102 lakes documented with one (or more) invasive plants...”*

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# STATE UPDATE: RHODE ISLAND

## (Continued)

about an invasive plant in high abundance around private docks this summer, RIDEM confirmed it was inflated bladderwort (*Utricularia inflata*). Inflated bladderwort (pictured to the right) is now officially documented in seven lakes throughout Rhode Island. During a visual shoreline survey around additional parts of the pond, two other invasives were documented: variable watermilfoil (*Myriophyllum heterophyllum*) and mudmat (*Glossostigma cleistanthum*).

3. Mashapaug Pond is an urban pond in Providence, Rhode Island which frequently has cyanobacteria blooms in the summer. During a monitoring visit Brazilian elodea (*Egeria densa*) was observed near the shoreline of the 75-acre pond. It is also been documented upstream in the watershed at Spectacle Pond. This documentation of Brazilian elodea brings the official statewide species distribution to five ponds.

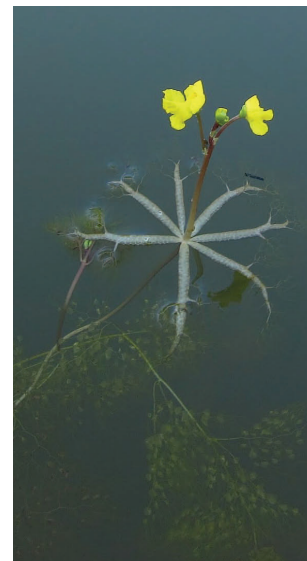
4. Asa Pond in South Kingstown, Rhode Island is a small 25-acre pond surrounded by conservation land and a state fishing area and small light craft boating access. RIDEM staff observed a healthy population of variable watermilfoil in early July. As of this summer, the official statewide species distribution for variable watermilfoil is in 86 ponds or river segments throughout the state.

5. Eight Rod Farm Pond located in the RIDEM Eight Rod Farm Management Area in Tiverton, Rhode Island is the source water of Borden Brook. Previously overlooked because of its small size (~10 acres) the pond was classified just as part of Borden Brook. To more accurately reflect its impounded characteristics, for purposes of counting lakes with invasive plants, this location was added as a "Eight Rod Farm Pond". However, this reclassification is only for invasive monitoring purposes and is not reflected in any state water quality regulations or to be used for official Integrated Reporting. RIDEM documented Eurasian watermilfoil (*Myriophyllum spicatum*) in this conservation and fishing area in 2012. This documentation brings the official statewide species distribution for Eurasian milfoil to 11 ponds or river segments throughout the state.

6. The northern (most downstream) basin of the Three Ponds Brook complex in Warwick was added as a "pond" named "Three Ponds (northern basin)" to more accurately reflect its impounded characteristics at 12 acres. For purposes of counting lakes with invasive plants, it was formerly just classified as part of a river segment named Three Pond Brook. This reclassification is only for invasive monitoring purposes and is not reflected in any state water quality regulations or to be used for official Integrated Reporting. Invasive fanwort (*Cabomba caroliniana*) was found here in October 2017.

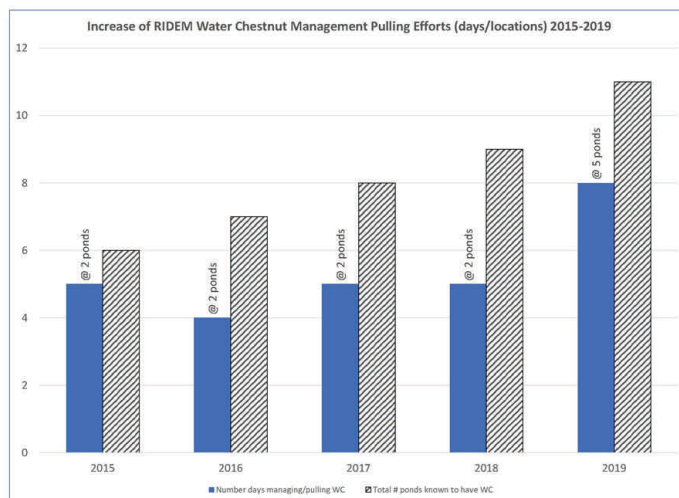
**Observed Expansions to the Official Species Distributions:**

Rhode Island's 10<sup>th</sup> and 11<sup>th</sup> populations of water chestnut (*Trapa natans*) were recorded in Barney Pond (Lincoln, RI) as well as in Olney Pond (Lincoln, RI) in June of this year. Both ponds have several other invasive plant species, but this is the first sighting of water chestnut. Both populations were small (less than 40 square feet) and RIDEM seasonal staff pulled all observed rosettes on two separate visits to each pond. Both ponds are in the Moshassuck River Watershed. Barney Pond has difficult boating access, but Olney Pond is located in Lincoln Woods State Park where there is a kayak school and state-owned boat ramp.



*"Rhode Island's 10<sup>th</sup> and 11<sup>th</sup> populations of water chestnut (Trapa natans) were recorded in Barney Pond (Lincoln, RI) as well as in Olney Pond (Lincoln, RI) in June of this year."*

**Figure Below:** Increase in RIDEM Water Chestnut Pulling from 2015 to 2019.





## STATE UPDATE: RHODE ISLAND (Continued)

*“Due to overwhelming public interest to actively manage the population of sacred lotus (Nelumbo nucifera) in Meshanticut Pond, RIDEM coordinated a volunteer leaf-cutting effort to weaken the plant population...”*

For the most recent Aquatic Invasive Species distribution map of 130 lakes or river segments (with one or more invasive plant) and list including which invasive plants are present at each locale, see: <http://www.dem.ri.gov/programs/benviron/water/wetlands/pdfs/invasive.pdf>

### Control Efforts

Despite constrained resources, RIDEM was able to hand pull water chestnut at 5 of the 11 populations this summer (Belleville Pond, Sylvestre Pond, Roger Williams Park, Olney Pond and Barney Pond). Luckily the populations at these locations are small enough that they can be managed with small hand pulls annually. However, the discovery of the populations at two new ponds this year has doubled the number of days spent managing water chestnut (from 4-5 days each summer 2015-2018 to 8 days in 2019). Although the limited time spent culling a few plants early in a population is essential for control, it has reduced the amount of time available for monitoring other lakes. Currently, Rhode Island is also working with the City of Central Falls to develop a lake management plan for the water chestnut at Valley Falls Pond.

Due to overwhelming public interest to actively manage the population of sacred lotus (*Nelumbo nucifera*) in Meshanticut Pond, RIDEM coordinated a volunteer leaf-cutting effort to weaken the plant population. Spaced out over four 3-hour volunteer events, 74 volunteers gathered to cut stems from kayaks, and haul the enormous leaves out of canoes. While the lotus harvesting efforts resulted in approximately one and a half dumpsters worth of plant matter removed, it is estimated the volunteers only took out about 15% of the 1.5-acre patch. More important was the greater take-away message confirming invasive plants are a quickly spreading problem, and difficult to manage. This type of successful community engagement and press interest reinforced spread prevention messaging and bolstered support for further state management efforts. RIDEM is seeking to treat the pond with herbicides next summer.

**Below, left:** A dumpster full of sacred lotus cuttings. **Below, right:** Volunteers cut and pull sacred lotus under the directions of RIDEM. Photo: RIDEM





### How Are We Doing?

What do you think of our newsletter? Please forward any suggestions, or if you would like to contribute an article or update to an upcoming newsletter, to:

Chris Doyle  
([cdoyle@solitudelake.com](mailto:cdoyle@solitudelake.com))

*“Beginning in January, there will be a five-dollar charge on in-state boat registrations and a 20-dollar charge for out of state vessels using waters in the state, to be set aside by the Connecticut Department of Energy and Environmental Protection to combat invasive aquatic plants.”*

## STATE UPDATE: CONNECTICUT

**Greg Bugbee**

**Department of Environmental Science; Connecticut Agricultural Experiment Station**

Prolific beds of hydrilla (*Hydrilla verticillata*) are now confirmed in the Connecticut River (see picture, below) from Agawam, MA south to the Connecticut shoreline. Genetic testing suggests the strain has not been previously documented in North America. To compound the problem, the hydrilla was often mixed with Eurasian watermilfoil (*Myriophyllum spicatum*), fanwort (*Cabomba caroliniana*) and water chestnut (*Trapa natans*). As of this writing (early October), turions have been observed but no tubers. A detailed survey of the southern stretch of the River was performed in 2019 by the Connecticut Agricultural Experiment Station (CAES) Invasive Aquatic Plant Program and will be available this winter.

Coventry Lake continues to battle its hydrilla problem with annual herbicide applications.

Many lakes, including Ball Pond, Candlewood Lake, Squantz Pond, Taunton Lake, and Lake Waubeeka, have introduced triploid grass carp during the last decade to control nuisance aquatic plants and long term monitoring results are now being observed. With the exception of Candlewood Lake, reports from 2019 suggest that the aquatic plant populations are being over-grazed resulting in less than optimal vegetative coverage.

A test of a Fall 2018 application of ProcellaCOR, to control variable watermilfoil (*Myriophyllum heterophyllum*) in Bashan Lake, yielded promising results with near complete control in many areas previously treated less effectively with granular 2,4-D ester.

Short term placement of benthic barriers continues to increase as a means of eliminating vegetation in localized areas. Areas such as beaches, near docks, and locations with pioneer infestations seem best suited to the practice.

Beginning in January, there will be a five-dollar charge on in-state boat registrations and a 20-dollar charge for out of state vessels using waters in the state, to be set aside by the Connecticut Department of Energy and Environmental Protection to combat invasive aquatic plants. Projections suggest this could generate up to \$500,000 annually.

**Below:** A Connecticut River boat launch infested with topped out hydrilla. Photo Courtesy Greg Bugbee.





## STATE UPDATE: NEW HAMPSHIRE

Amy P. Smagula  
New Hampshire Department of Environmental Services

### State of Invasives in New Hampshire – And Water Quality Impairments

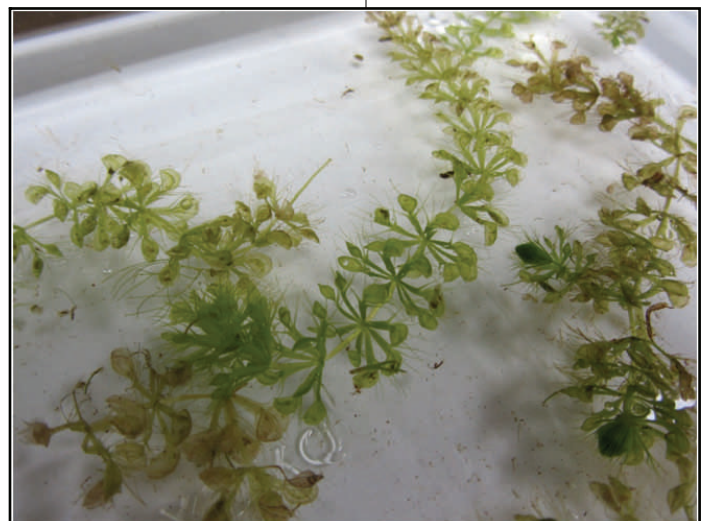
This year we added two *Najas minor* infestations to our list of infested waters, one in Country Pond in Newton, and the other in Big Island Pond in Derry. We now have a total of 90 infested waterbodies, most with variable milfoil, and some with a mix of other common invasives similar to those found throughout the region (fanwort, water chestnut, a bit of Eurasian milfoil, and others). Updated maps of infestations can be found online at [https://www.des.nh.gov/organization/divisions/water/wmb/exoticspecies/exotic\\_plant\\_map.htm](https://www.des.nh.gov/organization/divisions/water/wmb/exoticspecies/exotic_plant_map.htm).

One thing we have noted in recent years is increased boom and bust cycles of *Najas minor* (European naiad). We have a handful of waterbodies with this plant, and a few years ago when we first started finding it (around 2012), it was sparse and sporadic; it was there some years in low density, gone the next. In recent years (2017-present), we have noticed increased growths of the plant, with some waterbodies supporting dense multi-acre stands of the plant. Most of those systems are fairly tannic, and a majority of them are impounded river systems. Only one waterbody is actively managing the plant with mid-summer Diquat treatment before seed production with pretty good efficacy, with incremental progress as we play out the existing seed bank in the sediments. I suspect it will be a species that we start actively managing regularly in coming years, if boom cycles continue.

An occurrence of *Aldrovanda vesiculosa* (waterwheel plant) was documented in a beaver pond along an impoundment on a small stream in Pelham, New Hampshire in early November. This is the first documentation of the species in New Hampshire. The plant is widespread in the system, as documented by Matthew Charpentier. The area is now iced over, but NHDES will be monitoring this infestation and nearby areas for spread in 2020. At this time the plant is not on the prohibited species list, or state-listed as an invasive.

*“Aldrovanda vesiculosa (waterwheel plant) was documented in a beaver pond along an impoundment on a small stream in Pelham, New Hampshire, in early November. This is the first documentation of the species in New Hampshire.”*

**Below, left:** *Aldrovanda vesiculosa* in the Bear Swamp Wildlife Management Area, NJ **Below, right:** Close-up of *A. vesiculosa*. Photos: Chris Doyle and Glenn Sullivan.





## STATE UPDATE: NEW HAMPSHIRE (CONTINUED)

*“During the 2019 growing season, control actions were conducted on over 40 waterbodies across New Hampshire, with state grant funds awarded to each of these projects in the amount of a 25% project cost match.”*

### Prevention

For prevention activities in 2019, the Lake Host Program (run by the New Hampshire Lakes Association (NH Lakes), with funding from NH Department of Environmental Services) staffed over 100 high use boat launches and inspected tens of thousands of boats this summer. Volunteers from the program are credited with several “saves” where they intercepted state-listed invasive plants and animals attached to transient recreational gear about to launch into an non-infested water, or pulling out of an infested system. These inspections document more and more water chestnut seeds stuck in the carpeted bunks of boat trailers, as found through these inspections.

This year NH Lakes leveraged state grants funds to purchase a CD3 unit ([www.cd3station.com](http://www.cd3station.com)) which they mounted on a trailer to tow around the state to larger public access sites as a demonstration project to raise awareness about clean, drain, dry protocols for transient recreational gear. We are hoping this pilot project encourages towns and associations around the state to purchase units for fixed installations at public access sites in their communities.

### Early Detection

The New Hampshire Weed Watcher Program continued to expand this summer, adding several new volunteers and groups to the ranks of Weed Watchers around the state, including volunteers on waterbodies that are currently free from infestations as well as waterbodies that are dealing with established infestations of invasive species.

These extra eyes on the water also look for invasive animals and harmful algal blooms, reporting anything suspicious to state biologists for follow-up and action. We are thankful for their efforts.

### Management

During the 2019 growing season, control actions were conducted on over 40 waterbodies across New Hampshire, with state grant funds awarded to each of these projects in the amount of a 25% project cost match. Total project costs for these waterbodies (just under half of the infested waterbodies in New Hampshire) topped \$1.6 million, of which the state was able to award about \$380,000 to local entities by way of grant funds. Target species included variable milfoil (majority of projects), fanwort, Eurasian watermilfoil and European naiad. Projects included a variety of control techniques, following an integrated plant management approach.

### Regional Efforts

Hydrilla was found in the Connecticut River in Connecticut in 2017, and since that time each state along the river corridor has spent time each growing season surveying reaches of the river within their state boundaries. New Hampshire biologists paired up with Vermont agency staff to survey sections of the river in the fall of

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# STATE UPDATE: NEW HAMPSHIRE (CONTINUED)

2019, and as this update is written, no hydrilla growth has been found in the southern (Putney to Brattleboro) reach of the Connecticut River to date. We should get through the southern portion of the river to the MA border by mid-October, hopefully with zero finds. The river does support varying densities of Eurasian water milfoil, curly-leaf pondweed, European naiad, and water chestnut, among other invasives.

New Hampshire also contributed financially to the regional eDNA effort for invasive aquatic animals (Asian clam and zebra mussel), coordinated by Maine DEP, in collaboration with the Northeast Aquatic Nuisance Species Panel (NEANS) and UNH. Results from the summer-long effort are to be reported out in November 2019.

### Legislation

As a result of a legislative initiative in 2018, the Exotic Species Program is the recipient of an additional \$200,000 of funding for SFY 2020 and 2021 for prevention and management efforts. The bill originally sought a \$10 million appropriation, and while the actual realized funds are far less, we are glad for any additional funding to extend program capabilities through grants to various entities for prevention and management efforts.

The 2019 legislative session is ramping up, and so far there are no bills related to invasive species yet, though there is still time for some to be introduced. We will be monitoring the legislature closely.

Please direct any questions about the New Hampshire update to Amy Smagula at [Amy.Smagula@des.nh.gov](mailto:Amy.Smagula@des.nh.gov).

*“Hydrilla was found in the Connecticut River in Connecticut in 2017, and since that time each state along the river corridor has spent time each growing season surveying reaches of the river within their state boundaries.”*



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## STATE UPDATE: VERMONT

### Kimberly Jensen Vermont Department of Environmental Conser- vation

Another transition occurred within the State of Vermont's Aquatic Invasive Species Program when Josh Mulhollem left Vermont Department of Environmental Conservation (VTDEC) to work as the Environmental and Policy Program Manager at Oregon State Marine Board. Josh reports that he and his family are doing well and are enjoying their newest addition, a baby girl. Responsibilities within the AIS program were transferred to Kimberly Jensen and her team of summer technicians.

The State continued to spearhead water chestnut (*Trapa natans*) control efforts in the Lake Champlain Basin and within other lakes and ponds throughout Vermont. A combination of mechanical harvesting contractors, hand-pulling contractors, VTDEC staff, and a considerable number of volunteers were successful at removing plants at over 90 locations. Early spring high waters delayed some hand harvesting efforts, but provided access to mechanical harvesters to sites that have been difficult to

fully access in prior years. While data from mechanical and hand harvesters is still being processed, it appears that significant increases were made at many mechanical harvester locations.

VTDEC continued a partnership with the Vermont Youth Conservation Corps to assist with hand harvesting operations within sites that have historically large populations of water chestnut. The teams consisting of two crew leaders and 5-9 crew members harvested over 29,000 rosettes this summer.

VTDEC continued another partnership with the University of Ver-

mont Spatial Analysis Lab for the assessment of water chestnut populations using aerial photography (drones) to inform in-water water chestnut removal efforts and to gauge the long-term effects of the State's water chestnut management program in Lake Champlain. This year the plan was to better identify the signature of water chestnut populations throughout the growing season, and to demonstrate pre-and-post hand harvesting efforts. A presentation was provided at NALMS 2019 from the University of Vermont Spatial Analysis Lab.

To prevent the spread of aquatic invasive plants and animals, the State of

*“The State continued to spearhead water chestnut (Trapa natans) control efforts in the Lake Champlain Basin and within other lakes and ponds throughout Vermont.”*

**Below:** Vermont Youth Conservation Corps crew assist VTDEC with hand harvesting efforts of water chestnut on Lake Champlain. Photo: K Jensen



## STATE UPDATE: VERMONT (CONTINUED)

*“To prevent the spread of aquatic invasive plants and animals, the State of Vermont, in partnership with the Lake Champlain Basin Program, expanded their watercraft inspection programs to over thirty locations.”*

*“A LCBP Boat Steward retrieved a specimen off a boat that was positively identified as Hydrilla (*Hydrilla verticillata*), which has never been documented in a Vermont waterbody.”*

Vermont, in partnership with the Lake Champlain Basin Program, expanded their watercraft inspection programs to over 30 locations. At six of these locations, hot water decontamination equipment is also available. While data is incoming, inspectors collected and submitted many suspicious samples of suspected AIS to State staff. One Greeter blocked a boat covered with Zebra mussels. A LCBP Boat Steward retrieved a specimen that was positively identified as hydrilla (*Hydrilla verticillata*), which has never been documented in a Vermont waterbody.

Last summer, a new Water chestnut population was discovered off

the shore in Sand Bar State Park by a park visitor who reported it the ranger. After an initial survey and harvest by VTDEC staff and LCBP Boat Stewards completed a more thorough survey and harvested less than 35 plants from the area. This area will continue to be monitored in future years.

This fall, another Greeter informed VTDEC of a potential new population of adult zebra mussels at Lake Dunmore in central Vermont. While veligers have been discovered here in the past (1999), there have been no known occurrences of adult specimens. VTDEC and partners confirmed the species and their location within the lake.

With quick assistance from Dunmore Fern Lake Association and contracted divers, the population of approximately 150 mussels were suction harvested. VTDEC with the Lake Champlain Basin Rapid Response Task Force will continue to evaluate the infestation and develop a plan for containment and spread prevention.



**Below:** Vermont Youth Conservation Corps crew assist VTDEC with hand harvesting efforts of water chestnut on Lake Champlain. Photo: K. Jensen





## STATE UPDATE: MAINE

**John McPhedran**  
Maine Department of  
Environmental Protection

### Late Season Discoveries

We know it all too well: late season finds of invasive aquatic plant infestations. It happened again in 2019 with September finds of curly-leaf pondweed (*Potamogeton crispus*) and variable leaf watermilfoil (*Myriophyllum heterophyllum*).

A Unity College student kayaking on an impounded portion of the Kennebec River found curly-leaf pondweed and watermilfoil. Her mission that day wasn't to survey for plants but, based on previous work with a central Maine lake association, she knew right away these plants looked suspicious. Maine DEP subsequently surveyed a portion of the impoundment and arranged for two days of manual removal of the pondweed in October 2019. Significant additional surveying will be needed in 2020 to determine the extent of curly-leaf pondweed (pictured to the right) in the impoundment. The variable leaf watermilfoil, previously identified in an upstream dammed tributary, was confirmed via genetic analysis and is likely

growing throughout this portion of the river.

A Maine Game Warden with a camp on Big Lake in interior Washington County, a relatively remote area of the state, discovered a suspicious milfoil that turned out to be variable leaf watermilfoil. This population of invasive milfoil is 95 miles east of the nearest known infestation in Maine. Big Lake itself is 10,444 acres but is part of interconnected waterbodies, including the St. Croix River flowage, totaling 17,619 acres and bordering New Brunswick.

Confirmation of this plant in interior Washington County presents potential for further spread in this relatively undeveloped area of the state. Initial surveying in October 2019 included staff from Maine DEP, Lake Stewards of Maine, the Maine Warden Service and the Passamaquoddy Tribe. DEP has begun discussions with Downeast Lakes Land Trust on prevention, outreach and additional surveying. A concerted effort to survey most of this system in 2020 will be organized by Lake Stewards of Maine.

### Management of Existing Infestations

Twenty-two grants totaling \$254,404 were awarded by Maine DEP to lake groups working to manage infestations in 2019. These locally-managed programs target variable-leaved watermilfoil except for one working to reduce growth of curly-leaf pondweed and one managing hydrilla. Each recipient contributes significant cash and volunteer match to the respective program. Final reports on 2019 efforts to manage infestations were due to Maine DEP in November.

Response to the two 2018 infestation discoveries on Cobbossee Lake, Eurasian watermilfoil (*Myriophyllum spicatum*) and European frog's-bit (*Hydrocharis morsus-ranae*), continued in 2019. Maine DEP with help from local lake/watershed groups resumed weekly diver manual removal in June 2019. Despite the frequent removal efforts, scattered plants were found at each visit. Given the apparent early stage of infestation, limited distribution of the plant and the difficulty in eliminating all plants with manual removal, Maine DEP proceeded with a 4-acre application of the herbicide ProcellaCOR on

*“Twenty-two grants totaling \$254,404 were awarded by DEP to lake groups working to manage infestations in 2019.”*



*“Confirmation of this plant [variable leaf watermilfoil] in interior Washington County presents potential for further spread in this relatively undeveloped area of the state.”*

## STATE UPDATE: MAINE (CONTINUED)

*“Staff of the Friends of the Cobbossee Watershed and volunteers form the Cobbossee Yacht Club and Lake Association continued in 2019 to manually remove areas of European frog’s-bit from 5,500-acre Cobbossee Lake.”*



*“The dedicated funding mechanism for invasive species work on inland waters, passed by the Maine Legislature in 2001...The fees were increased for the first time during the 2019 legislative session.”*

July 22, 2019. Several dive surveys since the treatment have not detected the target plant. The area will be carefully monitored in 2020.

Staff of the Friends of the Cobbossee Watershed and volunteers form the Cobbossee Yacht Club and Lake Association continued in 2019 to manually remove areas of European frog’s-bit from 5,500-acre Cobbossee Lake.

Maine DEP also reported last year another infestation of Eurasian water-milfoil in a 28-acre pond with no public access in south-coastal Maine. Landowners there are engaging a DASH contractor to perform limited initial management of the infestation in late October 2019. Eurasian water-milfoil is well-established in the pond.

Finally, Maine DEP has collaborated for the last three years with New Hampshire Department of Environmental Services and the Three Ponds Protective Association to manage brittle water-nymph (*Najas minor*) in an impoundment of the Salmon Falls River. Seed-laden fragments

of this plant spread prolifically within a water body and seeds can be ingested by and pass through the digestive tract of waterfowl, aiding spread to other water bodies. Eradication of this infestation is not likely, but meaningful suppression is the goal to reduce spread risk in the downstream Salmon Falls River, and beyond.

### Legislative Session 2019

The dedicated funding mechanism for invasive species work on inland waters, passed by the Maine Legislature in 2001, started generating revenue to Maine DEP and Maine Department of Inland Fisheries and Wildlife in 2002. The original annual fees on motorized boats on inland waters, \$10 for Maine-registered and \$20 for out-of-state-registered watercraft, had remained the same through the 2019 boating season. The fees were increased for the first time during the 2019 legislative session. Starting in 2020, operators of Maine-registered boats will pay \$15 annually. Operators of out-of-state-registered watercraft will pay \$35 starting in 2020 and \$45 starting in 2022.

A bill to require draining water from boat bilges, live wells and ballast tanks, and to remove drain plugs and open valves during overland transport, was voted ought not pass by the legislative committee hearing the bill. At least one committee member was concerned that the bill would have a detrimental impact on operations by commercial bait collectors, even though committee discussion showed support for an exemption for permitted bait collectors.

### Courtesy Boat Inspections

Maine DEP awarded grants for boat inspection programs totaling \$200,835. Sixty-six grants were awarded to lake and watershed organizations. Data from participating organizations is being entered and checked by data management staff.

For more information, please check DEP’s website <http://www.maine.gov/dep/water/invasives/> or email [mil-foil@maine.gov](mailto:mil-foil@maine.gov).



## STATE UPDATE: NEW JERSEY

Heather Desko, New Jersey Water Supply Authority and  
Chris Doyle, SOLitude Lake Management

### Hydrilla

Several hydrilla control projects continued this year in New Jersey. The Delaware & Raritan Canal project (New Jersey Water Supply Authority) is in the third year of hydrilla control via injected herbicides. During the fall 2019 SAV survey, no hydrilla plants nor fragments were found within the Canal; however, one herbicide-stressed plant was found in early July of this year and one tuber was found out of 400 total cores collected at 5 sites along the Canal during the late October tuber sampling.

The Manasquan Reservoir Aquatic Plant Management Project, also under the direction of the New Jersey Water Supply Authority, completed its second pilot herbicide application season (total 10 acres of the 770 acre reservoir).

2019 marked the first year of the Manasquan Reservoir Boat Steward program, where stewards inspected 1,979 boats for hitchhiking invasive species fragments. A total of 243 boats were intercepted from entering the reservoir with plant fragments and 442 vessels leaving Manasquan Reservoir had plant fragments.

This year, hydrilla was confirmed in two other lakes in central New Jersey – Assunpink Lake and Stone Tavern Lake, both located in Monmouth County.

### Other Invasive Aquatic Plants

Parrotfeather (*Myriophyllum aquaticum*) was confirmed in Lake Takanassee in Monmouth County this year, and Brazilian waterweed (*Egeria densa*) was found in a private farm pond in the Raritan River Watershed in Hunterdon County (pictured, to the right).

### Hazardous Algal Blooms (HABs)

In 2019, there were 70 suspected HABs with 39 confirmed blooms in 34 different waterbodies in New Jersey (at the time of publication). The thresholds for a confirmed bloom in NJ is >20,000 cells/ml or 3 ug/L Microcystins. Blooms were confirmed in the state's largest lake, Lake Hopatcong, and several other high profile waterbodies including Greenwood Lake and several water supply reservoirs including Spruce Run Reservoir and Manasquan Reservoir. NJ Department of Environmental Protection conducts aircraft remote sensing to measure chlorophyll a and phycocyanin and is developing algorithms to use these data to estimate cell counts. Continuous monitoring buoys have been installed seasonally at Lake Hopatcong by NJDEP and at Spruce Run Reservoir by the US Geological Survey to track potential bloom conditions and inventory water quality data.

**Right:** Lake Takanassee parrotfeather infestation. Photo: K Clonan, NJWSA.



*“2019 marked the first year of the Manasquan Reservoir Boat Steward program, where stewards inspected 1,979 boats for hitchhiking invasive species fragments.”*



*“Governor Phil Murphy and officials from the New Jersey Department of Environmental Protection announced more than \$13 million in funding to local communities and a new initiative to reduce and prevent future harmful algal blooms in New Jersey.”*

**Below:** Sad Face HAB  
(Photo: Deidre Supple, NJ State Park Service)



## STATE UPDATE: NEW JERSEY (CONTINUED)

In response to 2019 HAB events in New Jersey waters, on November 18th, New Jersey Governor Phil Murphy and officials from the New Jersey Department of Environmental Protection announced more than \$13 million in funding to local communities and a new initiative to reduce and prevent future harmful algal blooms in New Jersey. This initiative is summarized as:

### Take Action to Prevent and Mitigate HABs

\$2.5 M in matching HAB/Lakes Management Grants including for treatment and prevention projects. This will be a matching program resulting in \$5 million in new projects.

\$1 M in Watershed Planning Grants for planning and projects that reduce the nonpoint source pollution, including nutrients, that contribute to HABs in surface waters.

\$10 M in Principal Forgiveness Grants from the Clean Water State Revolving Fund for half of the cost (up to \$2 million) per project of major infrastructure upgrades to reduce nutrient loading to waterbodies, including sewer and stormwater projects.

### Enhance Science and Build Capacity to Respond

The NJDEP will establish an expert HAB and lakes management team to:

- Evaluate and address prevention and mitigation strategies;
- Develop New Jersey HABs and Lakes Management Guidance Materials;
- Provide local partners with technical assistance to develop local HAB action plans.

### Science Agenda

- NJDEP will evaluate thresholds for different exposure pathways to cyanobacteria and toxins for humans and animals and establish guidance values for new toxins as needed.
- NJDEP will research HABs and prepare to use new monitoring and lab testing tools.
- NJDEP, in consultation with the expert panel, will build on existing efforts to develop a database of treatment technologies.

### Build Statewide HAB Monitoring Program Capacity

NJDEP will pursue additional monitoring, laboratory testing and data management capacity both internally and with external partners to assess water quality conditions and sources that contribute to HABs and to inform HAB event response, prevention and treatment.

### Improve Communications

- NJDEP will host two Regional HAB Summits;
- NJDEP will enhance Web-based HAB Tools;
- Assist local governments

For more detailed information:

[https://www.state.nj.us/dep/hab/docs/HABs\\_factsheet\\_11.14.19rev.pdf](https://www.state.nj.us/dep/hab/docs/HABs_factsheet_11.14.19rev.pdf)



# AQUATIC PLANT QUIZ



## Aquatic Plant Quiz

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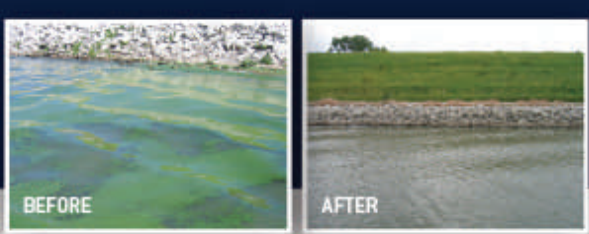
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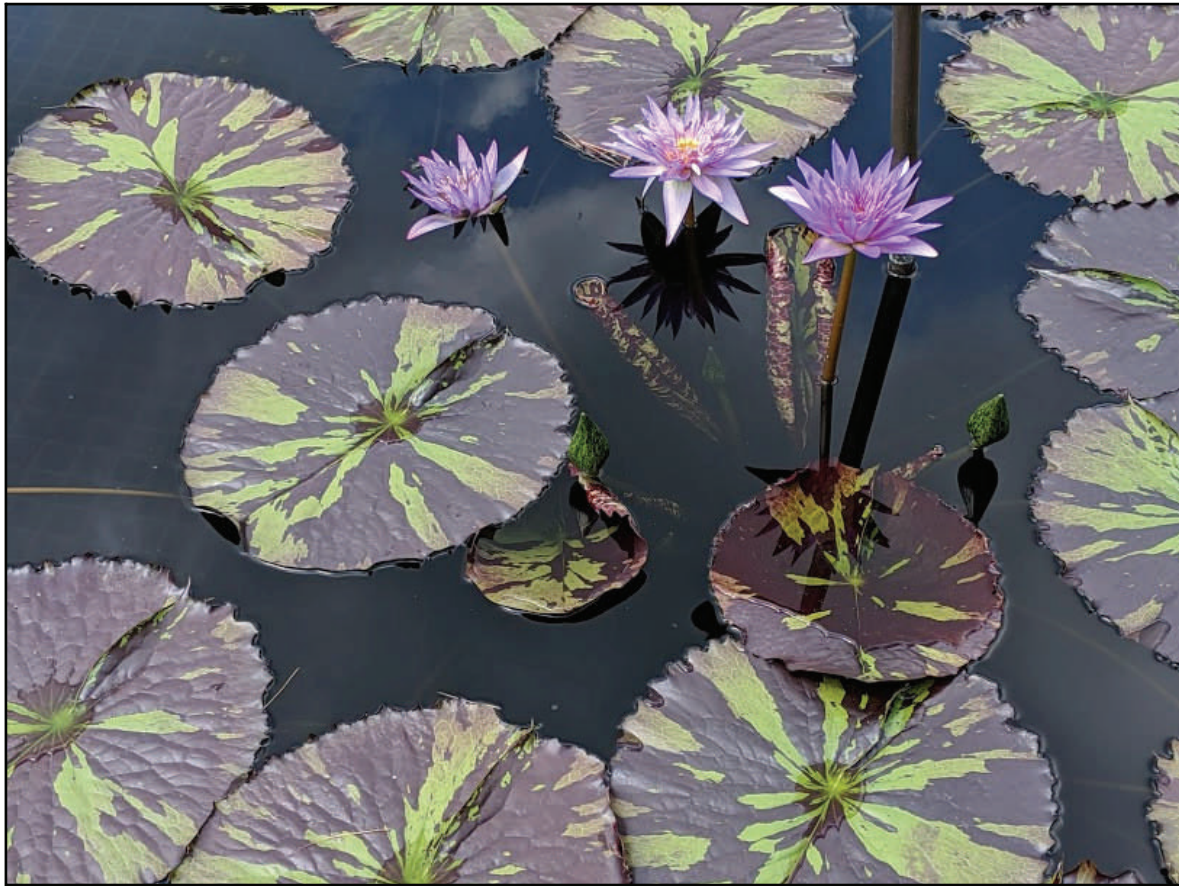
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No Trip to Longwood Gardens (located 30 miles south of Philadelphia, in Kennet Square, PA) would be complete without visiting their stunning collection of exotic water lilies. This summer, the Editor made the trek to the gardens for a nostalgia-filled sojourn for the first time in over 20 years. Although he would like to take credit for the quality of these pictures, really the praise goes to his new Android Smartphone.



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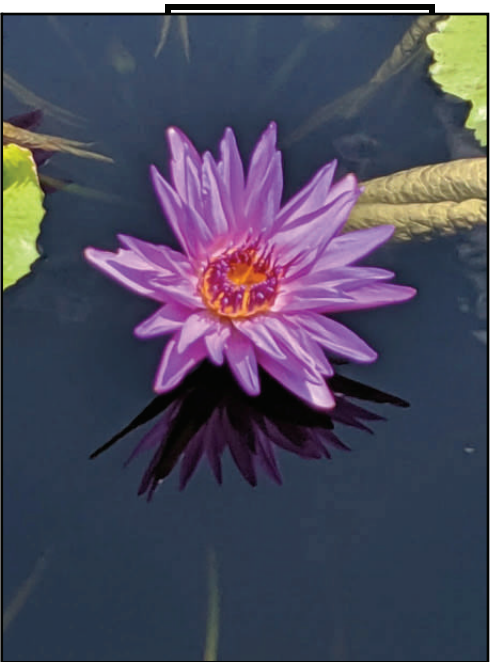
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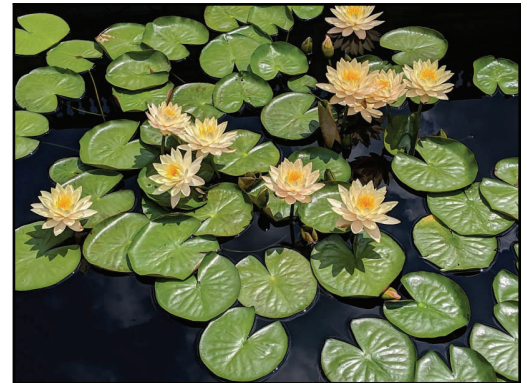
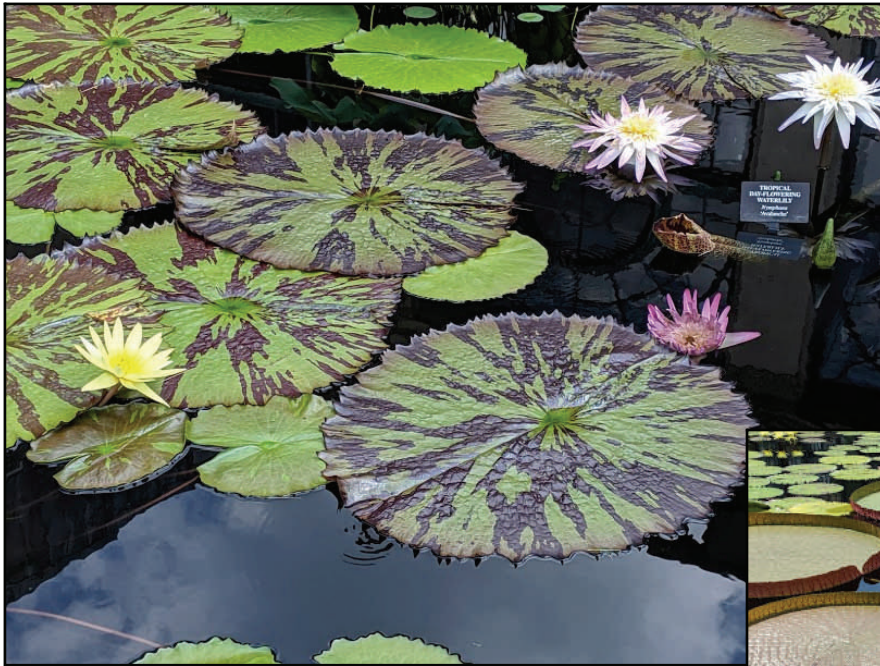
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## FEATURED STUDENT ARTICLE

### Looking Ahead: A collection of potential aquatic invaders that threaten the Northeast

Kara Foley, NEAPMS Student Director  
North Carolina State University

Early detection of aquatic invasive species and rapid response to their associated infestations are two key elements of effective aquatic plant management. For successful early detection, it is important to be able to recognize both the common invaders to a particular region as well as those uncommon invaders that may have the ability to demonstrate invasive tendencies. While the Northeast is currently dealing with a wide variety of aquatic invaders, there will always be new species to stay on the lookout for. Some of these species include African oxygen weed, water soldier and starry stonewort.

**African oxygen weed** (*Lagarosiphon major*), native to Africa, has yet to be identified in the United States but poses a significant threat to our freshwater resources – especially in the Northeast due to its cool climate. African oxygen weed has all of the characteristics of a problematic species: quick reproductive rates, easy dispersal potential via vegetative fragments, and tolerant to a wide range of environmental conditions. In New Zealand, African oxygen weed currently dominates many freshwater systems and has caused significant damage to local ecosystems by outcompeting native species. Unfortunately, management of African oxygen weed has been difficult in New Zealand due to lack of effective control options.

If African oxygen weed were to be introduced to the Northeast, it will likely be found in slow moving streams, ponds and lakes. African oxygen weed is a close relative to hydrilla (both are members of the Hydrocharitaceae family) which is reflected in their many shared morphological features. Both species have rooted, submersed growth habits and short linear leaves. However, African oxygen weed has alternate, noticeably recurved leaves with smooth edges in comparison to hydrilla's whorled, slightly curved leaves with serrated edges.

Another member of the Hydrocharitaceae family that threatens the Northeast is **water soldier** (*Stratiotes aloides*). Water soldier is a native to Europe and northwest Asia and has not been identified in the United States. However, in 2008, water soldier was found in Ontario, Canada in the Trent River. Luckily, due to the successful early detection and rapid response efforts from Ontario's water resource managers, the population has not spread far from its initial site of introduction. Successful control of water soldier has been demonstrated in Canada through hand-harvesting, shade cloth installation and chemical treatment with diquat-based herbicides.

*“While the Northeast is currently dealing with a wide variety of aquatic invaders, there will always be new species to stay on the lookout for”*

*“In New Zealand, African oxygen weed currently dominates many freshwater systems and has caused significant damage to local ecosystems by outcompeting native species.”*



## FEATURED STUDENT ARTICLE (CONTINUED)



Photo: michigan.gov

*“In fact, one of the first introductions of starry stonewort to North America was documented in 1978 in New York’s St. Lawrence River.”*

Water soldier is a unique aquatic plant because it has two distinct growth habits throughout the year. During the winter months, the plant is rooted to the substrate and produces vegetative runners or “offsets” as well as turions. In the summer, the loosely-rooted biomass floats to the water’s surface and flowers. These phenological patterns allow water soldier to optimize its potential for fast growth rates and quick dispersal, making it a concern in an aquatic ecosystem. The emergent leaves of water soldier have been described to resemble those of a pineapple’s as they are quite thick and rigid and are arranged in a rosette. In this form, they have sharp, serrated edges that could hurt swimmers and impede recreation. When submersed, the leaves lose their rigidity and become quite thin. Water soldier prefers waterbodies that are shallow, nutrient-rich, and slow-moving.

Another species to be on the lookout for in the Northeast is **starry stonewort** (*Nitellopsis obtusa*). Unfortunately, this macroalga has already spread throughout much of upstate New York and has also been found in a few waterbodies in Vermont. In fact, one of the first introductions of starry stonewort to North America was documented in 1978 in New York’s St. Lawrence River. Starry stonewort is easiest to identify with its white, star-shaped asexual reproductive structures (“bulbils”). If no bulbils are apparent, look for macroalgal growth similar to that of other Characeae genera such as *Chara* and *Nitella* with bright green branchlets in whorls of 5-8 around its main axis.

Despite being an algal species, starry stonewort behaves similarly to an invasive aquatic plant. It is tolerant to a wide range of environmental conditions, can reproduce by bulbil formation as well as fragmentation and outcompetes native vegetation by forming dense mats along the bottoms of lakes and ponds. Mature populations of starry stonewort have been reported to be difficult to control, however, some methods that have been successful for managing localized populations of starry stonewort include hand pulling, diver assisted suction harvesting and chemical treatment with copper and endothall-based herbicides. See the Summer 2019 NEAPMS newsletter for more information on the starry stonewort research efforts at Clemson University.

While it is nearly impossible to predict the species that will be next to invade the Northeast, these three species have demonstrated that they have the capability to cause significant economic and ecological damage to the region if introduced. In general, be sure to take the time to properly identify any species that may not look familiar when you are out in the field.

### References and Helpful Resources:

African oxygen weed:

[CRC Weed Management Guide: Lagarosiphon](#)

[MDARD Weed Risk Assessment for \*Lagarosiphon major\*](#)

water soldier:

[Great Lakes ANS Information System: \*Stratiotes aloides\*](#)

[USDA Weed Risk Assesesment for \*Stratiotes aloides\* L. \(Hydrocharitaceae\) – Water soldier](#)

starry stonewort:

[Great Lakes ANS Information System: \*Nitellopsis obtusa\*](#)

[MDARD Weed Risk Assessment for \*Nitellopsis obtusa\*](#)



Image: Scott Brown, ML&SA



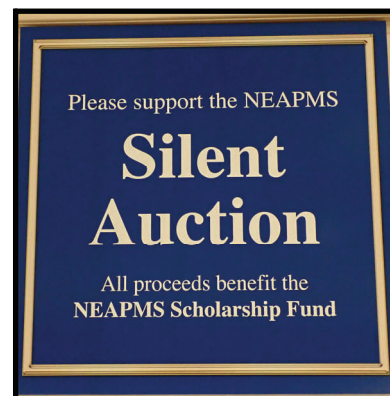
# SILENT AUCTION

It's never too early to consider contributing an item to the NEAPMS Silent Auction Table at the Annual Conference in January.

For 2020, we want this to be the best Silent Auction yet!

## Need a few good ideas? How about:

- GPS units/limnological sampling gear
- Outdoor recreational equipment
- Gift cards
- Top-shelf Vermont maple syrup
- Fine local wine/micro-brew beer
- Aquatic plant identification books



100% of the proceeds from the Silent Auction go straight to the NEAPMS Scholarship Fund!

**Silent Auction Questions?**

Please Contact:  
**John McPhedran**  
([john.mcphedran@maine.gov](mailto:john.mcphedran@maine.gov))

# NEAPMS SCHOLARSHIP

## Scholarship Committee

*Bin Zbu (Chair)*

*Mark Heilman*

*Meg Modley*

*Chris Doyle*

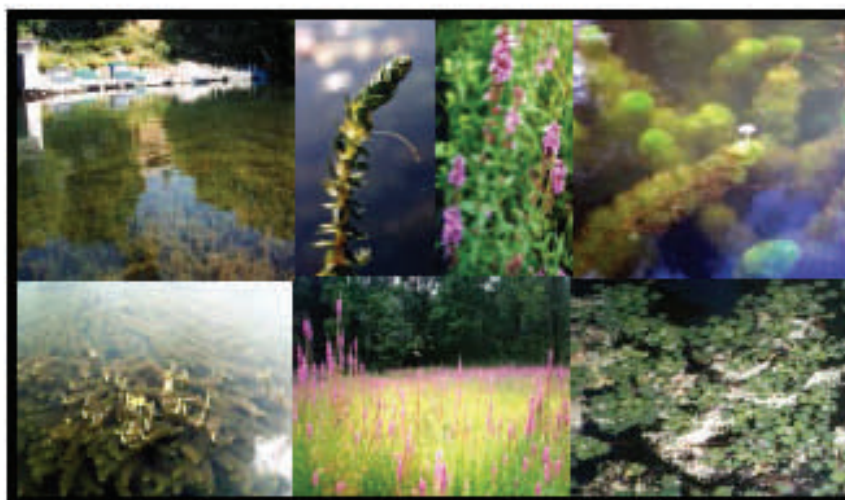
*Greg Bugbee*

*Kiyoko Yokota*

*Paul Lord*

*Chris Hanlon*

## Graduate and Undergraduate Scholarships and Stipends Available!



The Northeast Aquatic Plant Management Society announces the availability of scholarship monies for students pursuing degrees in AQUATIC PLANT MANAGEMENT.

Graduate scholarships can range up to \$5,000.00 depending on the degree pursued and the project proposed.

Undergraduate students interested in participating in an internship in Aquatic Plant Management can be eligible for a stipend to pay for salary and/or related expenses during the internship.

For more detailed information visit the NEAPMS website at [www.neapms.net](http://www.neapms.net) and click on Scholarships



### ANNOUNCING:

NEAPMS will host its first Student Luncheon at the Annual Conference on Wed. Jan. 15th, featuring Guest Speaker Dr. Chuck Boylen

Answer from page 22:  
Potamogeton pultifer  
(Spotted Pondweed)



# See you in January in Lake Placid, NY for our Annual Conference!



Photo: The Crowne Plaza, Lake Placid

*If you have any questions, comments, or suggestions, please reach out to a Director for discussion at our January Board Meeting.*

**Check Out Our Website:**  
[www.neapms.org](http://www.neapms.org)

*If you'd like to advertise in the Nor'Easter, please contact Glenn Sullivan (gsullivan@solitudelake.com). Both 1/4 page and business card-sized ad space is available.*

## ANNOUNCEMENTS

February 10-13, 2020:

**MAPMS**

Indianapolis, IN

[www.mapms.org](http://www.mapms.org)

November 20-22, 2018:

**TAPMS**

Bryan, TX

[www.tapms.org](http://www.tapms.org)

March 4-5, 2020:

**PALMS**

**30th Anniversary!**

Boalsburg, PA

[www.palakes.org](http://www.palakes.org)

July 19-22, 2020:

**APMS**

**60th Anniversary!**

San Antonio

[www.apms.org](http://www.apms.org)

March 16-18, 2020:

**WAPMS**

Tucson, AR

[www.wapms.org](http://www.wapms.org)

November 16-20, 2020

**NALMS**

**40th Anniversary!**

Burlington, VT

[www.nalms.org](http://www.nalms.org)



## 21<sup>st</sup> Anniversary Meeting – Preliminary Program

January 14-16, 2020 - The Crowne Plaza Hotel and Conference Center – Lake Placid, New York

Tuesday, January 14, 2020

	<b>Special Session: Stakeholder Interactions and Aquatic Plant Management (Moderated by Emily Mayer, SOLitude Lake Management)</b>
2:00pm to 2:30pm	Harnessing Subconscious Behavior <i>Ken Donnelly, Beyond Attitude</i>
2:30pm to 3:00pm	Human Dimensions of Aquatic Plant Management <i>Vic DiCenzo, Ph.D., SOLitude Lake Management</i>
	<b>Aquatic Plant Identification Workshop (Moderated by Chris Doyle, SOLitude Lake Management)</b>
3:00pm to 4:00pm	Problems in Taxa Identification within the Potamogetonaceae <i>C. Barre Hellquist, Ph.D., Professor Emeritus, Massachusetts College of Liberal Arts</i>
4:00pm to 5:30pm	Aquatic Plant Workshop and Quiz <i>SOLitude Lake Management Biology Team</i>
5:30pm to 7:30pm	<b>NEAPMS Presidential Reception</b> <i>(Mingling, cash bar and appetizers)</i>
7:30pm -	Dinner and/or entertainment on your own in hotel or downtown Lake Placid

Wednesday, January 15, 2020

7:30am to 8:30am	<b>Continental Breakfast</b>
	<b>Opening Session/Aquatic Plant Identification and Mapping (Moderated by Will Stevenson, SOLitude Lake Management)</b>
8:30am to 8:45am	Welcome Remarks <i>Will Stevenson, NEAPMS President</i>
8:45am to 9:15am	Using Sonar-Based Technology for Aquatic Invasive Species Early Detection and Waterbody Vulnerability Assessments <i>Erin Vennie-Vollrath, Adirondack Park Invasive Plant Program and The Nature Conservancy</i>
9:15am to 9:45am	Evaluation of Machine Learning for Automation of Aquatic Plant Identification from Hydroacoustic Data <i>Rob Richardson, Ph.D., North Carolina State University</i>



9:45am to 10:15am	<p>U.S. Geological Survey's Nonindigenous Aquatic Species (NAS) Program: Tools and Information for Researchers, Managers, and Stakeholders <i>Ian Pflingsten, U.S. Geological Survey</i></p>
10:15am to 10:30am	<p><b>Refreshment Break</b></p>
10:00am to 11:30am (30 minute presentations)	<p><b>Hazardous Algal Blooms (Moderated by Mark Heilman, SePRO)</b></p> <ul style="list-style-type: none"> <li>• Solid Phase Adsorption Toxin Trackers (SPATTs) and Diffusive Gradients in Thin Films (DGT) Samplers for Characterizing Cyanotoxins in Freshwater <i>Kurt Carpenter, Oregon Water Science Center</i></li> <li>• Using Advanced Technologies for HAB Monitoring and Water Supply Response in New Jersey <i>Heather Desko, New Jersey Water Supply Authority</i></li> <li>• Advancing Strategies for Controlling Harmful Algal Blooms <i>West Bishop, Ph.D., SePRO</i></li> </ul>
12:00pm to 1:00pm	<p><b>Luncheon</b> <b>Student Luncheon</b> with Guest Speaker: TBA</p>
1:00pm to 1:30pm	<p><b>Sponsor Updates I</b> (<i>invited 2-3 minute industry updates</i>) <b>(Moderated by Glenn Sullivan, SOLitude Lake Management)</b></p>
1:30pm to 3:00pm (30 minute presentations)	<p><b>Climate Change on Lakes and AIS Pathways</b> <b>(Moderated by Meg Modley, Lake Champlain Basin Program)</b></p> <ul style="list-style-type: none"> <li>• Climate Change and Your Lake: What You Need to Know <i>Ken Wagner, Ph.D., Water Resource Services</i></li> <li>• Pathways of Invasion: Recreational Boater Activity, Aquatic Invasive Species Distribution, and Landscape Level Connectivity to Inform Management and Prevention in New York State <i>Michale Glennon, Paul Smith's College-Adirondack Watershed Institute</i></li> <li>• Efficacy of Boat Stewards and NYS Regulations at Enhancing Visitor Adoption of AIS Prevention Strategies <i>Daniel Keltling, Paul Smith's College-Adirondack Watershed Institute</i></li> </ul>
3:00pm to 3:30pm	<p><b>Refreshment Break</b></p>
3:30pm to 4:30pm (30 minute presentations)	<p><b>New Technology (Moderated by Bin Zhu, University of Hartford)</b></p> <ul style="list-style-type: none"> <li>• Chemical- Free Algae Mitigation with Air Nanobubbles <i>Christian Ference, Moleaer</i></li> <li>• Preliminary Evaluation of Nanobubblers to Improve Water Quality and Reduce Cyanobacteria Blooms <i>Patrick Goodwin, Aquatic Systems, Inc.</i></li> </ul>
4:30pm to 5:00pm	<p>NEAPMS Business Meeting – <i>NEAPMS Board of Directors</i></p>

APMS Updates- *Mark Heilman, APMS President*  
AERF Updates- *Carlton Layne, Executive Director*

5:00pm to 5:30pm  
5:45pm to 7:00pm  
7:00pm to 9:00pm

**Poster Slam Session (Moderated by Meg Modley, LCBP)**  
Reception and Poster Session  
NEAPMS Awards Banquet

### Thursday, January 16, 2020

7:30am to 8:30am

#### **Continental Breakfast**

#### **Hydrilla (Moderated by Chris Hanlon, Aquatic Technologies, Inc.)**

- Monoecious Hydrilla Management in Lake Waccamaw: A Program Summary  
*Erika Haug, Ph.D., North Carolina State University*
- Hydrilla in the Connecticut River: What's going on, anyway?  
*Gregory Bugbee, Connecticut Agricultural Experimental Station and Nicholas Tippery, Ph.D., University of Wisconsin*
- Investigating the Success of Dioecious *Hydrilla verticillate* in Northern Climates\*  
*Kara Foley, North Carolina State University*

8:30am to 10:00am  
(30 minute presentations)

10:00am to 10:30am

#### **Refreshment Break**

#### **Topics in Aquatic Vascular Macrophytes and Algae (Moderated by Emily Molden, Nantucket Land Council)**

- Comparison of Hydro-acoustics, Aerial Photo Interpretation, Rake Sampling and Diver Survey on Quantifying Changes in Aquatic Plants  
*Bin Zhu, University of Hartford*
- Evaluation of Selected Algaecides on *Lyngbya wollei* Control\*  
*Emily Vulgamore, North Carolina State University*
- Management of Water Chestnut  
*Lynde Dodd, U.S. Army Corps of Engineers*
- Treatment Timing and Application Method to Effectively Control Monoecious Hydrilla Including Tubers  
*Justin Nawrocki, UPL NA*

10:30am to 12:30pm  
(30 minute presentations)

12:30pm to 1:30pm

#### **Luncheon and Silent Auction Item Pick-Up**

### NEAPMS Poster Presentations

**Non-Target Impacts of Hydrilla and Lyngbya Treatments on Water willow**



**(*Justicia americana*)\***

*Jens Beets, University of North Carolina State*

**Investigations into Water Quality and Nutrient Loading of Little Spectacle Pond, Lancaster, MA**

*Brea Arvidson, SŌLitude Lake Management*

**The Search for Suitable Species to be Used in Environmental Risk Assessments**

*Chelsea Hedderig, Smithers*

**Quantitative Assessments of Operational Selective Control of Invasive Watermilfoils in the Northern US with ProcellaCOR**

*Mark Heilman, Ph.D., SePRO*

**Development of Hydrilla Biological Control in the US with Focus on the Monoecious Biotype**

*Nathan Harms, U.S. Army Corps of Engineers*

**Boat Stewardship at the Manasquan Reservoir, NJ**

*Kyle Clonan, New Jersey Water Supply Authority and Montclair State University*

**The Adirondack Park Aquatic Nuisance Species Spread Prevention Program**

*Eric Paul, Adirondack Watershed Institute-Paul Smith's College*

**ARMOR: A New Tool for Managing the Spread of Invasive Aquatic Species**

*Jeremy Farrell, Rensselaer Polytechnic Institute and Darrin Fresh Water Institute*

\*Denotes student presentation